Assessing the impact of macroprudential tools: the case of Israel

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Abstract

The Israeli financial system withstood the global financial crisis (GFC) of 2007–09 relatively well and came out unscathed. Notwithstanding this favourable outcome, Israel is a small open economy, which means that its domestic financial conditions cannot be disconnected from the consequences of low global interest rates. The upward trend in domestic asset prices, particularly home prices, has prompted policymakers to use macroprudential policy tools. This paper examines the effects that those measures have had on various risk indicators pertaining to credit providers and individual borrowers. We find that two typical risk indicators – the average loan-to-value (LTV)) and payment-to-income (PTI) ratios – have declined. Moreover, the banking system has increased its capital buffer for possible credit losses on its housing loan portfolio. Nevertheless, the authorities in charge of macroprudential policy must ascertain whether the measures implemented are not shifting risks to other, perhaps less visible, parts of the financial system. To complete a full assessment of the impact such policy on systemic risk, more granular and better data would be needed.

Keywords: macroprudential policy, central banks, real estate, household finance, financial stability, monetary policy, mortgage rates

JEL classification: E5, E61, E63, E65, G21, G28

Institutional and legal framework

In Israel, three separate financial sector regulators deal with different aspects of macroprudential policy (MaP): the Banking Supervision Department (BSD) of the Bank of Israel (BoI), which reports to its Governor; the Capital Markets Authority (CMA),[1] which oversees pension and provident funds as well as insurance companies; and the Securities Authority (SMA), which regulates the activities of public companies and mutual funds. A team made up of representatives from each one of these bodies works as a cooperative forum on matters relating to systemic risk. This institutional arrangement will soon be formalised and enshrined in law by the establishment of a Financial Stability Committee (FSC)[2] chaired by the Governor of the BoI. The FSC's prime goal will be to identify sources of systemic risk, to discuss possible policy actions and measures, and exchange essential knowledge and opinions among the relevant authorities regarding on financial institutions' standing and financial markets and instruments.

Bank of Israel

Twice a year, the Monetary Policy Committee (MPC) of the BoI holds a special meeting on financial stability. At the meeting, the Financial Stability Unit of the Research Department – in collaboration with the BSD and the Markets Department – presents its analysis and findings. Issues covered include the risks to financial stability arising from the banking and insurance sectors; risk assessments of institutional investors' portfolios; results of stress tests applied to financial institutions; the monitoring of developments in real estate and stock and credit markets to detect the formation of bubbles. In addition, if necessary, the BSD, which has independent statutory authority, briefs the MPC on any impending financial stability issue and macroprudential policy steps under consideration or being implemented.

Housing market: prices and MaP measures

Following a 10-year period, housing prices began to rise in April of 2007 and continued obstinately to do so for another decade, rising cumulatively by 128% by October 2016 (91% in real terms). Housing prices rose particularly fast between 2009 and 2011, at 16.2% annually, while the stock of mortgages expanded cumulatively by close to 50% (42% in real terms). In early 2010, the BSD issued the first of a series of measures designed to reduce the exposure of banks to highly leveraged borrowers.[3] At the same time, the BoI began to tighten monetary policy, raising interest rate successively to ensure that inflation remained within its target as the economy rebounded from the trough reached in 2009. Thus, both macroprudential and monetary policy actions moved in a common restrictive direction.

[1] The Israeli Knesset recently passed a law stipulating that the CMA, which used to be part of the Ministry of Finance, will become a separate and independent body. It will also oversee smaller financial institutions such as money changers and small lenders.

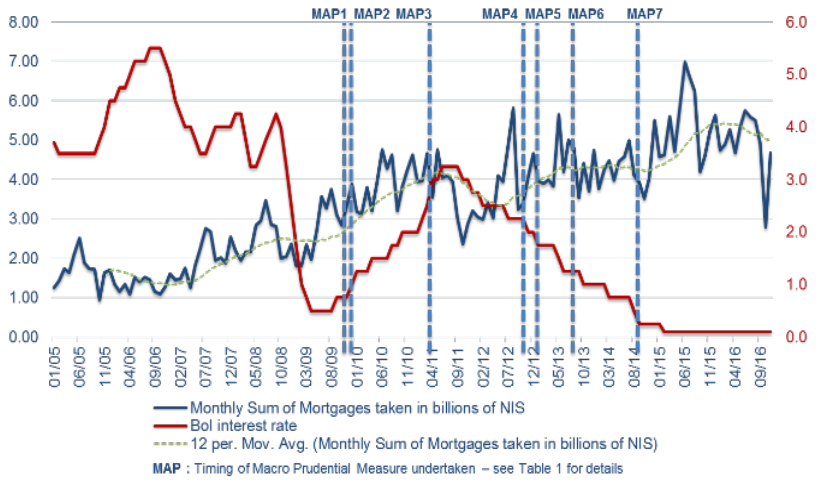
[2] The law passed a first reading of the Israeli Knesset in January 2017.

[3] Banks have only been required to submit data giving detailed information on mortgage LTV ratios since 2011.

Direction changed in June 2011 when the BoI started to gradually reduce its policy rate from 3.25% to 0.1% in early 2015. This level has been kept until this day while additional macroprudential measures have been implemented (listed in Table 1; with the BoI's policy rate and a measure of activity in the mortgage market shown on Graph 1).[4]

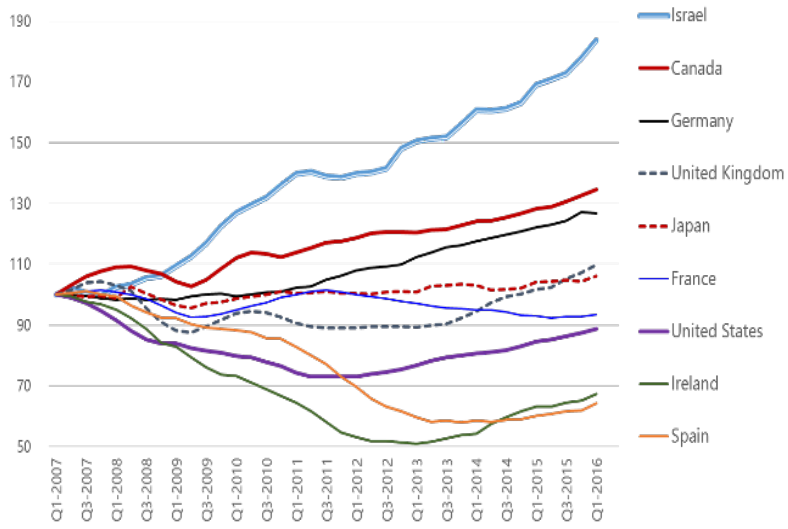
Monthly stock of mortgages and Bank of Israel's policy interest rate

Monthly; in billions of NIS — Graph 1



Housing prices – various countries

Index of real housing prices – 2007–16 — Graph 2



[4] Note that the sharp drop in mortgage activity in 2011 can be attributed in part to the social protest of the summer, during which public concerns about the high cost of housing became strong.

Brief description of measures

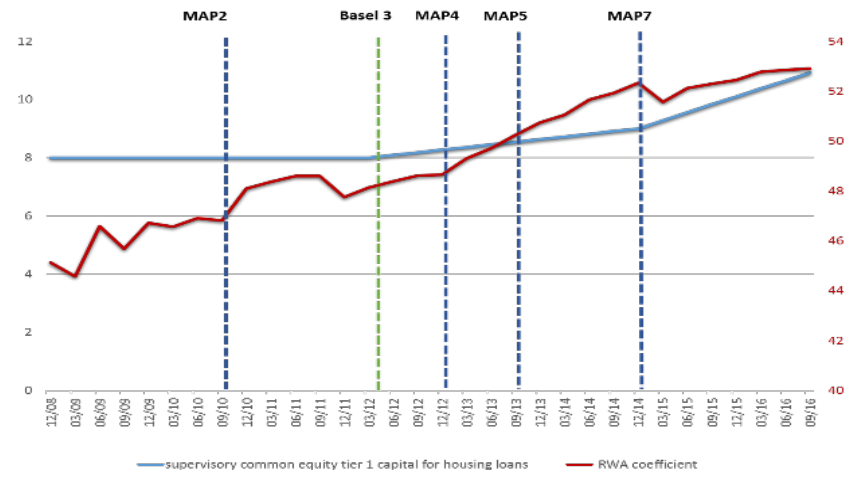
Several measures targeted banks' incentives to extend housing credit to highly leveraged borrowers (Table 1). Such measures worked by either requiring more capital (MaP2, MaP4, MaP5 and MaP7) to be held against such type of credit or by demanding higher provisions for mortgage loans classified as doubtful (MaP1). Other measures targeted borrowers (MaP3 and MaP6) by introducing PTI limits or restrictions on the portion of a mortgage loan subject to an adjustable interest rate.

Measures directed at the banking system

Banks incur an additional "capital cost" for each additional shekel lent that is equal to its corresponding risk-weighted-asset (RWA) coefficient. This coefficient increased from 47% to 53%, as shown in Graph 3. In addition, it is worth noting that during this period the Basel III capital requirements came into force, thereby resulting in a gradual increase of the aggregate common equity Tier 1 ratio from 8% to 9%[5] (over a three-year period). Also, MaP7 required from banks an additional amount of Tier 1-type capital equal to 1% of the outstanding housing credit portfolio (this stringent requirement was implemented gradually over a 28 month period, with the final target to be reached by 1 January 2017).

Tier 1 capital required for housing loans

2008–16 Graph 3



The average LTV ratio of newly-taken mortgages dropped from 56% at the end of 2011 to 50% by September of 2016. This was the intended effect of the earlier measures (MaP1, MaP2, MaP4 and MaP5) as they made it more costly for banks to lend funds for housing with higher LTV ratios. As shown on Graph 3, the share of loans with LTV ratios above 75% dropped immediately after MaP4 was introduced.

[5] For systemically important financial institutions (SIFIs) – 10% until 1 January 2016.

This was not surprising since the measure effectively capped the LTV ratio at 0.75.[6] Perhaps more interestingly, the increase in capital requirements imposed by MaP5 on loans with higher LTV ratios did not appear to have the expected impact until much later, when the share of mortgages with LTVs above 60% but below 75% dropped precipitously – from above 35% to 27% in 2016 – that is three years later.

The measures therefore seem to have reduced systemic risk in the banking system by raising capital buffers and shrinking highly leveraged transactions.

Measures directed at risks taken on by borrowers

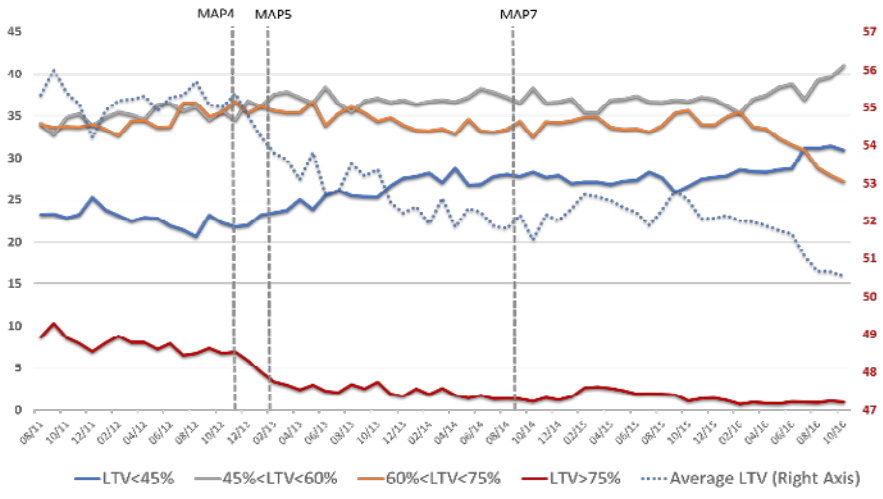
There are four MaP tools aimed at borrowers: LTVs, PTIs, the proportion of adjustable rate mortgages (ARMs) and, finally, the length of loan repayment.

The LTV ratio implemented by the BoI in 2012 (MaP4) required commercial banks to limit the LTV ratio to 75% for first-time home buyers, 50% for investors and 70% for those upgrading their homes. As shown on graph 4, it worked as a binding constraint with the share of loans with an LTV ratio above 75% dropping substantially.

The PTI ratio implemented in August 2013 (MaP6) strictly limited the maximum value of the ratio to 50% of household income. As shown on graph 5, there was a sharp drop in the share of loans granted with a PTI above 40%,[7] and a slight decline in the average PTI.

Share of mortgages by loan-to-value categories

2011–16 Graph 4

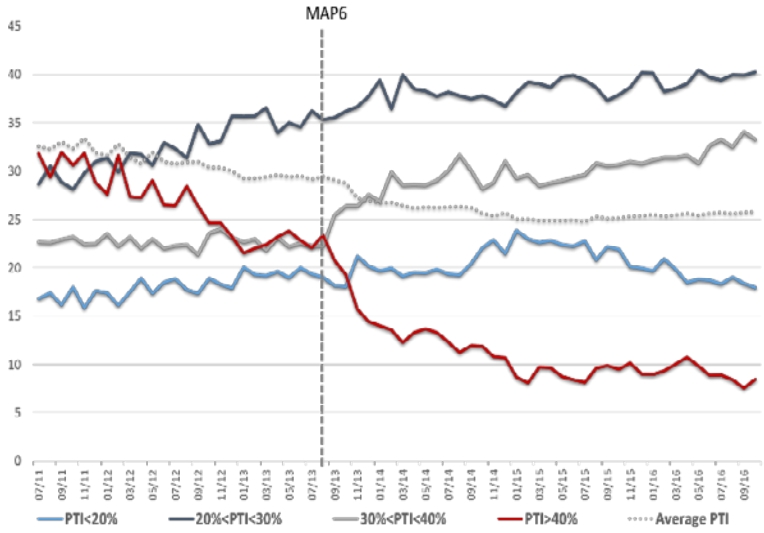


[6] The remaining loans with an LTV of more than 75% comprised loans that were provided without collateral or monthly repayment provisions.

[7] Note that MAP6 strictly limits the PTI to 50% and raises the amount of capital needed for mortgages with a PTI greater than 40%.

Share of mortgages by PTI limits

2011–16 Graph 5



The third measure, MaP3, implemented in June 2011, set the share of housing loans that could be taken with an adjustable rate.[8] This measure was tightened in August of 2013 by MaP 6 under which at least one third of any mortgage must be taken at a fixed rate. As shown on Graph 6, the share of adjustable rate mortgages (ARM) dropped from 95% to 52% following the two MAP measures setting limitations. These followed a BoI-issued warning – indicated by * on 9/2009 on the graph – about the risks of taking on an ARM. Note that in both cases – following MaP3 and MaP6 – the share of ARMs drops quickly, though in neither case does the limit appear to be binding. This is particularly striking for the second MaP, which limits the share of ARMs to 66%. In practice, however, borrowers have stayed well within the limit.

The period following the introduction of MaP3 was one during which the BoI gradually cut its policy rate to a low point of 0.1%. Yet the monetary policy stance evolved continuously during the entire period. The yield curve, which was initially steepening in the expectation that global monetary expansion would end, flattened as it became clearer that it was in fact deepening. A pattern of steepening and flattening repeated itself again in 2014 and 2015, presumably for a similar reason. Thus, as shown on Graph 6, the strict constraint on the share of ARMs was roughly binding as the yield curve steepened (between 03/2011 and 09/2013). But as the yield curve flattened, this was no longer the case.

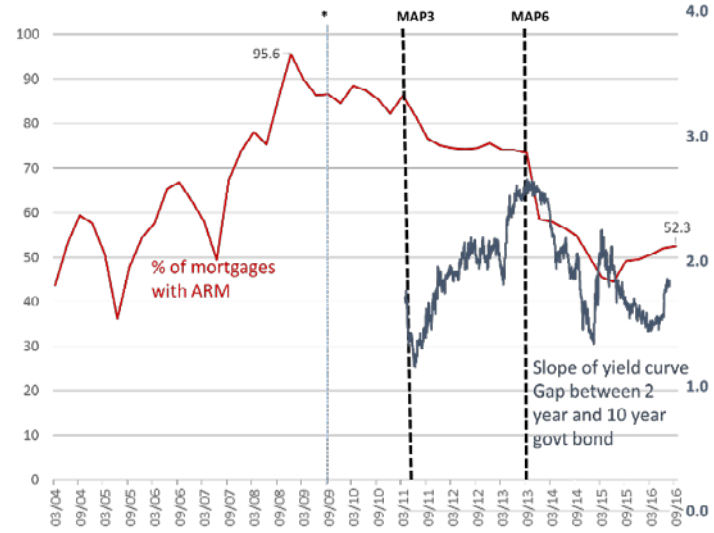
The fourth MaP sets a limit of 30 years as the maximum period for repayment of a mortgage loan (MaP6).

Taken together, these restrictions sought to reduce the risk taken on by borrowers were a downturn to occur or were interest rates to rise (in the case of the PTI).

[8] Adjustable rate – ie where the rate adjustment occurs within five years (most loans underwent monthly adjustment – though data are not available for that period).

Share of ARMs and steepness of yield curve

2004–16 Graph 6



It is difficult to assess how effective these measures have been, particularly given that since their implementation the economy has not experienced a downturn: unemployment keeps on falling; wages are rising; inflation remains low (and was even negative on some occasions); policy rates remain low; and housing prices continue to rise.

Interaction between macroprudential and monetary policies

At the height of the GFC, the BoI cut its policy rate decisively, which allowed the economy to recover quickly from its trough of 2009. As the economy and the housing market picked up, and inflationary pressures emerged, the BoI raised its policy rate to ensure that it met its inflation target. At the same time, tighter MaP measures were introduced, in part to counteract the buoyant housing market but also as lessons from the GFC were learned. Thus, both MaP and monetary policy measures were pointing in the same restrictive direction.

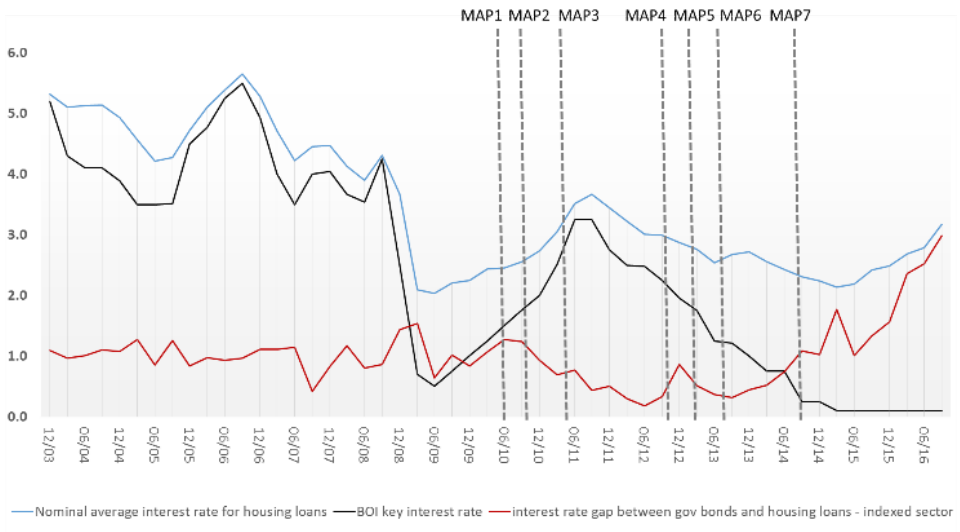
This changed in June of 2011, when the BoI began to gradually reduce its policy rate from 3.25% to 0.1% in early 2015 as global economic conditions became volatile, domestic economic growth slowed and inflationary pressures receded. However additional macroprudential measures were implemented.

Looking at Graph 7, it is worth noting that when the first three macroprudential measures were introduced and monetary policy was tightened, the differential between housing loans rates and government bond yields of similar maturities stayed either stable or fell. Thus, if monetary policy was meant to be tightening for the housing market, it was apparently less so in practice since the interest rate differential declined. When the BoI's monetary policy stance changed and a gradual reduction in the policy rate occurred, the differential kept narrowing. So even before the imposition of additional MaPs, the fall in mortgage rates was less than that for government bonds of similar maturities. The imposition of additional measures led

the gap to widen and it did so quite significantly, adding almost 200 basis points over a two and a half year period.

Policy and mortgage loans interest rates

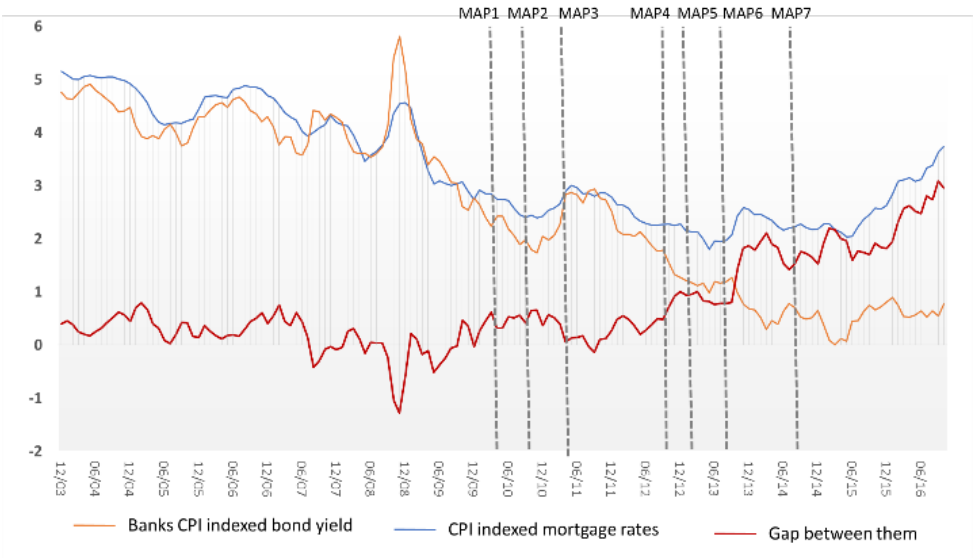
2003–16 Graph 7



The interest rate charged on mortgages is a function of the funding cost of a bank, risk premia to compensate for uncertainty of repayment (handled by ratios such the LTV and PTI) and a mark-up the elasticity of demand faced by banks. In Israel, the market is fairly competitive. The BoI's policy rate, which touched its lowest level of 0.1% in March 2015, led to a lower funding cost (Graph 8). Yet, while low historically, the differential between that funding cost and mortgage rates rose steadily. It widened substantially following the implementation of a MaP that required additional capital equal to 1 percentage point of banks' housing loan portfolios. As mentioned before, risk ration, such as the PTI and LTV, did not increase over the period, lending support to the idea that the interest differential widened in response to policy and not to a higher risk premium. It is worth noting, however, that the average maturity of banks' mortgage loans increased steadily (Graph 9). This means that one element of risk had indeed mounted. This could have contributed to an increase in overall portfolio risk.

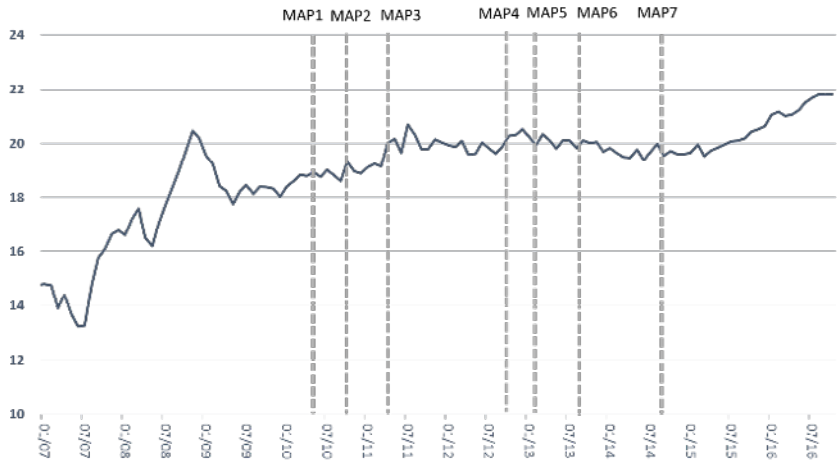
Interest rates on bank indexed bonds and mortgage loans

2003–16 Graph 8



Average maturity of mortgages in years

2007–16 Graph 9



It is not easy to assess whether the MaP measures or other factors – such as the riskiness of borrowers not captured by aggregate risk ratios (eg average LTV and PTI) – contributed to widen the gap. It is possible that the buoyant housing market prompted entry by a riskier class of borrowers. In the absence of deeper analysis at this point, it is not possible to attribute the higher risk premium on mortgage loans to the implementation of MaPs. But it cannot be excluded.

Conclusion

The Bank of Israel has accumulated rich experience in recent years on the use of macroprudential tools targeted at the residential housing market. These measures were implemented both with the purpose of reducing potential systemic risk in the banking system and to contain demand for housing given a slow supply response. Two risk ratios – the average LTV and PTI – have declined, particularly at the extreme end of the risk distribution (transactions involving highly leveraged borrowers). However, a third parameter – the average maturity of mortgage loans – has risen. The measures implemented also included an increase in banks' capital buffers for scenarios generating potential credit losses in their housing loan portfolios. The ultimate effectiveness of such measures is, of course, difficult to assess, particularly given that the business cycle has not turned down since implementation: unemployment continues to fall; wages are increasing; inflation is low (and even negative at times); policy rates remain at all-time lows; and housing prices continue to increase.

There is some uncertainty as to whether the restrictions placed on housing loans have not shifted lending to riskier segments of the banking sector (eg to the consumer loan market for borrowers hitting the LTV or PTI limits) or to the non-bank financial sector (regulatory arbitrage). Consumer loans have grown over the period but not much above disposable income, which means that overall household sector leverage has not increased substantially despite the protracted period of low rates. The household debt-to-GDP ratio has increased from 39% to 42% during the past five years, which is still a relatively low level by international comparison.

When implementing macroprudential policy measures, the prudential authorities must make sure that such measures do not divert risks to other, perhaps less visible, areas of the financial system. A more efficient coordination mechanism between regulatory authorities and better and more granular data are still needed. The Bank of Israel has been promoting both actively. The establishment by the Bank of a Financial Stability Committee (now in its legislative phase) and a national credit registry are two other important steps.

Finally, the apparent need for MAP measures during times of monetary expansion poses a significant challenge as they may highlight weaknesses in the monetary transmission mechanism. Indeed, if large liquidity injections are mostly channeled into sectors that, instead of expanding output, fuel asset price inflation and then lead to the imposition of MaP measures, the effectiveness of monetary policy may have to be reconsidered. Even in a country that did not undergo a major financial crisis, such as Israel, the transmission mechanism may have weaken, both in terms of its ability to channel investment to productive uses as well as the time lag needed for policy to take effect. The latter is certainly the case in the Israeli housing market where the supply response is particularly slow owing to the many bureaucratic hurdles that need to be overcome. In fact, one could think of these hurdles as a particular long supply chain, with each step including a lengthy process. It would be interesting to see whether sectors characterised by such long supply chains have demonstrated a slower response to monetary incentives.

MaP measures implemented

Table 1

Date	Type of MaP	Intended impact on supply and demand for housing credit	Monetary policy stance
MaP1 May 2010	Banks required to make additional provisions (0.75%) for housing loans with a high LTV ratio (LTV>60%)	Raises cost of lending for higher LTV mortgages	Policy rate raised FX intervention (purchases)
MaP2 October 2010	Higher capital provision (100% of RWA instead of 35% – 75%) for floating rate loans granted with a high LTV ratio (LTV>60% AND % of variable rate loans>25%) – not applicable for housing loans worth less than 800,000 NIS	Raises cost of lending for higher LTV mortgage and variable rate loans Raises cost of borrowing since variable rate<fixed rate	Policy rate raised FX intervention (purchases)
MaP3 May 2011	Limit to the variable-rate portion of a loan for which the rate could change within less than five years from the date of approval or from the date on which the previous rate was set, to 33.33% of the total loan	Raises cost of borrowing since variable rate<fixed rate	Policy rate peaks in June 2011
MaP4 November 2012	Limit to the LTV to 75% for first time buyers, 50% for investors and 70% for upgrading homes	Reduces the demand for mortgages May increase demand for other types of credit	Policy rate reduced
MaP5 February 2013	Raises risk weights for capital adequacy requirements: housing loans where LTV<45% remain with a capital charge of 35%; those with 45%<LTV<60% see their weights rise to 50%; and those with 60%<LTV<75% are weighed at 75% Banks are required to maintain provisions of at least 0.35% of their housing loan portfolios	Raises the cost of lending for all loans where LTV>45%	Policy rate reduced FX intervention (purchases)
MaP6 August 2013	PTI limited to 50% of HH income	Reduces demand for mortgages	Policy rate reduced FX intervention (purchases)
	Raises risk weights for capital adequacy requirements for PTI>40% to 100%	Raises cost of lending	
	Limits share of variable rate loans to two thirds for all loan periods	Raises the cost of borrowing when variable rate<fixed rate	
	Limits loan period to 30 years	Reduces the demand for mortgages	
MaP 7 September 2014	Additional Tier 1 capital requirement equal to 1% of total outstanding housing credit portfolio. Gradual implementation with final target to be reached by 1 January 2017	Raises cost of lending	Interest rate reduced FX intervention (purchases)

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