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Macroprudential policies to mitigate housing market risks

Country case study: Israel

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1. Housing as a source of risk

Taking out a housing loan is a significant financial decision for a household, accompanied by weighty and lengthy economic implications. The considerable sum involved, and the long loan term expose the borrower to a range of risks in the case of macroeconomic or idiosyncratic shocks.

In 2008 house prices in Israel started to sharply rise as a result of excess demand for dwellings. This was partly driven by a reduction in housing starts and higher demand due to lower global and local interest rates after the great financial crisis (GFC). The sharp rise in house prices was shortly followed by a dramatic rise in the volume of new mortgages (Graph 1) granted by local banks. As a result, a growing share of banks' portfolios was either credit for housing or for risks correlated with it, such as consumer credit and credit for construction and real estate (Graph 2). Assessing this risk through stress-tests indicated that housing exposures had become a source of vulnerability for the Israeli banking system.

To better assess the risks embodied in housing credit, the Bank of Israel's Banking Supervision Department (BSD) collects granular data with respect to each mortgage granted by each bank. The rich data allows for a large variety of analyses, including simulations for tool calibration and for effectiveness assessments.

The Israeli mortgages market is relatively complicated: each loan may consist of several "tracks" that differ in terms of indexation to CPI, as well as with fixed or variable interest rates (Graph 3 presents the distribution of new mortgages by type of indexation and type of interest rate). Thus, alongside the common risks embodied in a long financial obligation, most households are exposed to both interest and inflation risks. Moreover, mortgages are recourse loans, so there is a risk that the loan may exceed the value of collateral.

2. Objectives

The Israeli law instructs the BSD to act for the wellbeing of the public and the economy by pursuing three main objectives: protecting depositors' money, assuring the orderly functioning of the banking system and protecting consumers of banking services.

In order to protect bank customers' deposits, the BSD closely follows each bank, assessing its risk portfolio, conducting stress tests, and performing examinations and surveys. The in-depth assessment is facilitated by Israel's relatively concentrated banking system. An examination of the risks and the sources of vulnerabilities showed that credit for housing was a growing risk to the Israeli banking system, mainly due to its increasing size and its correlation with other credits, including consumer credit and credit for construction and real estate.

Moreover, there were growing consumer protection concerns about the public's ability to properly evaluate the risks involved in mortgage loans. For that reason, the Bank of Israel instituted reforms

to the mortgage market in 2021. The reforms instruct banks to provide borrowers with more information about loans, including the internal rate of return (IRR) of each loan proposal, taking into account the market projections supplied to the commercial banks by the Bank of Israel for inflation and interest rates over the entire lifetime of the mortgage. This allows the client to not only evaluate the risks but also to better compare different loan proposals.

The framework for macroprudential measures adopted in Israel attempts to tackle the risks embodied in the growing share of credit accounted for by mortgages and other highly correlated loans. The framework divides the action into two components. The first component reduces the risks embodied in new mortgages by adopting borrower-based measures limiting the loan to value (LTV) ratio, the debt service-to-income (DSTI)¹ ratio, the amortisation term and the floating interest rate share in the total loan. The second component aims to improve banks' ability to absorb potential losses by requiring them to make higher capital allocations² and higher credit loss allowances.

When calibrating the various measures, the BSD considered it important that the measures would be effective in reducing risks arising from new mortgages without strangling the market and allow the public to carry on purchasing houses.

3. Macroprudential instruments in practice

The Banking Supervision Department has taken a series of regulatory measures with regard to housing credit:

Borrower-based regulatory measures:

LTV ratio limits (from October 2012)	
Classification of purchase	Maximum LTV
Sole residential property	75%
Alternative residential property	70%
Investment property	50%

DSTI ratio limits (from April 2014)	
Classification of purchase	Maximum DSTI
All	50%

- Limiting the term of full amortisation to no more than 30 years (from April 2014).
- The floating interest portion of the loan may not exceed two thirds of the total loan. The prime rate limit was initially adopted in April 2011 during a period of rapid increases in the monetary rate. The prime rate limit rose from 1% in January 2009 to 3% in April 2011. While 50% of new

¹ In Israel the DSTI is known as the payment to income (PTI) ratio.

² Capital allocation in Israel follows the standard approach.

mortgages were issued with unindexed floating interest rates (prime rates), the share of new mortgages with floating interest rates of any kind was 80 percent. In view of these characteristics, there was concern that a further increase in the Bank of Israel rate (a reasonable proposition at the time) would severely increase borrowers' monthly payments, impair their solvency, degrade the housing loan portfolio and cause credit risk to climb. In 2021, given the effect of the Covid-19 crisis, the prime rate limit was expanded from one third of each total loan to two thirds.

Improved loss-absorbing cushions

Risk-weighted asset (RWA) requirements by LTV ratio (from February 2013)

LTV	RWA
Below 45%	35%
Between 45% and 60%	50%
Above 60%	60%

Risk-weighted asset requirements by DSTI ratio (From April 2014)

DSTI	RWA
Below 40%	Determined by LTV ratio
Between 40% and 50%	100%

- Minimum group credit-loss allowance of 0.35% of loan balance.
- Compulsory allocation of Tier 1 equity at a rate of 1% of the outstanding housing loan portfolio (From July 2014).

The full set of measures should be considered within the whole regulatory framework. Even though each measure attempts to mitigate a different source of risk arising from the financial cycle boom, the measures complement each other. For example, the effect of the DSTI limits may not be as binding for borrowers without the limitation on the full amortisation term.

The aim of the LTV and DSTI caps and the limitation on the full amortisation term was to reduce the average risk in the new mortgages portfolio by removing the risky tail of these distributions. The higher RWA requirement for LTV and DSTI ratios that are high but below the limits was put in place to provide banks with more capital to absorb potential losses and also to play a similar role to the flexibility margins/speed limits commonly used in other countries. This is because the banks in Israel that were instructed by the BSD to increase their Common Equity Tier 1 capital ratio at the same time would have to consider which borrowers would be able to receive these loans and price them accordingly.

All the macroprudential measures are anchored in the Banking Supervision Directives (#451 and #329). They all restrict banks judgments and risk appetite. The measures were not designed to be enforced on the general public or on non-banks, which have a very small share of the total housing credit market in terms of volume.

The introduction of the measures and their calibration began in 2010, shortly after the volume of new mortgages began to grow. The tools were recalibrated and improved over time. Most of the recalibrations tightened the measures, but some eased them.

The BSD started collecting granular data with respect to each mortgage granted by all the banks from 2013. This allowed the BSD to better understand the need for each measure. Moreover, the effect of the measures could be evaluated by observing the change in the distribution of new mortgages and the broader reaction of the market to each measure introduced. The tools used to calibrate these measures included the stress test simulation, which allowed the BSD to determine which types of borrowers were more likely to default on their debt. For example, this tool allowed the BSD to understand that since the mortgages in Israel are recourse loans, as previously stated, the DSTI is a key element in gauging the probability of default (PD) of each loan, while the LTV is a key element in calculating the loss in the case of default. This result further allowed the BSD to calculate the level at which each factor becomes a risk.

4. Effectiveness

4.1 Measuring success

Risks are detected based on the skewed distribution of a risk factor. To evaluate the effectiveness of any risk reduction measure it is thus necessary to observe how the distribution of specific risk factors develops over time.

Graph 4 shows the development of the LTV distribution over time. Before the limits were applied in 2012, around 7% of new mortgages were granted with an LTV above 75%, a level that was recognised by the BSD to be a source of vulnerability for banks. After the limits were applied, such loans were no longer granted. This lowered this risk factor.

Graph 5 shows the development of DSTI distribution. It shows that prior to the usage of the DSTI limits and the RWA requirement for DSTI ratios above 40%, more than 20% of the DSTI distribution was above 40%, a level that was recognised by the BSD to have a high PD in case of macroeconomic loosening.

Graph 6 further shows that the PD of the new mortgages, as calculated for stress test purposes, fell after each of the measures was applied. Since the main goal of the BSD was to reduce the risk embodied in housing credit in banks' portfolios, this shows that the measures were in fact effective.

It should be noted that banks' credit quality is relatively good, as shown by the low level of non-performing loans (NLP). This is why the calibration of the measures and the effectiveness evaluation of the entire regulation scheme was simulated in a loosening macroeconomic environment, and in stress test scenarios.

4.2 Factors influencing success

The implementation of the macroprudential tools did not aim to be cyclical. The tools were calibrated in a structural manner, even though the framework was created during a boom period of the financial cycle, as the volume of credit for housing was growing strongly. However, the tools are frequently reconsidered and recalibrated, taking into account the current macroeconomic environment.

For example, in April 2020, a temporary 1% reduction in the additional capital requirement against new mortgages was introduced in order to lighten the burden on borrowers by lowering the interest rate on mortgages. This easing of requirements was also meant to apply to all-purpose loans backed by a dwelling. It lowered the cost of mortgages, as can be seen in the narrowing of the spread between the cost of sources (for the purpose of the test the real five-year government yield) and the average mortgage rate. As a rule, the spread between the loan price and the cost of sources would have been expected to widen, given the increase in the risk characteristics of the loans and the macroeconomic

risk occasioned by the crisis. In practice, however, it narrowed after the capital requirement was eased (Graph 7).

Moreover, in January 2021 the BSD decided that borrowers should be given greater latitude to choose the composition of their mortgages in accordance with their personal needs and risk aversion. It thus allowed the floating interest rate share of the loan to reach up to two thirds of the loan rather than one third, as was previously determined. This was also due to a change in macroeconomic conditions, with interest rates projected to be lower for longer and the floating interest rate being the least costly part of the loan at the time. In retrospect, the change in the macroeconomic environment after the Covid-19 pandemic and the accompanying interest rate hike had a greater effect on borrowers with a relatively high floating interest rate component, pushing up the monthly payments on their mortgages.

4.3 Leakages

Although the measures are not enforced on non-banks, there is no evidence of any shift in demand from banks to non-banks, as can be observed by the low market share of non-banks in the total volume of credit for housing.

Prior to 2018, the RWA requirement for mortgages with LTV ratios above 60% was 75%. This was the same RWA requirement as for consumer credit loans. This caused a distortion in credit allocation, mainly because the risks involved in high-LTV mortgages are lower than those for uncollateralised consumer credit. As a result of the relatively high RWA requirement, banks tended not to allow borrowers, including first-time buyers, to reach the leverage ceiling, or they made these loans much more expensive. In order to tackle this distortion and help first-time buyers utilise the maximum LTV level, the RWA requirement was revised to its current level. After the new level was implemented, in March 2018, a larger share of new mortgages with high LTVs was granted.

The LTV limits may have also created a shift from mortgages to consumer credit. The 2021 Financial Stability Report notes that about 15% of new mortgages are accompanied by a new consumer loan (Graph 8). There are various reasons for taking out a consumer loan around the time of receiving a mortgage, such as “synergy” loans from the bank providing the mortgage, or in order to finance expenses that are incidental to purchasing a home. However, it could also be for completing the necessary down payment. This may allow borrowers with high income and low equity to buy a more expensive house by taking out a complementary consumer loan.

5. Cost, benefits and unintended consequences

The rich macroprudential framework in Israel has allowed research to be carried out on the unintended consequences of these measures.

Examining the LTV limits that were aimed at reducing the risk of new mortgages, Tzur-Ilan (2019) found that they led to borrowers opting for more affordable housing units, farther from the central business district and in lower socioeconomic neighbourhoods.

Even though the BDS did not attempt to target house prices, which are not in its mandate, Laufer and Tzur-Ilan (2021) found that, due to the LTV limits, house prices were about 2–3% higher than they would have been without the implementation of this measure. Moreover, the policy affected the prices in the expensive areas of the country more.

Mugerman and Ofir (2021) found that putting a limit both on the final payment period and on the DSTI ratio sets an anchor for borrowers and lenders. There was an increase in the maturities of mortgage loans after the maturity limit was implemented and an increase in the DSTI ratio after DSTI limits were imposed. Graph 9 supports this result.

References

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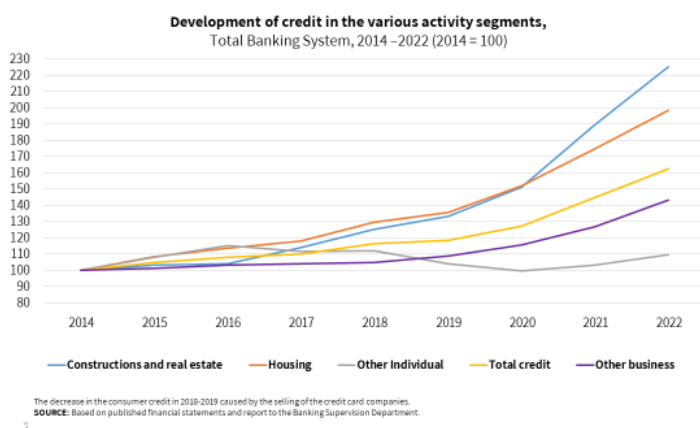
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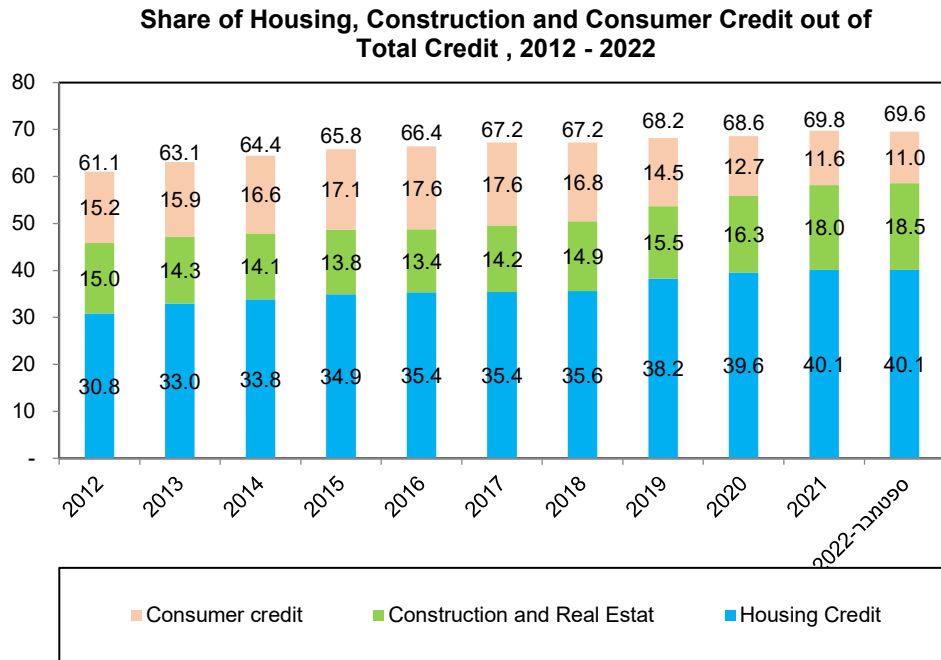
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Graphs

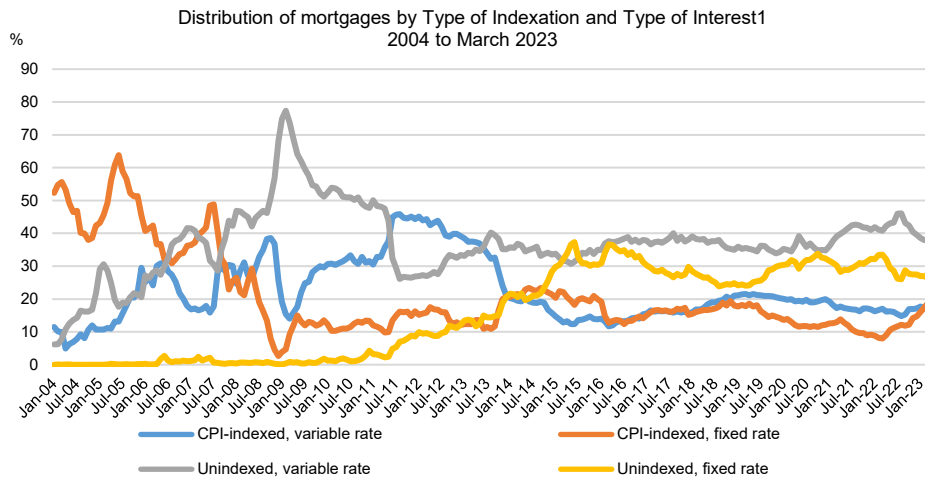
Graph 1:



Graph 2:

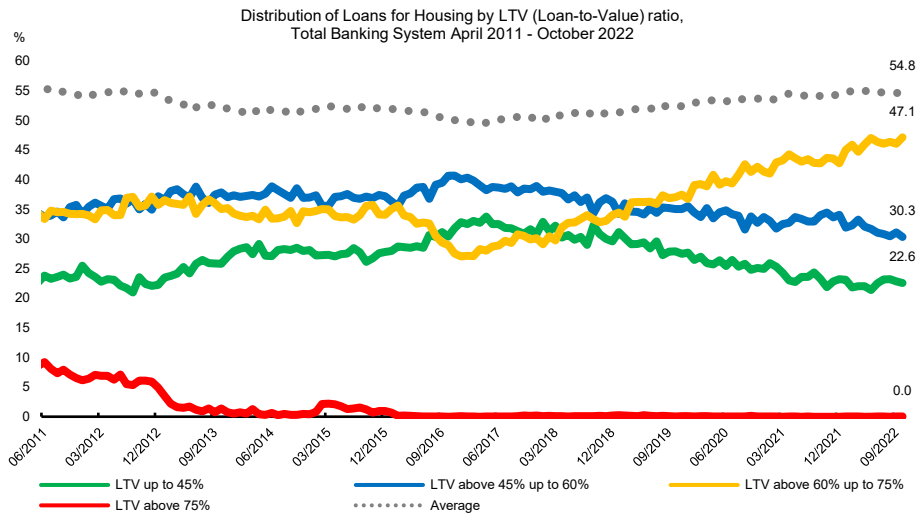


Graph 3:



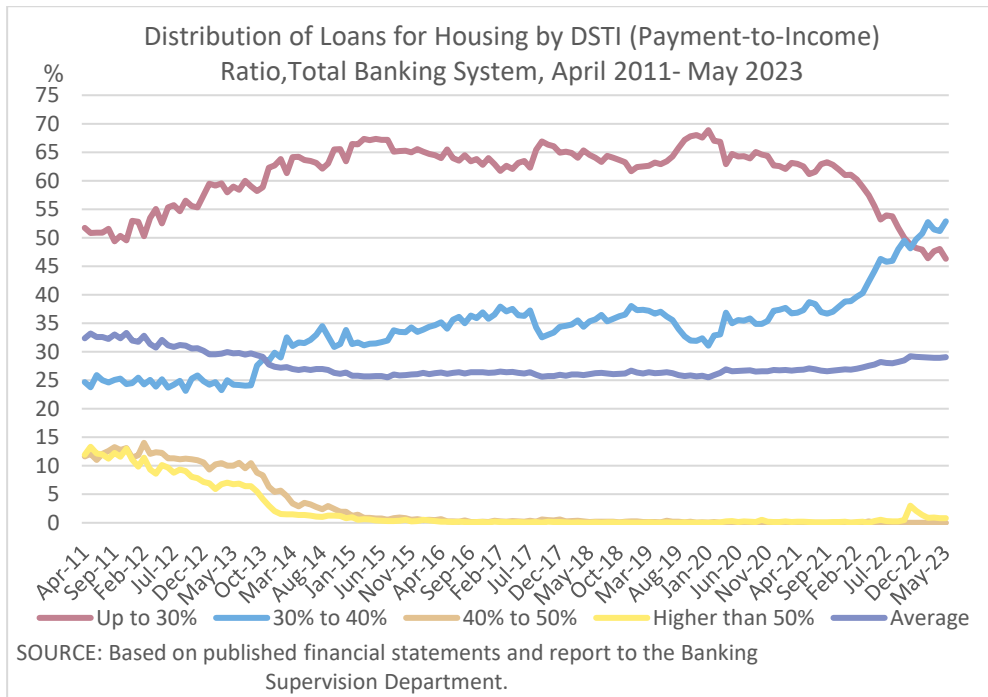
¹ Prime rate is the main credit in Unindexed, variable rate.
SOURCE: Based on published financial statements and reports to the Banking Supervision Department.

Graph 4:



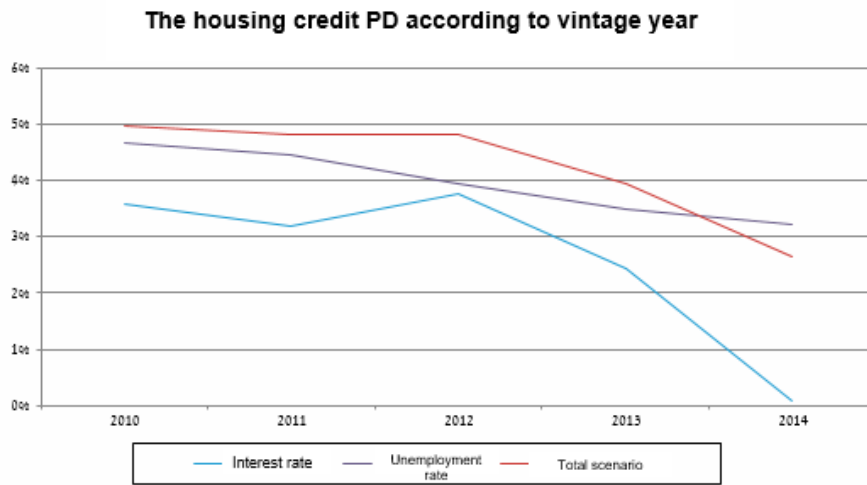
SOURCE: Reports to the Banking Supervision Department

Graph 5:

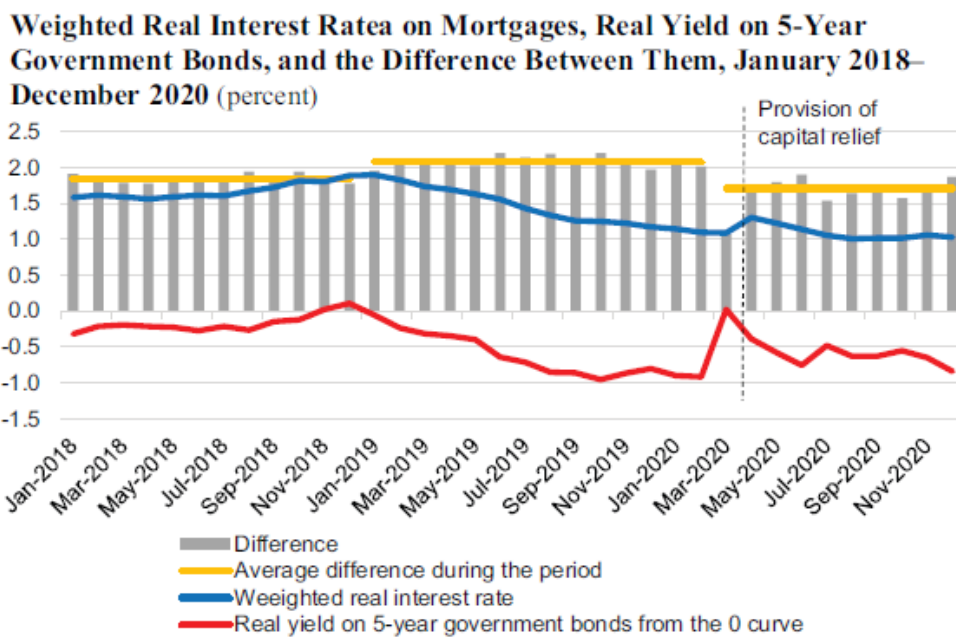


SOURCE: Based on published financial statements and report to the Banking Supervision Department.

Graph 6:



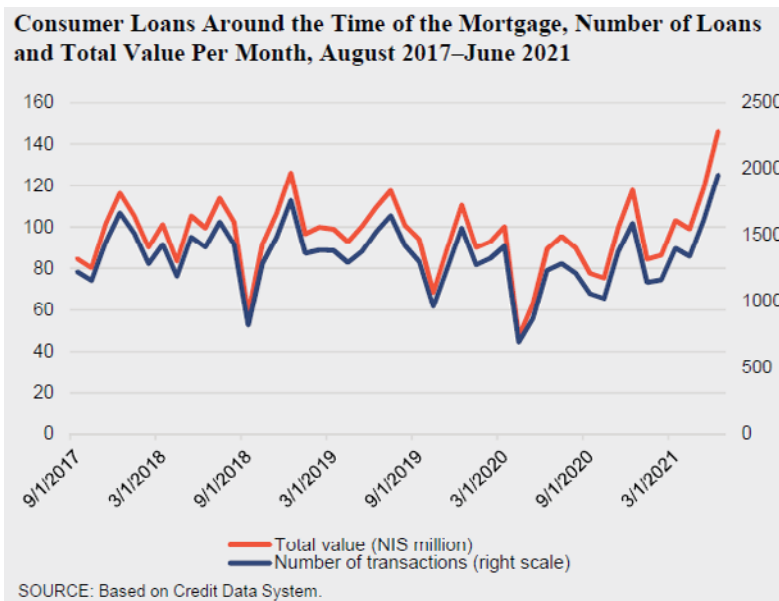
Graph 7:



^a Calculated assuming inflation of 2 percent.

SOURCE: Based on reports to the Banking Supervision Department and Bank of Israel data.

Graph 8:



Graph 9:

