

Experiences of Debt Cap Regulations in Hungarian Retail Lending*

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The 2008 financial crisis underlined that, on the one hand, the operation of the banking sector is highly procyclical and, on the other hand, household borrowers are unable to assess their long-term ability to repay realistically. The resultant excessive risk-taking and inadequate risk assessment by banks brought, in Hungary as well, substantial losses for banks and a high rate of distressed customers. Through the enforcement of debt cap rules, the MNB as a macroprudential authority has been limiting the recurrence of excessive household indebtedness in a preventive manner since 2015. Focusing on international practices and the results of Hungarian regulations in the first two and a half years, we reviewed the Hungarian experiences with regard to the debt cap rules. Although we can only draw preliminary conclusions due to the shortness of the period elapsed since the introduction of the debt cap rules, our analysis demonstrates that, in line with their calibration, Hungarian debt cap rules currently do not restrict sustainable lending processes, and contribute significantly to promoting a healthy lending structure by restraining excessively risky loans.

Journal of Economic Literature (JEL) codes: E32, E58, G21, R31

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1. Introduction

The 2008 financial crisis clearly showed that the banking sector operates in a highly procyclical manner. Owing to market frictions in the banking sector and to diverse risk perception levels, there may be excessive risk-taking among banks and their customers in certain periods, and if this gives rise to a financial crisis afterwards, risk acceptance becomes overly low. The operation of the banking sector tends to reinforce economic and financial cycles, and in doing so it may give rise to real

* The views expressed in this paper are those of the author(s) and do not necessarily reflect the official view of the Magyar Nemzeti Bank.

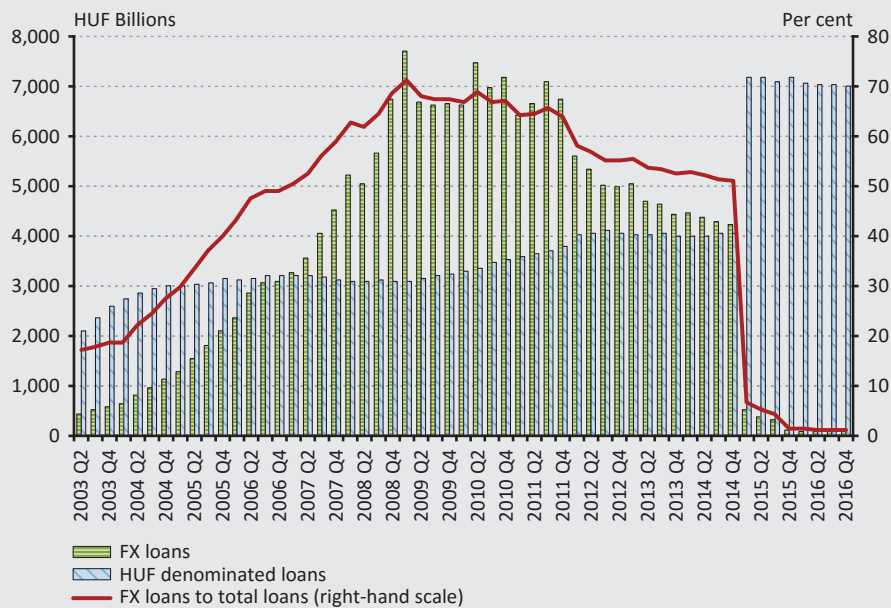
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economic losses; therefore, one of the primary tasks of macroprudential policy is to mitigate the procyclicality of the banking system. In addition, it became clear that household borrowers are not always capable on their own of realistically assessing their long-term debt servicing capacity in the changing macroeconomic environment; thus in order to ensure a level playing field, policy instruments may also have to be applied to curb excessive indebtedness. In spite of the fact that the period of the more intensive application of macroprudential tools is relatively short in many countries, several empirical studies have recently been published with the encouraging conclusion that a more active application of macroprudential policy may not only help mitigate the volatility of GDP growth, but *ceteris paribus* it may facilitate stronger growth in the long run too (see, for example, *Boar et al. 2017*).

Figure 1
Denomination structure of household loans

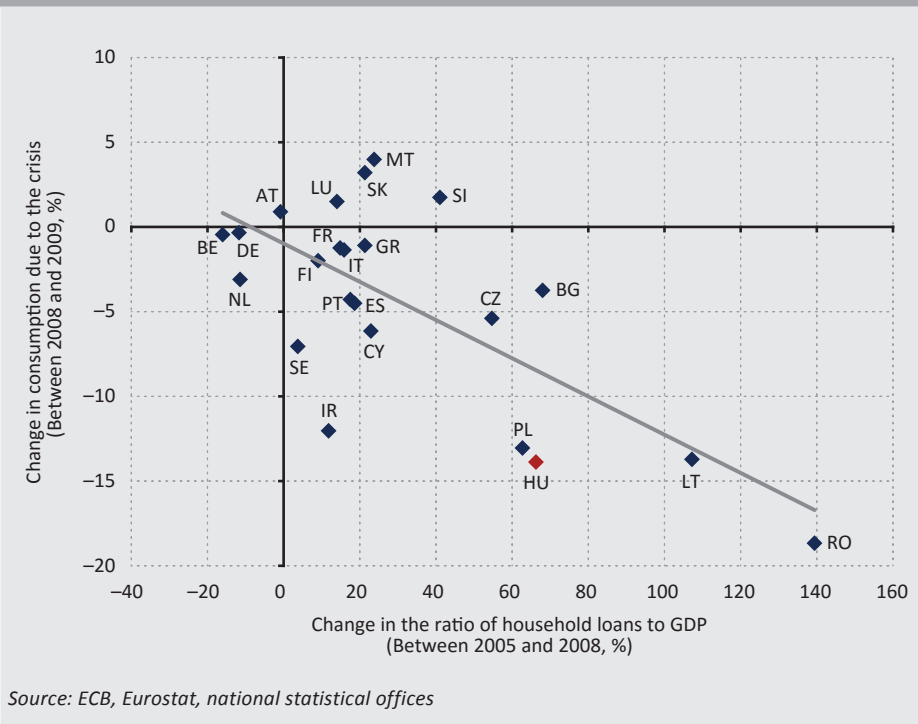


Source: MNB

The potential adverse effects of excessive risk-taking are aptly demonstrated by the consequences of pre-crisis lending in Hungary. Excessive lending occurs when lending conditions are more relaxed than warranted by the actual credit risk of borrowers. In pre-crisis years, both the increase in outstanding borrowing and the proliferation of foreign currency loans in Hungary (*Figure 1*) indicate that the systemic acceleration in lending took place with excessive indebtedness on

the customer side, and excessive risk-taking on the side of the banking sector. In addition, the risk expectations of market participants were too optimistic in general. Consequently, the number of customers facing payment problems rose to an alarming level after the outbreak of the crisis. As the number of non-performing loans rose dramatically, banks' impairment losses became so substantial that they required a series of capital injections between 2008 and 2015. Provisioning reduced banks' disposable capital with a parallel, dramatic decline in their willingness to take risks in view of the economic outlook, and consequently, a drastic fall in new loan disbursements. This acted as a brake on the already restrained consumption and investment during the crisis (Figure 2, Bauer et al. 2013).

Figure 2
Downturn in household lending and consumption during the crisis in specific countries



By enforcing debt cap rules, the MNB as a macroprudential authority has been limiting the recurrence of excessive household indebtedness in a preventive manner since 2015. The mandatory requirements formulated according to a comprehensive system of criteria are applicable at the transaction level; thus they can mitigate risks arising from excessive lending in a targeted manner and hence, strengthen financial stability. The primary objective of the limits set by the MNB is to ensure that outstanding borrowing grows in a healthy structure and in a sustainable manner, and to mitigate

the risk of excessive credit outflows emerging in the event of a future overheating scenario. In view of the possible wide-ranging effects of the debt cap requirements, it is worth summing up the relevant experiences of the past period.

Below, we first explore the relationship between household lending and a significant contributor to household indebtedness, real estate bubbles. We then examine the applicability of debt cap type requirements as macroprudential tools designed to mitigate the risks of excessive credit expansion, and the estimates of their effectiveness on international samples, before presenting an overview of the experiences of the debt cap rules adopted in European countries so far. Finally, we take account of the results of the first two and a half years of the Hungarian requirements, focusing on developments in domestic lending trends, the effects of the limits so far, and their possible side-effects.

2. Excessive household indebtedness and asset price bubbles

Excessive household indebtedness may have particularly severe consequences if it is accompanied by a housing market bubble; in other words, a general, sustained, and often explosive overvaluation of housing prices. If the price adjustment that follows the overvaluation is accompanied by excessive indebtedness of the population, it may trigger a severe real economic recession, and a financial and banking crisis. Several studies confirm that economic recessions associated with house price busts following a real estate bubble fuelled by a credit boom tend to be deeper and potentially longer than recessions amplified by other types of financial imbalances (see, for example, *Claessens et al. 2009; Crowe et al. 2013; Jordà et al. 2015*).

Residential property accounts for a significant part of households' assets, while household mortgage loans comprise a large portion of the banking sector's assets. An *en masse* default of housing loans undermines banks' profitability through impairment, which deteriorates the banking sector's lending capacity due to banks' declining capital levels. As a result of depreciating housing prices, households and – through decreasing collateral value – banks suffer significant losses on their assets, although this does not trigger an immediate effect in the case of households. Hungarian households may be particularly vulnerable to this effect, as home-ownership is typically high among households, irrespective of income status (nearly 86.3 per cent in 2016¹); in addition, residential property tends to be the only very dominant wealth component among low-income households (see *Boldizsár et al. 2016*). Relying on loans for the financing of housing is a substantial commitment for most borrowers, which may tie up the portion of household income that is available for consumption or for saving over the long term, even after the depreciation of the home's value (“debt overhang problem”) and, through the decline in collateral value, may confront borrowers with an even tighter liquidity constraint.

¹ For more detailed data, see: http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=ilc_lvho02&lang=en.

Intensive housing loan outflows may exacerbate real estate market imbalances. Some real estate market mechanisms hamper the sustained maintenance and fast retracement of the equilibrium price even without the emergence of excessive credit outflows. Examples include problems arising from information asymmetry, relatively high transaction costs and the adjustment constraints of the supply side owing to the specificities of the construction industry and regulatory features. Housing market transactions, however, typically require substantial borrowing on the buyer’s side. The expansion of credit outflows paves the way for a heightened demand for real estate, which contributes to the appreciation of real estate prices. With the increase in household assets and collateral values, the appreciation may amplify credit outflows, which may be reflected in an upsurge in housing market demand and also in an increased utilisation of real estate collateral for consumer loans (see, for example, the ground gained by home equity loans before the crisis). As indicated by the summary shown in *Table 1*, the interaction between lending and real estate prices has been confirmed by literature in several cases, although the authors may arrive at slightly different conclusions with respect to the short and long-term direction of the interaction. The contribution of the construction sector and the second-round contribution to GDP may increase temporarily. However, if the amplification mechanism leads to an asset price and credit boom that proves to be unsustainable in the long run, the excessive expansion in the construction sector and the affiliated activities translate into a suboptimal allocation of resources, the negative legacy of which may cast a long shadow over the growth potential of the economy after the bursting of the bubble (see, for example, *Borio et al. 2016*).

Table 1

Overview of literature on the interaction between housing prices and credit

Author	Long-term interaction			Short-term interaction		
	house prices ↓ credit	house prices ↑ credit	house prices ⇄ credit	house prices ↓ credit	house prices ↑ credit	house prices ⇄ credit
Hoffmann (2003)	*					*
Hoffmann (2004)	*					
Brissimis and Vlassopoulos (2009)	*					*
Gerlach and Peng (2005)	*			*		
Oikarinen (2009a, 2009b)		*			*	
Fitzpatrick and McQuinn (2007)			*		*	
Berlinghieri (2010)			*			*
Gimeno and Martinez-Carrascal (2010)			*			

Note: Asterisks indicate the cases where the studies identified effects between house prices and credit.

Source: Anundsen – Jansen (2013)

Empirical literature provides evidence that excessive household indebtedness increases the probability of real estate market imbalances and the evolution of severe financial crises. Some analyses distinguish between two types of asset price bubbles: processes fuelled by easy credit and those financed by stock market speculation (“irrational exuberance”) (*Mishkin 2008*). In the international sample of *Crowe et al. (2013)*, real estate bubbles were accompanied by intensive credit outflows in the vast majority of cases. *Cerutti et al. (2017)* arrived at a similar conclusion: the authors found that only about one-fifth of the international house price booms were imbalances without excessive credit outflows. It should be mentioned that around sixty per cent of the real estate booms reviewed by the authors exhibited intensive credit outflows not only in mortgage credit but also among a broader range of household loans. Note that real estate market amplification mechanisms do not necessarily operate with the same strength in all asset markets. *Schularick and Taylor (2012)* identified credit growth as the most powerful predictor of financial crises; however, the authors did not find its interaction with stock price changes significant in increasing the probability of a financial crisis. Based on the literature, the aggregate debt service ratio is typically one of the most useful early warning macro variables of banking crises, along with the variables that capture credit outflow dynamics and levels somewhat earlier (*Drehmann – Juselius 2014; Drehmann et al. 2017*).

Although excessive credit outflows may lead to severe financial crises, lending that supports the real economy in a sustainable manner is an important factor at the level of the national economy. Using an international sample, *Gorton and Ordoñez (2016)* compared periods where the ratio of credit growth-to-GDP exceeded a certain level in every case, but some of these credit booms ended in financial crises, while others did not. All boom periods that ended without a crisis displayed – both in developed and emerging countries – more dynamic average economic and investment growth and an improvement in productivity (both in terms of labour and total factor productivity). Accordingly, in light of a series of other indicators and criteria it is imperative for macroprudential policy to be able to identify dynamic periods that are not adequately supported by fundamentals.

3. Debt cap rules as macroprudential instruments preventing excessive household indebtedness

3.1. Impact mechanism of debt cap rules

The two main types of debt cap rules are variables that limit the maximum credit amount available to borrowers and debtors' maximum debt service costs. The loan-to-value ratio (LTV) defines the maximum credit amount in proportion to the market value of the underlying collateral. The second main group of debt cap type requirements regulates the loan-to-income ratio (LTI) and the payment-to-income ratio (PTI). The first rule sets the maximum credit amount available to the debtor in proportion to the debtor's disposable income – which, in general, is steadily available to the debtor on an annual basis –, whereas the second limits the debtor's maximum monthly debt service costs based on the debtor's monthly income.

Debt cap requirements are primarily intended to restrain excessive household lending. Besides households, this macroprudential instrument may be theoretically extended to corporate lending as well; however, due to the calibration difficulties this would entail, such application of the debt cap rules is uncommon. Indeed, there is no clear definition for corporations' stable, disposable income and it is extremely difficult to determine the market value of the underlying collateral in their case.

Collateral and income-based requirements may significantly restrain the cyclicity of real estate prices and household lending. The requirements affect both credit demand and credit supply. LTV limits primarily curb the maximum credit amount that can be granted by creditors in order to prevent potential losses from housing price corrections, while income-based requirements limit the maximum debt service that can be undertaken by debtors or the maximum credit amount available to them. Restrictions on both indicators collectively restrain excessive lending to households and encourage banks to compete through product pricing and the provision of extra services rather than through easing their lending conditions. Consequently, the regulations serve as targeted tools to reduce the systemic risks inherent in excessive household indebtedness and to support the sustainable provision of credit to the economy (*ESRB 2014*).

Table 2 Transmission of debt cap rules				
	Direct adjustment channels	Effects inside the banking sector	Effects outside the banking sector	Aggregate effects
LTV ↓ PTI ↓	Regulatory arbitrage	Role of foreign credit may increase	Non-bank institutions may assume an increased role in lending	With the dampening of the credit cycle and the reduction of PD and LGD values the resilience of the banking sector increases, post-crisis downturns become less severe and the real economy recovers faster
	Credit market	Credit demand ↓ Credit supply ↓	Decreasing volatility in real estate prices	
	Expectations	Stricter risk management PD ↓ and LGD ↓		

Source: MNB (2016)

Debt cap rules improve the shock-resilience of creditors and debtors simultaneously, thereby mitigating the negative repercussions of a potential financial crisis. On the one hand, the loan-to-value requirement ensures that banks' claims can be satisfied by disposing of the underlying collateral even in the case of a sharp decline in real estate prices; on the other hand, income-based requirements ensure some room for manoeuvre for debtors in the case of an increase in debt service or a decline in their income. In addition, debt cap rules should be calibrated in view of the current state of the financial cycle. Accordingly, the rules should be tightened in periods of excessive risk acceptance and eased in times of financial crises, although, owing to the smaller volatility of household incomes, income-based requirements may be more effective throughout the entire cycle than the loan-to-value regulations (Szombati 2017). Moreover, since real estate prices increase faster than household incomes and savings when credit markets and real estate prices are highly overheated, maintaining the level of the loan-to-value ratio requirement will contain excessive lending in the housing market (ESRB 2014) in itself. At the same time, a countercyclical adjustment of the cap might become necessary to counteract the overheating more vigorously.

From a broader perspective – besides the macroprudential target system – the positive consumer protection effect of the debt cap rules should be assessed as well. In addition to their macroprudential significance, the debt cap rules also play a role in consumer protection, as they not only restrain excessive credit expansion in the household segment as a whole, but also protect each individual borrower from excessive indebtedness. The transaction-level requirement reduces the probability of social problems recurring that stem from defaulting debtors in the aftermath of the crisis.

During the calibration of debt cap rules, the possibility of regulatory arbitrage should also be restricted. *Nouy (2017)* distinguishes between three types of regulatory arbitrage². The first can be described as “cross-jurisdiction” arbitrage, which takes advantage of the differences in the regulations of individual countries. The second involves cross-sectoral business activities, while the third type of arbitrage is the exploitation of loopholes within the regulatory framework. The operation of the first two types in the case of debt cap rules is illustrated by *Table 2*. If the scope of debt cap rules is limited to domestic banks and institutions, when the limits are tightened, lending by domestic banks may be replaced by cross-border or branch office lending by non-resident institutions, or lending by non-bank financial enterprises and other institutions engaged in non-bank lending. The third type of regulatory arbitrage is discussed in detail in *Chapter 5.3*.

3.2. Effectiveness of debt cap requirements based on international experience

Based on the initial and relatively limited experience so far, debt cap rules effectively mitigate the risks associated with excessively fast credit outflows, and may also dampen the housing market price hikes fuelled by the credit expansion. Before the 2007–2008 global crisis, the active, regulatory-level application of debt cap rules was not common. However, the application of this regulatory tool became increasingly popular during the years following the crisis worldwide, which, in addition to a growing awareness of the importance of macroprudential regulations, may also be motivated by current systemic problems arising in the low interest environment typical of developed economies (e.g. sharp rises in real estate prices often with strong regional heterogeneity). Estimating the effectiveness of the debt cap rules, however, is a challenging endeavour in view of the relatively short time that has elapsed since its introduction; moreover, lending activity continued to expand below the equilibrium level in several countries after the crisis, which restricts the applicability of any advanced measurement approach. On the other hand, by nature, the short-term costs of applying macroprudential policy may arise immediately, whereas its benefits (e.g. moderation of the significant negative impacts of a future crisis) will materialise much later and are more difficult to measure.

Nevertheless, based on empirical experiences so far, debt cap rules have proved to be one of the most promising regulatory tools available (*Table 3*). Meanwhile, the results also demonstrated that beyond the diverging inspection methods, the effectiveness of various debt cap tools may vary across economies and periods with respect to their impact on specific regulatory outcome variables.

² Regulatory arbitrage refers to an adjustment in banks’ business conduct with a view to circumventing the impact of a regulation without a corresponding reduction in the underlying risk.

Table 3			
Studies investigating the effects of PTI and LTV rules			
Studies conducted using international samples			
Variable targeted by the regulation	Author(s) (geographical scope) [other details about the dependent variable]	PTI (& LTI)	LTV
Housing or mortgage loan portfolio (growth)	Kuttner and Shim 2013 (57 countries worldwide)	significant and material	not significant
	McDonald 2015 (17 countries worldwide)	significant	significant
	Akinci and Olmstead-Rumsey 2015 (57 countries worldwide)	significant and material	significant and material
	Jácome and Mitra 2015 (5 East Asian and East European countries)	n.a.	significant
	Morgan et al. 2015 (10 countries in Asia)	n.a.	significant
Loans to the private sector (growth, real)	Lim et al. 2011 (49 countries worldwide)	significant	significant
	Geršl and Jašová 2014 (11 countries in Central and Eastern Europe)	significant	
	Cerutti et al. 2017 (119 countries worldwide)	significant	significant
House price-growth	Crowe et al. 2013 (21 countries worldwide)	significant	not significant
	Vandenbussche et al. 2015 (16 countries in the CEE and South-East European region)	not significant	not significant
	Kuttner and Shim 2013 (57 countries worldwide)	not significant	significant
	McDonald 2015 (17 countries worldwide)	significant	
	Akinci and Olmstead-Rumsey 2015 (57 countries worldwide)	significant and material	significant and material
	Cerutti et al. 2017 (119 countries worldwide)	not significant	not significant
	Carreras et al. 2016 (19 OECD countries)	significant	significant
Review of individual countries			
Delinquency ratio	Baek et al. 2013 (South Korea)	significant	significant
Housing or mortgage loan portfolio	Igan and Kang 2011 (South Korea) [household credit growth outside of metropolitan areas]	significant	significant
	Kim 2013 (South Korea) [quarterly growth]	significant	significant and material
	Lee 2013 (South Korea) [real level]	not significant	not significant
	Price 2014 (New Zealand) [national growth, counterfactual estimate]	n.a.	significant
	Wong et al. 2014 (Hong Kong) [estimated supply and demand]	n.a.	significant
	Neagu et al. 2015 (Romania) [growth]	significant	
	Kuncl 2016 (Canada) [level, and impact on residential investment]	n.a.	significant

Table 3**Studies investigating the effects of PTI and LTV rules**

House price	Craig and Hua 2011 (Hong Kong) [quarterly growth]	n.a.	significant and material
	Igan and Kang 2011 (South Korea) [growth, metropolitan area]	not significant	significant
	Kim 2013 (South Korea) [quarterly growth]	significant	significant and material
	Lee 2013 (South Korea) [real level]	not significant	not significant
	Price 2014 (New Zealand) [annual growth, counterfactual estimate]	n.a.	significant
	Kronick 2015 (Canada)	n.a.	not significant

Note: YELLOW cells indicate the significant effects identified by the studies; WHITE cells and ORANGE cells respectively indicate non-significant results and estimates where the quantitative effect of the simulated regulatory interventions relative to the rest of the regulatory interventions reviewed (e.g. capital instruments, fiscal instruments, etc.) was prominent. GREY cells indicate instrument(s) that were not included in the given study. Cells that are not split in the middle indicate studies where the effect of the two different instrument types was not inspected separately.

Source: Fáykiss et al. (2017)

Unfortunately, owing to the limited experience, efforts to estimate the real economic costs and benefits of the regulation are fairly rare in international studies. *Boar et al. (2017)* used one of the largest samples in the literature to analyse the effect of macroprudential policies on the long-term volatility and growth rate of GDP. The authors do not distinguish between the various cyclical macroprudential instruments and accordingly, they use a single estimate to measure the effect of debt cap rules and, for example, the effect of capital buffers. They found that the application of cyclical macroprudential tools in general reduces long-term output volatility and does not even curb growth significantly; indeed, they might even boost output growth. However, the tools may be less effective in financially more developed economies compared to the average.

4. Application of debt cap rules across Europe

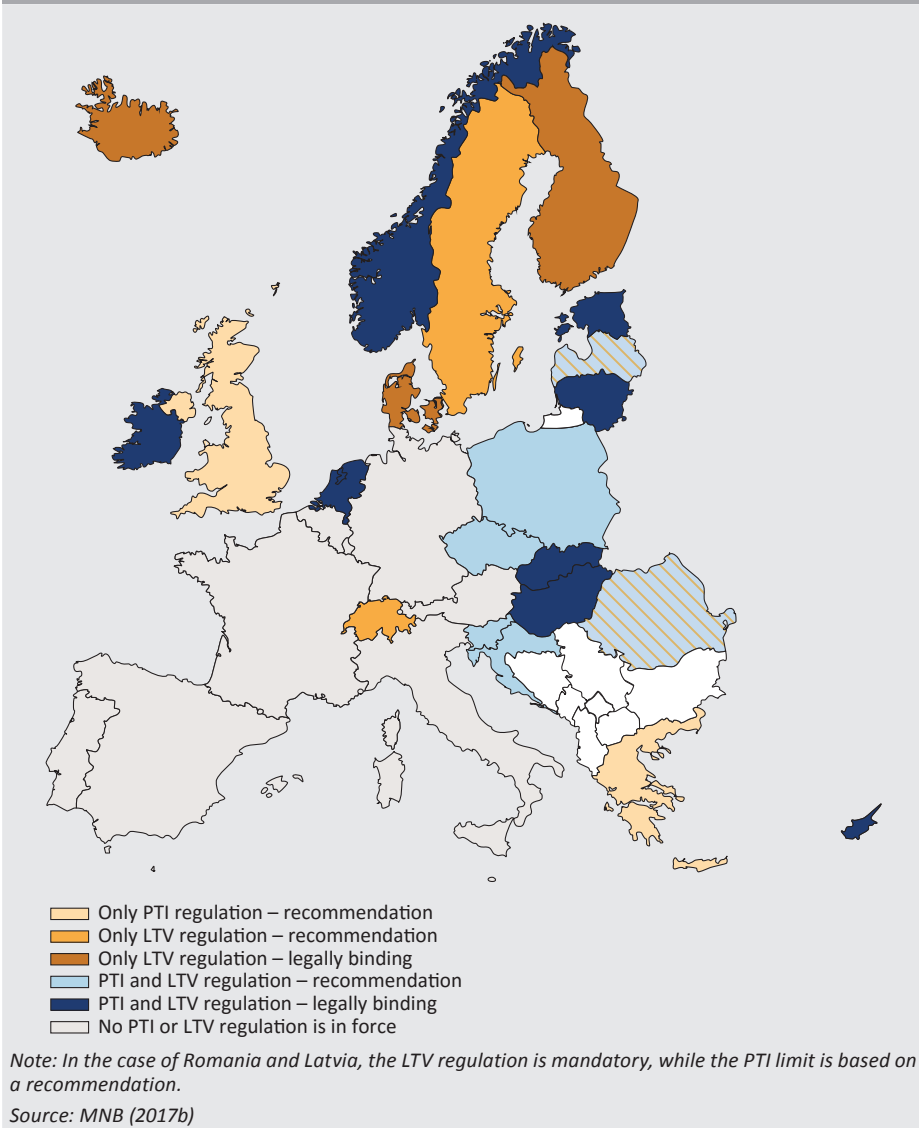
The use of debt cap rules has become increasingly widespread across Europe as well. Central and Eastern European and Northern European Member States are more frequently present among the countries applying the rule, whereas this type of regulatory activity is negligible in the core countries of the euro area (*MNB 2016*). As regards the calibration of individual national regulations, we should note that while the loan-to-value ratio (LTV) is set up identically in individual countries for the most part, two main indicator groups can be identified for factoring in the repayment capacity of debtors. One of them includes payment-to-income (PTI)³

³ Also known as debt-service-to-income (DSTI).

type ratios, which cap maximum monthly payments relative to the debtor's income, while the second group comprises loan-to-income (LTI) indicators, which define the maximum credit amount available to debtors based on their annual income (Figure 3).

Figure 3

Debt cap type requirements across the states of the European Economic Area



The application of the limits in individual regions can be summed up as follows:

- *Central and Eastern European countries:* Besides Hungary, Slovakia adopted mandatory LTV and PTI limits, while the rest of the countries in the region either issued recommendations (Czech Republic, Poland, Slovenia, Croatia) or adopted mandatory provisions with respect to the LTV limit only, and – in addition to the mandatory LTV regulation – address the PTI limits in the form of a recommendation (Romania).
- *Northern countries:* LTV regulations were adopted as a recommendation in Sweden and as a regulation in Denmark, Finland and Iceland. In Latvia, besides the mandatory LTV limit, the PTI limit was set as a recommendation, while Estonia and Lithuania apply mandatory PTI limits and Norway adopted mandatory LTV and LTI limits.
- *Southern countries:* In these Member States, only Cyprus adopted mandatory PTI and LTV regulations, whereas Greece issued a recommendation with respect to the PTI limit only.
- *Other European countries:* The Netherlands introduced mandatory LTV and PTI rules and Ireland applies binding LTI and LTV regulations, whereas the United Kingdom issued a non-mandatory recommendation regarding the maximum credit amount available to borrowers relative to their annual income.

Despite the ostensible proximity of the thresholds of debt caps introduced across the EU, their comparability is significantly hampered by the detailed rules applicable. For example, as regards the debt cap rules that remained a national matter, for the calculation of the payment-to-income ratio individual Member States define the debt service and income components differently (e.g. with regard to sustenance costs), and different rules are applied to the management of co-debtors and higher-income debtors, the *de minimis* limits, and the inclusion of bullet loans and floating rate schemes. Instead of the PTI indicator, several Member States apply the LTI indicator, which limits the maximum credit amount in proportion to annual income. As regards the loan-to-value ratio, different provisions apply for the definition of the market value in several countries. Accordingly, requirements applicable to overstretched incomes and to the disposal of collateral are hard to compare at international level. Therefore, even though the levels shown in *Table 4* are often close to one another, it is fairly difficult to determine the “tightness” of the given requirement based on the level of the regulatory limits.

Table 4			
Debt cap rules in Europe			
Country	PTI and LTI*	LTV	Note / Exceptions
CH	-	90%	
CY	80%	80%	PTI: 65% for FX loans LTV: for financing the primary permanent resident of the borrower, otherwise 70%
CZ	40% PTI, 8 LTI	80%	LTV: 15% of lending may be performed with a limit of 90%
DK	-	95%	
EE	50%	85%	LTI: for 80% of lending – if the interest rate is low, with stressed interest level LTV: for 85% of lending, it can be 90% for loans supported by a state guarantee
FI	-	90%	LTV: 95% for first-time buyers
GR	30-40%	-	
HU	50%	80%	PTI: between 10% and 60%, differentiated according to income and currency LTV: tighter for FX loans or new vehicle loans, up to 30%
IE	3,5 LTI	90%	LTI: for 80% of lending for first-time house buyers and for 90% of lending for non-first-time buyers LTV: for 85% of lending
IZ	-	85%	LTV: 90% for first-time house buyers
LT	-	90%	LTV: it can be 95% for loans supported by a state guarantee
LV	40%	85%	PTI: 5% of lending should be performed with a 60% limit, compliance with a 50% interest rate stress limit is also mandatory
MT	-	70%	LTV: for household mortgage loan exposures with a risk weight of 35%
NL	-	100%	
NO	5 LTI	85%	LTI: for 90–92% of lending, depending on region LTV: for 90–92% of lending, depending on region, 70% for home equity lines of credit (HELOC) type products, the cap is 60% for secondary homes in Oslo
PL	40%	80% for household loans, 75% for commercial property loans	PTI: 50% for higher-income borrowers LTV: 90%, but can be raised up to 80% if the part above 80% or 75% is collateralised or insured
RO	-	85% for housing loans, 75% for consumer credit	LTV: between 80% and 60% for FX loans depending on the currency and the hedging of the FX risk, 95% if the loan is backed by a state guarantee
SE	-	85%	
SI	50%	80%	PTI: 67% for higher-income borrowers but only a specific portion of the income can be included in the eased limit
SK	80%	80%	PTI: calculated with an interest shock of 2 percentage points, for floating interest rate loans, up to 1 LTI, 100% LTV: 40% of lending may exceed it up to 100%, but max. 10% can be above 90% and, up to 1 LTI the LTV limit is also 100%
UK	4,5 LTI	-	LTI: for 85% of lending

*Note: * If the limits above refer to LTI regulations, this is separately indicated; otherwise the % limits refer to PTI-type regulations.*

Source: ESRB (2017)

Several differences can be identified with respect to the regulatory tools applied in individual countries:

- *Institutional scope*: In the case of certain countries (such as the Netherlands and Hungary) the rule has a broad-based institutional scope, covering not only credit institutions but also non-bank creditors, which reduces the possibility of circumventing the regulation.
- *Eligible incomes*: In addition to Hungarian regulations, it is only in Cyprus, Estonia and Slovakia that prudent certification is required for the validation of after-tax incomes. In all other countries applying mandatory regulations, banks are permitted to define the range of eligible incomes.
- *Differentiation by risk dimensions*: In an international comparison, LTV requirements differentiate according to denomination (Romania) or real estate value (Ireland), whereas a similar differentiation of PTI requirements is not applied apart from in Hungary.

In order to ensure that the requirements are targeted as specifically as possible, several EU Member States apply exceptions in the debt cap rules:

- *Allowances for specific borrower groups*: To ease less risky borrower groups' access to credit, some countries permit, to some extent, the disbursement of loans with LTV values in excess of the limit (the Czech Republic, Ireland and Slovakia). Countries with high real estate prices support young, first-time home buyers by applying preferential LTV requirements for example (e.g. Ireland, Iceland). Baltic States have also defined preferential LTV caps with respect to housing loans backed by a state guarantee with a view to facilitating home purchases for first-time buyers.
- *Exceptions as a percentage of the total portfolio*: Sometimes policymakers allow creditors to disburse loans, up to a certain percentage of the total disbursement, with PTI or LTI values in excess of the regulatory limit, if the borrowers' outstanding repayment capacity can be certified (e.g. Estonia, Lithuania and the United Kingdom).

5. Debt cap rules in Hungary

5.1. Operation of Hungarian debt cap rules

The MNB was among the first in Europe to adopt legally binding, comprehensive debt cap rules. Entering into force on 1 January 2015, the rules are intended to prevent the overstretching of debtors' incomes and collateral values alike: the amount of new household loans may not exceed 80 per cent of the collateral value (loan-to-value ratio, LTV) and, as a general rule, the total debt service of borrowers

may not exceed 50 per cent of their regular, legal income (payment-to-income ratio, PTI). In order to offset the different risks, the Hungarian regulation is stricter for foreign currency loans and more relaxed for high-income borrowers⁴ (Table 5).

		HUF	EUR	Other currency
PTI	Under HUF 400,000 net monthly income	50%	25%	10%
	Equal to or more than HUF 400,000 net monthly income	60%	30%	15%
LTV	Mortgage lending	80%	50%	35%
	Car loans	75%	45%	30%

Source: MNB

In calibrating the debt cap rules, the current state of the financial cycle should also be considered. Requirements should be shaped countercyclically, in line with the changes in the cycle: while a period of overheatedness may warrant the application of tighter LTV and PTI limits to prevent excessive indebtedness, in times of crisis and at the bottom of the credit cycle where there is a risk of a credit crunch or the credit crunch has taken hold already, there is generally room for easing the existing tighter limits. The primary objective of the adoption of debt cap rules – in view of the existing state of the financial cycle – was to put a “brake” in place that can be “hit” later in order to prevent excessive credit outflows (Szombati 2017).

Hungarian debt cap rules were calibrated by covering a broad range of criteria, along the lines of various risk dimensions.

- i. The debt cap rules can be comprehensive both in terms of the affected credit products and the protection of market participants. Hungarian debt cap rules cover all credit products offered to households; their application is mandatory for all creditors and consequently, the possibility of circumventing them is limited. The rules protect creditors and borrowers simultaneously: in the case of the PTI limit, the primary objective is to mitigate the risks arising from customers’ excessive indebtedness, while the LTV cap is primarily intended to reduce potential losses from the collateralised loans disbursed by banks.
- ii. The requirement mitigates the risks of indebtedness in foreign currency by way of tighter limits in the case of both regulatory tools. An exchange rate depreciation may substantially raise both the monthly instalment amounts and the principal

⁴ For the justification of this provision see, for example, Balás et al. (2015).

value in proportion to the collateral, which should be covered by an additional buffer included in the limits⁵.

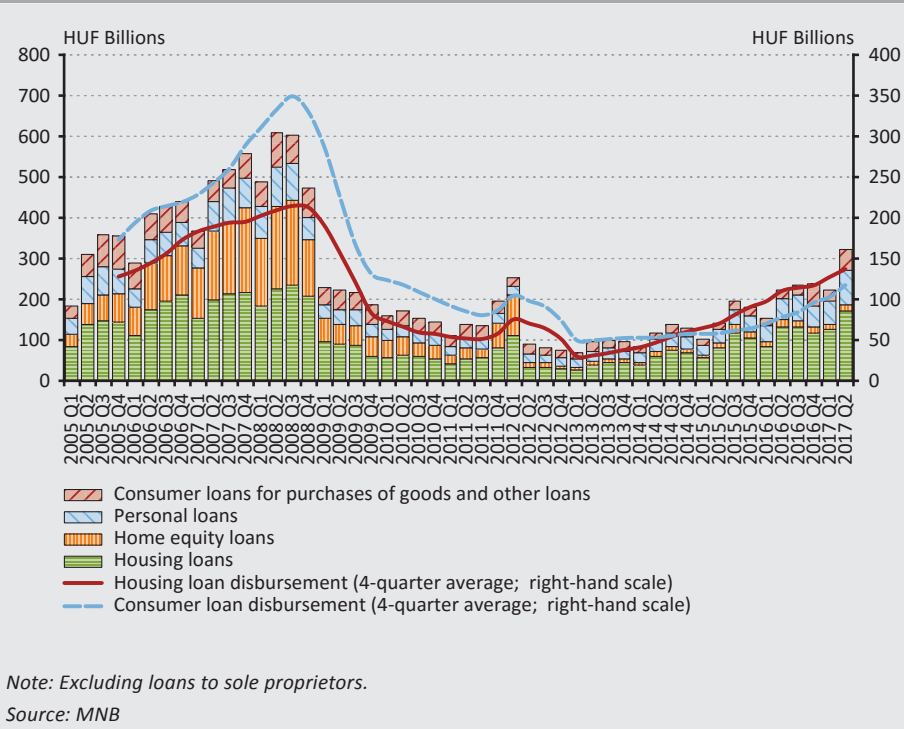
- iii. The calibration of the regulation should differentiate according to customers' disposable income. Since the growth rate of consumption typically falls behind the growth rate of income (see *Hosszú 2011* for example), a higher portion of the income can be allocated to debt servicing. The model calculations of *Balás et al. (2015)* performed on the data of a questionnaire-based survey also confirm that higher-income customers should enjoy more latitude in applying for a loan, as the same PTI levels might be too tight for higher-income customers, and too relaxed for low-income customers.
- iv. To facilitate prudent lending, only legal, certifiable income may be considered during the application of the debt cap rules. Since legal, certifiable income is deemed to be more stable than any other form of income, only these income components should be considered in PTI calculations. This requirement encourages households with an intention to borrow to report their incomes; therefore, in addition to facilitating responsible lending, another positive result of the MNB Decree is promoting the whitening of the economy. This, however, may exclude from the group of borrowers the segments that previously obtained credit from "grey" income, without certification.

5.2. Experiences so far with regard to application of debt cap rules in Hungary

A lending turnaround has recently taken place in the case of the household portfolio, while the dynamic acceleration of the disbursement of new household loans continued. Since the trough observed in the first quarter of 2013, the level of new disbursements has increased dynamically, reaching the values recorded in early 2006 by the first half of 2017. Housing loans exhibited the greatest growth in the past year and a half: by 2017 Q2 their disbursement grew to HUF 171 billion from the HUF 85 billion registered in early 2016. The disbursement of consumer credit more than doubled during the same period. This expansion was driven by the robust disbursement of personal loans and trade credit, while home equity loans continued to have a negligible share (*Figure 4*).

⁵ During the calibration of the required buffer, VaR (Value at Risk) or ES (Expected Shortfall) analyses may prove to be useful. They can assist in defining a PTI limit that ensures the PTI value does not exceed the regulatory limit applicable to forint loans even in the event of an extreme exchange-rate shock.

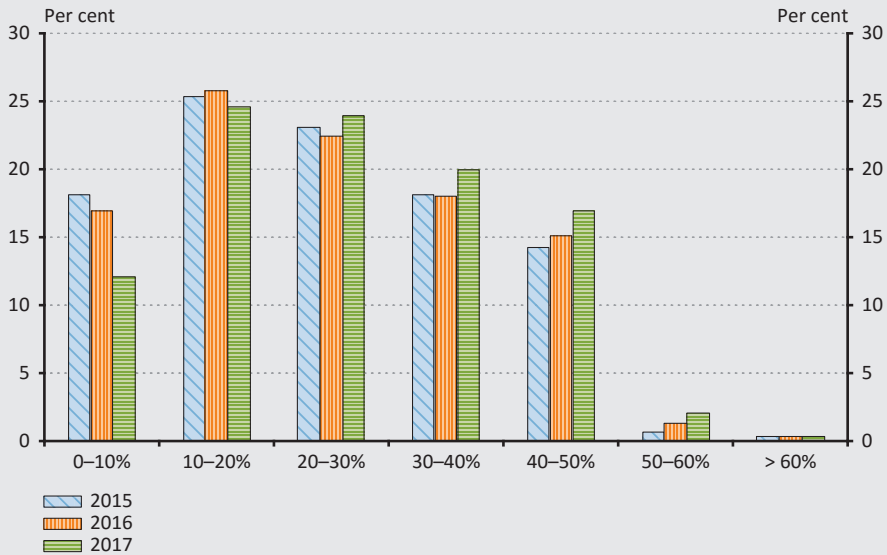
Figure 4
Gross credit disbursement by credit institutions in the household segment by product type



So far, the dynamic acceleration in lending has not entailed significant indebtedness of households, which is also confirmed at the macroeconomic level by the negative credit gaps⁶. Although borrowers appeared to be somewhat more overstretched in the past two and a half years as in the first half of 2017, one fifth of the loans were disbursed to more indebted customers with a PTI value of 40–60 per cent, this rate exceeds the figure observed in 2015 by only 5 percentage points. This year's high real wage growth, however, may slacken or curb further growth. Accordingly, although the limits may be activated for more borrowers, they are still not visibly concentrated around the regulatory caps (*Figure 5*). At the same time, contrary to pre-crisis years, the risk associated with housing loans and consumer credit has become significantly lower owing to the adopted or tightened prudential requirements and to the increased risk aversion of market participants (typically forint denomination, significantly lower LTV levels, etc.). Therefore, the dynamic credit expansion supports the recurrence of equilibrium lending and for the time being, cannot be considered excessive.

⁶ In this regard, see, for example, MNB (2017b).

Figure 5
Evolution of the distribution of newly disbursed loans according to PTI over time



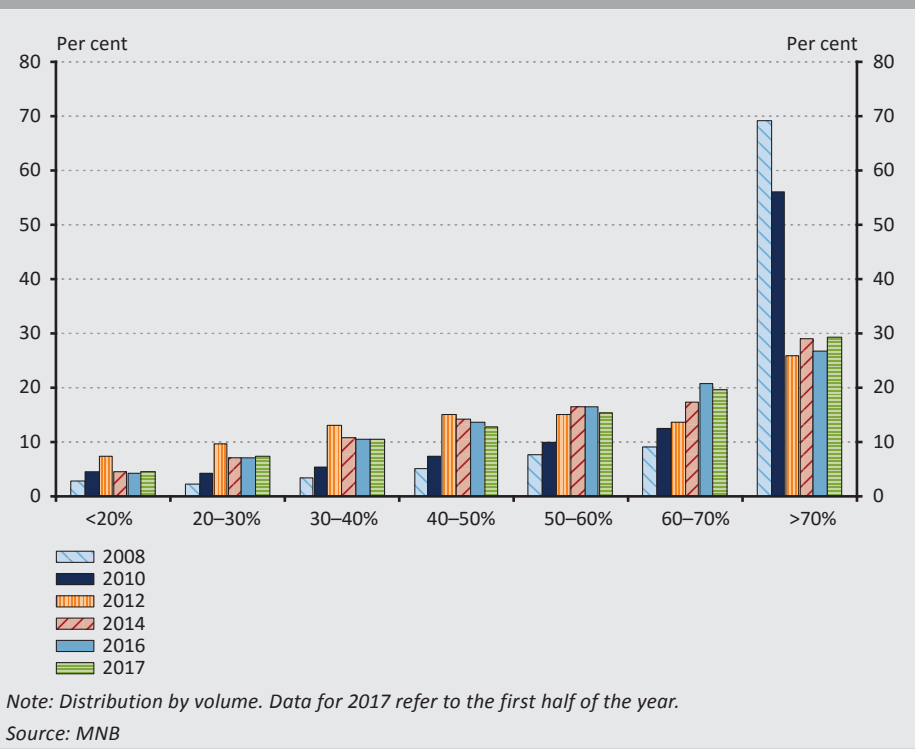
Note: Distribution by number of contracts. Data for 2017 refer to the first half of the year.

Source: MNB

At present, the upswing in housing loans does not threaten a build-up of systemic debt problems. Housing loans disbursed in the recent period are denominated in forints; their maturity just reached 16 years in the second half of 2017 compared to the 19–20 years observed before the crisis, their LTV values are significantly lower and individual transactions are not visibly concentrated in the proximity of PTI limits. The probability of future debt problems associated with housing market processes is reduced further by the fact the borrowing is linked to no more than half of all housing transactions (MNB 2017a). In addition, the encumbrance of the real estate collateral behind housing loans remains low, although it exhibits a slow up-slope trend. Parallel to rising real estate prices⁷ and dynamically increasing housing loans, debtors are more likely to finance their real estate purchases from borrowing; therefore, loans granted with collateral encumbered by more than 70 per cent of the market value represent an increasing share in total housing loan disbursements. At the same time, the share of these loans is still far below the levels observed before the crisis (Figure 6). Therefore, the dynamic expansion in the housing loan portfolio over the past three years took place in a far more sustainable manner than in the pre-crisis period.

⁷ For a more detailed analysis of housing market risks, see the Housing Market Reports of the MNB.

Figure 6
Evolution of the distribution of newly disbursed housing loans according to LTV over time



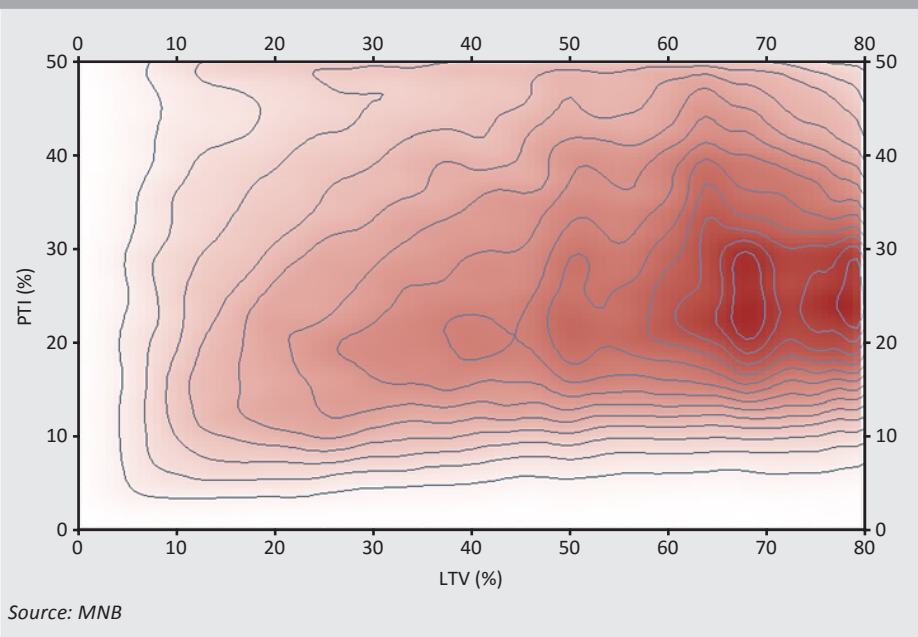
So far, the robust increase observed in real estate prices in Budapest has not resulted in the population’s excessive indebtedness. Although Budapest real estate prices rose by around 70 per cent compared to their end-2014 level over the past three and a half years, excessive indebtedness has failed to materialise so far among households. On the one hand, Budapest real estate prices remain in the vicinity of the level warranted by fundamentals⁸. On the other hand, no significant difference can be identified between the indebtedness processes of Budapest and countryside citizens, even with regard to the regional effectiveness of the debt cap rules. Despite the surge in real estate prices compared to disbursements outside of Budapest, the share of loans with an LTV value of over 70 per cent is only four percentage points lower and the volume of the contracts affected by both limits is only 1.5 percentage points higher in Budapest. Considering the higher income levels of the capital city, this confirms that excessive indebtedness cannot be observed for the time being. It should be noted that *Table 3* also confirms that, according to experience, debt cap rules are primarily effective in mitigating excessive household indebtedness and

⁸ For more detail, see the MNB’s Housing Market Reports: <https://www.mnb.hu/en/publications/reports/housing-market-report>

exert a more limited effect on housing market processes. Consequently, they can mainly dampen real estate price surges fuelled by excessive lending.

In accordance with the above, based on the distribution of mortgage loan transactions by PTI and LTV values, a higher level of concentration around the regulatory limits can be observed with respect to the LTV value (Figure 7). Of the debt cap requirements, however, the PTI requirement generated the larger portion of the estimated effect with respect to the loans restrained by it. Indeed, based on the distribution fits used for the purposes of the impact estimate, compared to PTI values the regulatory limits pertaining to LTV values required adjustment with respect to fewer borrowers (MNB 2017b).

Figure 7
Distribution of housing loans disbursed between 2016 Q1 and 2017 Q2 by PTI and LTV values



5.3. Potential adverse effects of debt cap requirements

Although the effect of debt cap rules at the transaction level significantly curbs the possibility of regulatory arbitrage, depending on the specific formulation of the rules, debtors and creditors to some extent may also adjust to the requirements through channels not affecting credit outflows, which may predict the limits' increasing effectiveness. Table 6 summarises these adjustment options.

As shown by the table, possible adverse effects may materialise principally in the case of rules that impose limitations in proportion to income, which may be

partly attributed to the fact that LTV values can be calculated with less complex methods. Another reason is the fact that PTI rules are applicable to all disbursed loans, whereas the LTV limit poses a constraint only in mortgage lending. Nudging borrowers towards less regulated, non-bank intermediary channels may be relevant in the case of both requirement types. This is addressed appropriately by the Hungarian regulation as its scope is not limited to bank lending. Although the requirements do not pose a constraint for loan transactions between private individuals, the significant proliferation of these transactions via online platforms or personal relationships has not been observed in Hungary.

	PTI	LTV
Borrowing through non-bank intermediaries	relevant but addressed by the regulation	relevant but addressed by the regulation
Maturity extension	relevant but currently not prevalent	not relevant
Selection of a shorter interest fixation period	relevant but currently not prevalent	not relevant
Selection of a currency with a more favourable interest rate	relevant but addressed by the regulation	relevant but addressed by the regulation
Unsecured borrowing	not relevant	relevant but addressed by the regulation

Source: ESRB, MNB

Since the size of debtors' monthly instalments is determined by the triumvirate of principal, interest and maturity, adjustment to the PTI requirement is possible, without changing the principal amount, by modifying the interest and the maturity:

- *Schemes with more favourable interest rates:* Two typical methods involve the selection of loans with a shorter interest fixation period or a currency with a more favourable interest rate level. Owing to the recent negative experiences of FX lending both among creditors and borrowers, foreign currency loans are not typical in Hungary at present. The debt cap rules, in turn, restrict higher risks through tighter limits. Although the share of more indebted borrowers is somewhat greater in the case of floating rate schemes compared to loans with interest rates fixed for longer periods, the difference is immaterial, and adjustment through the length of the interest period is restricted, overall, to an extent corresponding to the difference between the interest rate levels. The benefit provided by shorter interest fixation periods is offset by the fact that, in the calculation of the PTI value, the instalment for loans with an interest fixation period of at least 5 years has been calculated with a preferential weight of 85 per cent since May 2016; therefore, the higher instalment amount associated with the same principal amount is not in conflict with the PTI limit.

- *Longer maturity*: The impact of a longer maturity on the instalment amount diminishes in line with the extension of the maturity, while it increases the total payable amount significantly. Since the adoption of the debt cap rules only housing loans have been affected by a modest increase, but this can mainly be attributed to the general surge in house prices and the resulting credit amount increase.

One adverse effect of the LTV requirement could be an upswing in uncovered loans. If borrowers do not have sufficient savings, they could adjust to the own funds requirements demanded by the LTV rules by applying for uncovered loans. Although such borrowings may precede applications for housing loans in the case of collateral encumbered at a high rate, only a small fragment of debtors in the Hungarian credit market choose this form of adjustment to the LTV rules. In addition, this effect is also limited by the PTI requirements, as the maximum portion of the debtor's income available for debt service is restrained. The effectiveness of the PTI limit is buttressed, in such cases, by the fact that the interest rates on uncovered loans are far higher, which renders this form of adjustment very costly.

6. Summary

With the adoption of the debt cap rules, a regulatory framework has been put in place that allows for quick and efficient responses to mitigate the risks arising from excessive household lending. At present, the requirements do not restrain lending considerably; they are expected to exert their impact in periods of excessive credit expansion. Data recorded in the recent period do not point to a significant concentration of debtors in the vicinity of the regulatory limits, and no noticeable adjustment has been identified so far on the part of consumers. Therefore, in line with its purpose, the regulation only restricts excessively risky loans, ensuring a healthy structure for the recovery of household lending in the aftermath of the crisis.

Obviously, additional challenges may materialise in the future with respect to the trends in lending, which can be managed – after moderate fine-tuning – with the existing debt cap rules. On the one hand, asset price overheatedness may also emerge on a regional scale. Compared to the rest of the country, surges in real estate prices may prove to be stronger in some economically developed regions – typically around the capital city or major cities – due to greater demand for real estate and a more restricted supply. Numerous countries have adopted differentiated debt cap rules to dampen overheated regional real estate prices, but for the time being, trends in lending do not call for such differentiation in the case of Hungary. On the other hand, the high rate of floating rate schemes may also pose a challenge in the future. The instalment amount of floating rate loans follows

potential changes in the interest rate environment either instantaneously or with a small lag, and a strong increase in interest rates might prompt debtors to make drastic consumption adjustments. International regulatory practice offers several solutions to incorporate the interest rate risks associated with floating rate schemes into the debt cap rules. Great Britain and Romania issued a recommendation; the initial recommendation was replaced by mandatory regulations in 2015 in Norway and in March 2017 in Slovakia; loan assessments must assume cross-cycle interest rate levels in Estonia,⁹ while no more than one third of all disbursements can be floating rate schemes in Israel.¹⁰ Finally, the efficiency of debt cap requirements can be improved further by introducing a mandatory positive credit registry and by providing the conditions for voluntary, central income queries. To define the PTI value, creditors should be able to determine – clearly and in a credible manner – the existing debt service and income of debtors. Although various credit registries are available to estimate the debt-service burden, their efficiency can only be maximised if they include all loan contracts linked to a single debtor and if creditors can query the database even without the debtor’s consent. Another operative difficulty of PTI determination is the precise definition of eligible, stable and certifiable incomes. Indeed, some income types are far too periodical and their inclusion in the calculation may therefore be problematic; other income types might be too difficult to certify. One possible solution to this problem may be establishing a central database for income queries available to banks, subject to the debtors’ consent.

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⁹ For a collection of the relevant regulations see the ESRB’s database at https://www.esrb.europa.eu/national_policy/shared/pdf/overview_macroprudential_measures.xlsx?5eee1aeb10edcf3ab515977928325dd4

¹⁰ For more detail, see the website of the central bank of Israel: <http://www.boi.org.il/en/NewsAndPublications/PressReleases/Pages/21-08-2013-loans.aspx>

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