Received: 1 April 2019

DOI: https://doi.org/10.32025/RIS18017

The role of mortgage payment insurance in reducing the mortgage default risk level in Latvia

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ABSTRACT

Purpose. The use mortgage payment insurance as an instrument to reduce the credit risk of mortgage loans in Latvia is significantly lower than in EU and other developed countries. The authors aim to investigate the role of mortgage payment insurance in reducing the credit risk of mortgage loans and assess its potential impact on the housing market in Latvia.

Design. The authors created the following research structure:

Information on the level of use and coverage of home loan payment insurance in Latvian commercial banks has been collected and analysed.

The authors carried out calculations of a person's risk statistics in Latvia and modelling of the potential impact of a borrower's insurance on the household's losses.

Findings. Mortgage loans are one of the key resources for improving the welfare of families in developed countries. On the other hand, during the recent crisis 16% of borrowers faced problems with housing loan repayment, while 10% of borrowers were forced to look for new housing because the property was taken over as a result of default (FCMC, 2019). This problem is not systematically addressed at the moment in commercial banks in Latvia.

Originality. No studies have been carried out in Latvia that assess losses in case of temporary incapacity, permanent incapacity for work or forced unemployment in credit institutions and households in Latvia in the context of mortgage lending.

Keywords: mortgage payment insurance, mortgage default risk and unemployment.

Paper classification: research paper

INTRODUCTION

The Latvian financial services market can be characterized as relatively simple and fragmented in terms of use of financial services. This is especially true for financial services related to risk-taking, namely loans. Voluntary transfer of risk to third parties is not popular and borrowers do not appreciate its role in personal finance management. Instead, borrowers fully assume all the risks associated with adverse developments in their personal finances. As a result, even short-term financial problems, such as job loss, can cause significant losses to the borrower and increase the level of risk in credit institutions.

Often, the reason for such household financial behaviour is the cost of the service and low likelihood of risk. In this situation it would also be possible to talk about the low level of financial literacy of Latvian society. However, consumers of financial services in Latvia in this situation lose out because they do not get full protection against the risks that they cannot fully control.

Latvian commercial banks use mortgage guaranty insurance as a credit risk mitigation tool, but the use of mortgage payment protection insurance by borrowers is rather insignificant.

This makes the mortgage lending system in Latvia more vulnerable to external risks, and the financial services received by borrowers are less favourable than they would be in a fully and comprehensively developed market situation. The low utilization rate of mortgage payment insurance and insufficient risk allocation prevent insurers from offering the consumer a more affordable price for this financial service.

THEORETICAL FRAMEWORK OF THE RESEARCH

Risk has come increasingly to characterize homeownership, and the provision of risk mitigation has become more important, particularly in terms of ensuring that borrowers can maintain their stream of mortgage payments (Ford, 2012).

Mortgage insurance is a contract that can indemnify the loss of the mortgage bank while the borrower default and the auction income of the collateral (or the house) does not cover the loan balance (Wu *et al.*, 2017). Mortgage insurance is offered in different forms. Primary mortgage insurance is the insurance of a single mortgage credit. Mortgage portfolio insurance covers whole pools of loans (Chen, 2000) by providing varying combinations of accident, sickness and unemployment insurance and is used to protect the mortgage payments of policyholders in the event of a fall in income (Ashton and Hudson, 2017) .

Mortgage guaranty insurance (MGI) and mortgage payment insurance (MPI) play a major role in credit risk mitigation in developed countries. Before the financial crisis in 2008, fewer default events occurred and the hazard rate was low (Wu *et al.*, 2017). Lenders and borrowers have experienced significant losses due to defaults of households in an economic crisis situation. For mortgage financers, mortgage insurance opens up the possibility of leaving behind the limits of a fixed loan to value ratio (LTV) in favour of a flexible combination of individual LTV and mortgage insurance. By using private mortgage insurance, mortgage financers can expand their lending business to higher LTV ratios without incurring the related risks (Kofner, 2007). Consumers in underdeveloped markets lose out in this situation as they are forced to receive less advantageous mortgage services. There may be some support in this area in the form of public housing loan guarantees, but the range of beneficiaries is usually relatively limited. MGI and MPI can provide borrowers with equivalent benefits, but on market terms.

MGI can help lenders and borrowers to cope with the default risk of mortgage credits. MGI is taken out by the debtor of a mortgage in favour of the lender. The insurance covers the loss risk of the creditor in case of a borrower's default (Park, 2016). While MGI does not directly prevent defaults, it protects lenders and the economy from their often harmful consequences (Park, 2016). MPI is a mortgage insurance product that can protect both the borrower and the lender after a mortgage transaction is made, by guaranteeing the regular payments that ensure repayment (Kofner, 2007). Regular repayment of the loan is the main goal of a lender. Smart lenders do not rely solely on LTV in problematic situations.

During an economic downturn and especially in times of crisis, lenders and borrowers experience significant losses due to defaults of households. Mortgage payment protection insurance is an 'add-on' service providing varying combinations of accident, sickness and unemployment insurance and is used to protect the mortgage payments of policyholders in the event of a reduction in income (Ashton and Hudson, 2017). Mortgage insurance is not intended to prevent loan defaults, only to compensate investors if they occur. While not all "underwater" borrowers default, distressed borrowers with home equity can in theory always refinance or sell the property to avoid default. Mortgage insurance is typically associated with high LTV ratios, but according to this theory the presence of mortgage insurance should have little impact on the default rates for loans with similar levels of home equity (Park, 2016).

Lenders often have greater knowledge of a borrower's credit risk than captured in traditional underwriting standards available to mortgage insurers. Bank lenders may have detailed knowledge of the financial situation of a customer from years of providing banking and financial services. This asymmetric information allows lenders the option to profitably self-insure when lending to lower risk borrowers (Park, 2016).

Even if a country's market and regulatory environment is conducive to high-volume low-risk mortgage financing, the mortgage insurer must avert 'adverse selection of risk', i.e., it

must overcome the mortgage lender's natural inclination to choose – loan by loan – which cases to submit for insurance and which cases to 'self-insure'. After all, who more than the lender is likely to know which credits and which properties present significant incremental risks most in need of insurance against default-induced losses. (Blood, 2001)

There are important differences between MPI and MGI:

- MGI pays out to the lender whereas MPI protects the borrower;
- MGI provides all-risk coverage. Default-related losses of the lender are insured absolutely independent of the reasons for defaulting;
- MPI covers the risk of a temporary loss of earned income with respect to mortgage repayments;
- MPI provides preventive coverage. It helps to prevent defaults by replacing missing income to the borrower;
- With MGI, the insured event is the mortgagor's default;
- MPI is subject to moral hazard, whereas the moral hazard problem is non-existent with MGI, at least in the lender-borrower relationship (because it pays out to the lender). Regarding the coverage range (omitting important causes of default) and the types of risks insured by MPI, the moral hazard risk should be limited (Kofner, 2007).

MGI and MPI are important elements of a fully developed national system of real estate finance. Without MGI and MPI, borrowers are unable to make a sensible down payment and are either excluded from access to mortgage credit or suffer from unfair lending practices. Mortgage insurers help lenders to improve their risk management (Kofner, 2007).

Given the systematic risk, which is due to macro-economic factors like interest and unemployment rates, worldwide risk dispersion across different economic cycles would make a lot of sense. The more countries are covered by mortgage insurance, the better international risk dispersion will work. (Kofner, 2007)

There are two alternative views of home mortgage default behaviour (Jackson and Kasserman, 1980):

- The *equity theory* of default holds that borrowers base their default decisions on a rational comparison of financial costs and returns involved in continuing or terminating mortgage payments.
- The alternative is the *ability-to-pay theory* of default. According to this approach, mortgagors refrain from loan default as long as income flows are sufficient to meet the periodic payment without undue financial burden.

Under the equity theory, the current loan to value ratio (CLTV), which measures the equity position of the borrower (i.e. the market value of the mortgaged property divided by the

outstanding mortgage loan at each point in time), is considered to be the most important factor in default decisions. By contrast, under the ability-to-pay model, the current debt servicing ratio (CDSR), defined as the monthly repayment obligations as a percentage of current monthly income, which captures the repayment capability of the borrower, plays a critical role in accounting for defaults. (Kofner, 2007)

The insurance covers a mortgager's monthly mortgage repayments (interest payments and amortization) if he or she is unable to work because of unemployment, accident, or sickness. Usually all three risks are insured, but it is possible to insure against a subset, particularly where other insurance is already in place (Whitehead and Holmans, 1999). MPPI pays out to the borrower and its payouts are independent of a household's financial resources (Song, 2005).

From a housing policy perspective, the idea of private mortgage insurance is convincing because of its potential to shorten the savings phase ahead of homeownership. It could bring young families into their first home many years earlier. Mortgage insurance allows for higher LTV lending and can be regarded as a substitute for equity capital. It surely has the potential to raise the homeownership rate by considerably reducing the average entry age of homeownership (Kofner, 2007).

Private mortgage insurance enables lenders to share the risks of mortgage lending to riskier target groups. It is offered in different forms for the primary and the secondary mortgage credit markets and faces competition on both markets (Kofner, 2007). In addition to the unemployment risks faced by mortgage borrowers, an important determinant of the risk of arrears and repossession is the non-financial resources at the mortgagor’s disposal relative to his/her essential outgoings and mortgage payments. For example, a single person with a small mortgage and sizeable savings is more likely to be able to survive a short bout of unemployment than someone with many dependants, a large mortgage and meagre savings. One would, therefore, anticipate higher levels of insurance take-up amongst households that have diminutive savings relative to family outgoings (Pryce and Keoghan, 2002).

MORTGAGE LOANS AND INSURANCE MARKET DEVELOPMENT IN LATVIA

Mortgage loans play an important role in ensuring the well-being and long-term stability of society. According to an EU-SILC survey, the overcrowding rate in Latvia (40.5%) in 2017 was 2.4 times higher than the EU average, while only 10% of owner-occupied dwellings in Latvia were encumbered with mortgage. The EU average level of encumbrance was 2.8 times higher than in Latvia, while the level of more developed EU countries ranges from 40-60%.

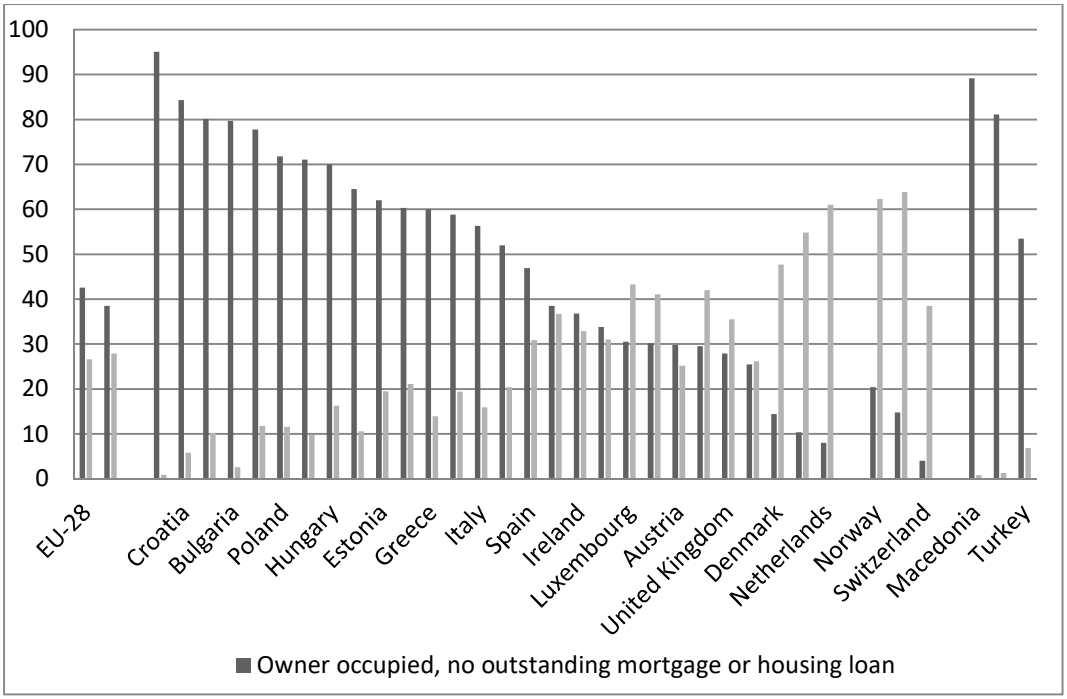

Figure 1. **Distribution of population by tenure status, 2016**
Source: Eurostat, 2018

The active development phase of housing lending in Latvia started approximately fifteen years ago (see Figure 2). It developed rapidly between 2002 and 2006, and mortgage loans made up a significant share of commercial banks' income in this time period. However, the rapid growth of mortgage lending, reaching an average increase of 90% per annum, slowed considerably starting from mid-2007, following the adoption of an anti-inflation plan by the Cabinet of Ministers of Latvia. For almost five years after the crisis, housing lending stagnated because:

- Banks reviewed their credit policies, as they suffered significant losses on loans issued before the financial crisis;
- Households were cautious, as the decline in unemployment and growth in income started only 4-5 years after the crisis, e.g. from 2013. In addition, the inability of a substantial share of borrowers to repay commitments previously assumed gave rise to excessive vigilance against new credit claims;
- Global political and economic uncertainty from 2014-2016 did not provide sufficient assurance about long-term stability.

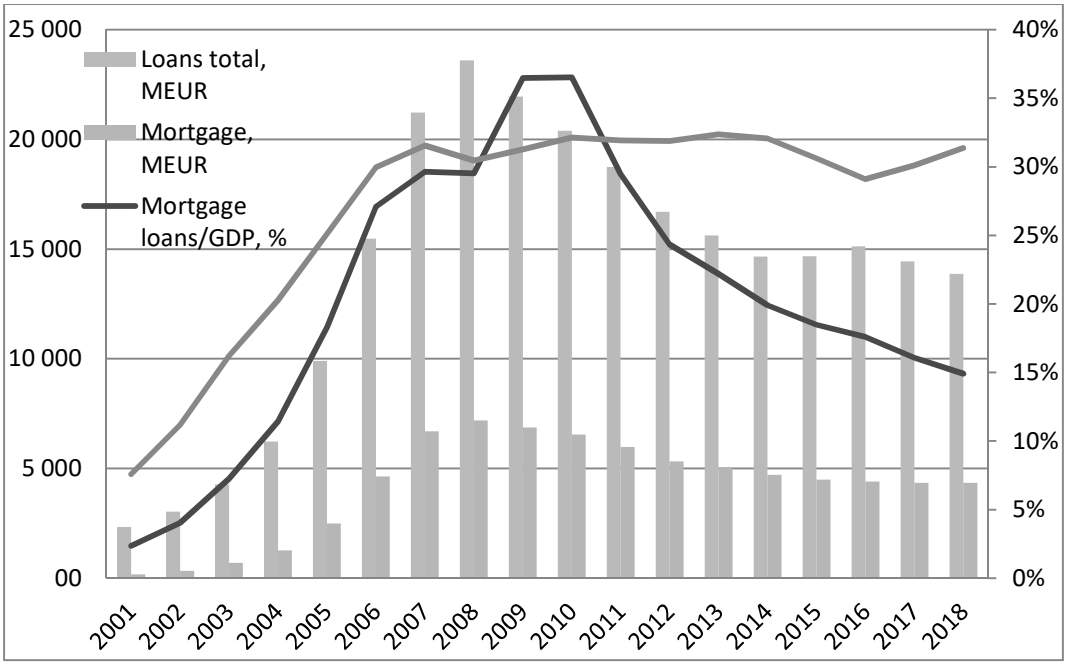

Figure 2. **Latvian credit institutions' loan portfolio development**
Source: FCMC, 2019

Even now, despite a resurgence of household lending, including mortgage lending, a further downward trend in the loan portfolio can be observed, which, in the authors' view, is another consequence of the 2008 financial crisis and is linked to the repayment of active "old" liabilities. Banks and consumers are still cautious about the issue of new commitments and the amount of new loans issued is not able to compensate for the reduction in the loan portfolio caused by the repayment of current active liabilities. Overall, such a market development scenario cannot be welcomed, and there is an objective need to build credit market growth on a more stable basis in the future.

Property insurance products are closely related to household lending. They include a variety of insurance coverage that protects against risks such as fire, theft and some types of weather damage but exclude any risk related to the solvency of the borrower. Property insurance product growth has a strong correlation with a country's economic development and the development of financial markets. Latvia has experienced such a situation: on May 1st, 2004, Latvia joined the EU (European Union, 2019), and that was a crucial signal for different industries that the country is safe, that it is developing and has a strong future. Rapid growth of financial markets, especially the banking sector and leasing companies, took place. Scandinavian financial groups (e.g. Hansa Leasing, SEB banka, Hansabanka) provided the Latvian financial market with cheap long-term money. Latvian households had the possibility to get a loan for the purchase of a new car or real estate. This caused a property bubble and the development of a property insurance bubble (Figure 3). One of the

factors that influenced the growth of the insurance market is the mandatory character of property insurance.

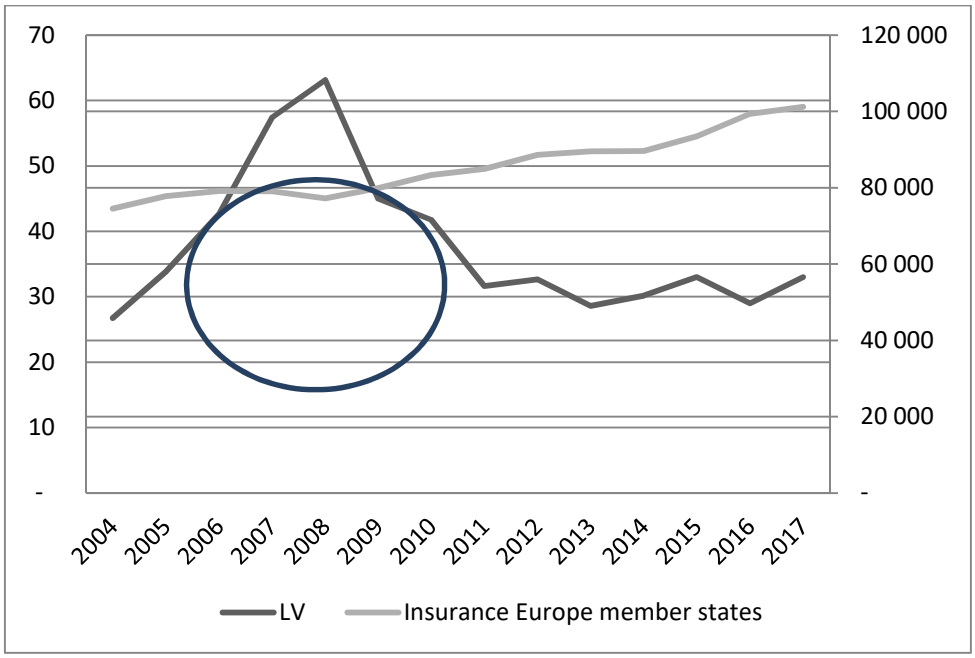

Figure 3. **Gross direct premiums written on the domestic market: property insurance in Latvia (millions, EUR) and Insurance Europe member states (billions, EUR)**
Source: (Insurance Europe, 2019)

In 2017, property premiums in EU grew 3.6%, while, at the same time, the Latvian property insurance market grew more than 3 times faster (+13.8) (Insurance Europe, 2019). Insurance density identifies how much money an inhabitant spends on insurance. Latvia had a very low insurance density base before joining EU and it still remains almost 10 times lower than in Europe on average.

Table 1

Density: property insurance in Latvia and the EU average

Density (total premiums EUR per inhabitant): property insurance in Latvia and the EU (average)

Country	2012	2013	2014	2015	2016	2017
LV	16	14	15	17	15	17
Insurance Europe member states	154	156	148	151	159	160

Source: (Insurance Europe, 2019)

From another point of view, the property insurance premium growth tendency is positive, and further development of this market segment is expected. This will be influenced by the growth in mortgage lending, rising property prices and the mandatory character of property insurance for borrowers.

MORTGAGE LOAN LOSS RATES AND MORTGAGE PAYMENT INSURANCE IN LATVIA

In order to minimise the credit risk, Latvian commercial banks in cooperation with Latvian insurance companies offer different types of mortgage payment insurance (MPI) (see Table 2).

Table 2

Mortgage payment insurance types and coverage available in Latvia

Option	MPI type	Coverage
Mandatory or up to the borrower	Temporary disablement	Monthly payments
	Permanently lost capacity for work	Full housing loan balance
	Loss of life	Full housing loan balance
Up to the borrower	Involuntary unemployment	Monthly payments

Source: Swedbank and SEB banka (2019)

As seen in Table 2, MPI in Latvia largely covers external risks of the borrower, leaving behavioural risks to the lender.

The low level of use of MPI can be largely explained by the low level of development of the insurance market in Latvia in general. As seen in Table 3, insurance density and penetration levels are way below EU average levels.

Table 3

Density and penetration: the domestic insurance market in Latvia and the EU (average)

Density (total premiums per inhabitant): domestic market in Latvia and the EU (average)					
Country	2013	2014	2015	2016	2017
LV	96	101	112	103	123
Insurance Europe member states	2 464	2 585	1 847	1 854	1 855
Penetration (total premiums to GDP): domestic market in Latvia and the EU (average)					
Country	2013	2014	2015	2016	2017
LV	0.8%	0.9%	0.9%	0.8%	0.9%
Insurance Europe member states	5.6%	5.7%	4.9%	4.9%	5.2%

Source: (Insurance Europe, 2019)

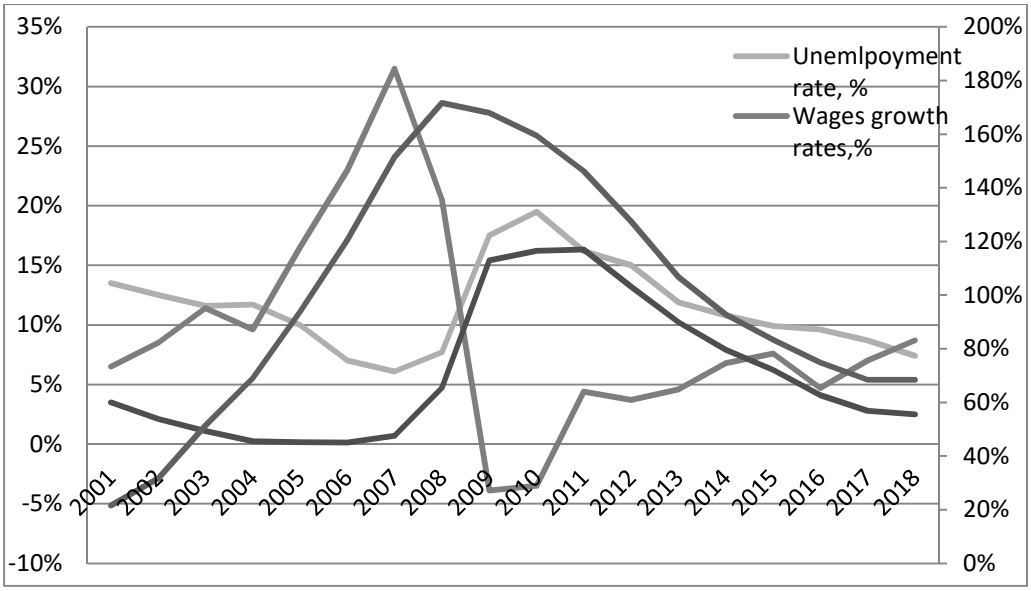

Figure 4. **Residential mortgage NPL and risk indicator development in Latvia**
Source: Calculated by the authors, based on FCMC and CSB data

The inability of borrowers to meet their commitments, as well as the limited possibilities of refinancing due to sharply falling housing prices in Latvia from 2008 to 2010, led to a rapid increase in non-performing loans (NPLs). In analysing the causes of the NPL increase (see Figure 4), the authors concluded that the most relevant factors were "external circumstances", such as:

- unemployment (a correlation rate of 0.8018 over the period of 2001-2018 highlights a strong positive association) and occupational disability (temporary or permanent);
- real wages growth (-0.7827 highlights a pretty strong negative association);
- GDP growth (-0.667 indicates a pretty strong negative association);
- the behaviour of the households themselves, such as:
    - excessive commitment (the correlation coefficient 0.5618 indicates a medium strong positive association) and insufficient savings;
    - mismanagement of personal incomes and costs of living;
    - competitiveness in the labour market (qualifications and experience);
    - other aspects.

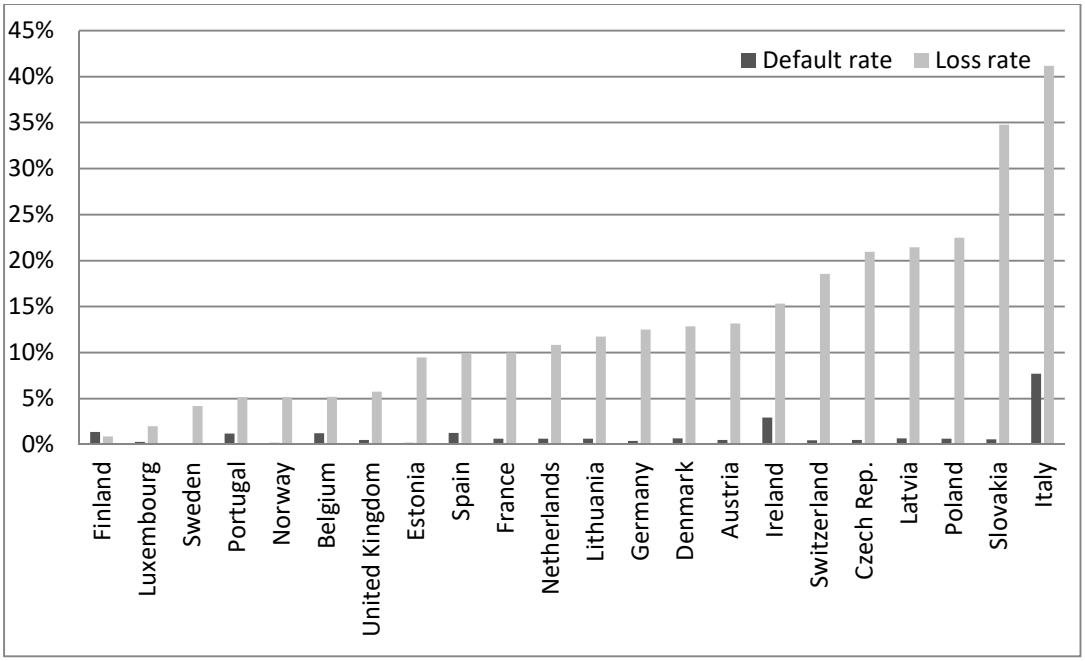

Figure 5. **Mortgage default and loss rates in Europe, 2018**
Source: EBA, 2018

A survey performed by the authors of leading Latvian commercial banks representing 56% of the housing loan portfolio showed that less than one third, ca. 30% of borrowers, were using MPI at the end of 2018. In comparison, in Estonia and Lithuania the share of mortgage payment insurance users among mortgage lenders is more than twice as high. At the same time, comparing the statistics as of 30.09.2018 from EBA (see Figure 5), it can be concluded that in countries where the majority of mortgage loans are covered by mortgage payment insurance, the level of credit losses was approximately twice as low as it is currently in Latvia.

THE IMPACT OF UNEMPLOYMENT ON MORTGAGE DEFAULT AND LOSS RATES IN LATVIA

The authors used primary data from The State Social Insurance Agency of Latvia (SSIA) for the period of 2013 to 2018. The unemployment statistics were grouped by age groups that are traditionally used by banks to group their credit clients and are also more frequently mentioned in studies such as Bell and Blanchflower, 2011: 25-34; 35-44; 45-54 and 55-64.

Age groups up to 25 and over 64 years were not included in the study since their proportion in the housing loans portfolio is not significant.

The authors assessed the likelihood of unemployment using the following formula:

$$LoU_{i,t} = \frac{Uc_{i,t}}{E_{i,t}} \quad (1)$$

where $LoU_{i,t}$ - likelihood of unemployment within age group *i*, during year *t*;

$Uc_{i,t}$ - unemployment cases within age group *i*, during year *t*;

$E_{i,t}$ - employed within age group *i*, in year *t*.

Figure 6 shows the trends for the likelihood of unemployment by age groups for the period of 2013 to 2018.

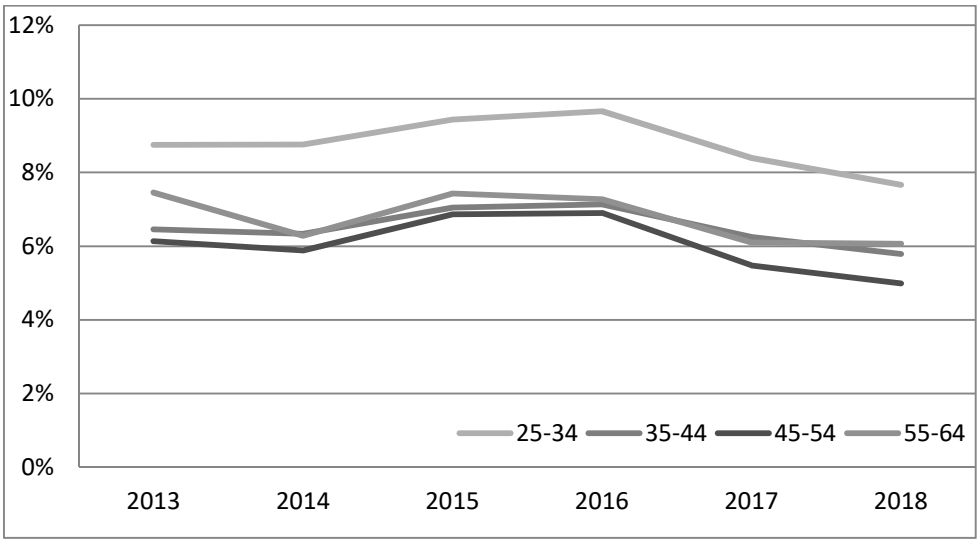

Figure 6. **Likelihood of unemployment by age groups in Latvia 2013-2018**
Source: Calculated by the authors, based on SSIA data

The following hypothesis testing was performed to assess the statistical stability of the unemployment likelihood ratios calculated:

- H_0: Likelihood of unemployment is not dependent on age group and year;
- H_A: Likelihood of unemployment is dependent on age group and year.

For the hypothesis testing, the authors used two-factor ANOVA, and the results are shown in Table 4 and Table 5:

Table 4

Average unemployment rates and variances by ages and years

SUMMARY	*Count*	*Sum*	*Average*	*Variance*
25-34	6	0.526631	0.087772	0.000052
35-44	6	0.390104	0.065017	0.000026
45-54	6	0.362597	0.060433	0.000058
55-64	6	0.406148	0.067691	0.000047
2013	4	0.288033	0.072008	0.000138
2014	4	0.272557	0.068139	0.000172
2015	4	0.307832	0.076958	0.000140
2016	4	0.309730	0.077433	0.000167
2017	4	0.262178	0.065545	0.000161
2018	4	0.245149	0.061287	0.000126

Source: Calculated by the authors, based on SSIA data

Table 5

Two-factor ANOVA test summary statistics on unemployment rates

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Rows	0.002624	3	0.000875	151.597	0.00000000002	3.287
Columns	0.000826	5	0.000165	28.647	0.00000036137	2.901
Error	0.000087	15	0.000006			
Total	0.003537	23				

Source: Calculated by the authors, based on SSIA data

Conclusion: the authors reject H_0 because $F_i > F_{crit}$, $F_t > F_{crit}$ and the p-values for both are very low. We have statistically significant evidence at $a < 0.000001$ that likelihood of unemployment is dependent on age group and year.

In this study, the authors assessed the indemnity rate using the following formula:

$$I_{i,t} = LoU_{i,t} * AvgUp_{i,t} \quad (2)$$

where $I_{i,t}$ - indemnity rate for age group *i*, during year *t*;

$AvgUp_{i,t}$ - average unemployment duration within age group *i*, during year *t*;

Figure 7 shows the trends for the indemnity rate by age groups for the period of 2013-2018.

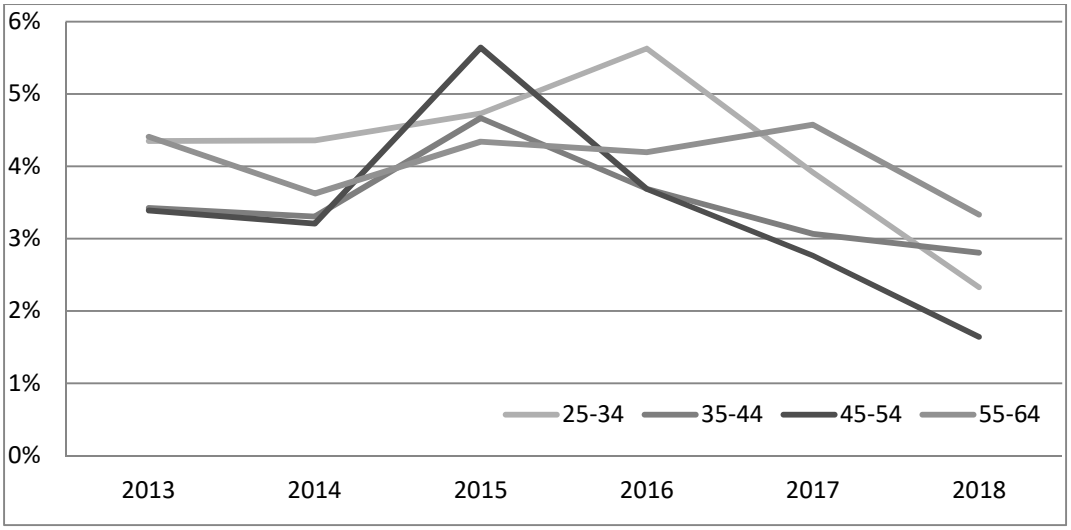

Figure 7. **Indemnity rates in case of unemployment in Latvia 2013-2018**
Source: Calculated by the authors, based on SSIA data

The following hypothesis testing was performed to assess the statistical stability of the indemnity rates calculated:

- H_0: Indemnity rates in case of unemployment are not dependent on age group and year;
- H_A: Indemnity rates in case of unemployment are dependent on age group and year.

For the hypothesis testing we used two-Factor ANOVA, and the results are shown in Table 6 and Table 7.

Table 6

Average indemnity rates and variances by ages and years

SUMMARY	*Count*	*Sum*	*Average*	*Variance*
25-34	6	0.259331	0.034222	0.000330
35-44	6	0.187202	0.031200	0.000063
45-54	6	0.195425	0.032571	0.000057
55-64	6	0.226028	0.037671	0.000186
2013	4	0.147895	0.036974	0.000029
2014	4	0.137252	0.034313	0.000021
2015	4	0.186253	0.046563	0.000114
2016	4	0.191745	0.047936	0.000349
2017	4	0.123106	0.030777	0.000016
2018	4	0.081736	0.020434	0.000008

Source: Calculated by the authors, based on SSIA data

Table 7

Two-Factor ANOVA test summary statistics on indemnity rates

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Rows	0.000538	3	0.000179	2.509	0.09831	3.287
Columns	0.002109	5	0.000442	5.903	0.00328	2.901
Total	0.003719	23				

Source: Calculated by the authors, based on SSIA data

Conclusion: the authors cannot reject H_0 because $F_i < F_{crit}$ and p_i-*value* > *5%*. However, $F_t > F_{crit}$ and p_t-*value* < *5%*. There is no statistically significant evidence at $a = 0.05$ that indemnity rates in case of unemployment are dependent on age group.

To evaluate the effect of MPI on the default rate, a regression model was developed that describes the relationship between the unemployment rate and the default. Based on EBA data (EBA, 2019) on default statistics in Latvia and Eurostat unemployment data (Eurostat, 2019), four linear and non-linear regression models were calibrated, of which the best fit (p-value < 0.01) was as follows:

$$y = 9.3506 * x^2 - 1.2778 * x + 0.0496 \quad (3)$$

where y - default rate,

x - unemployment rate.

The best fit regression model (3) coefficient of determination of 0.763 shows that 76.3% of default rate variations can be explained by changes in the unemployment rate and related factors, e.g. wage changes, etc. The shape of a second-order polynomial regression model (3) also determines that the default rates rises rapidly with unemployment exceeding 9-9.5%. This conclusion can also be easily explained from an economic point of view – it is relatively easier to find a new job at an unemployment level of up to 7-8% in a shorter period after the loss of previous work, while unemployment benefits only slightly reduce income levels and some expenses can be covered by savings.

Using the regression model obtained, the effect of MPI on the default rate under several unemployment scenarios was estimated; see Figure 8.

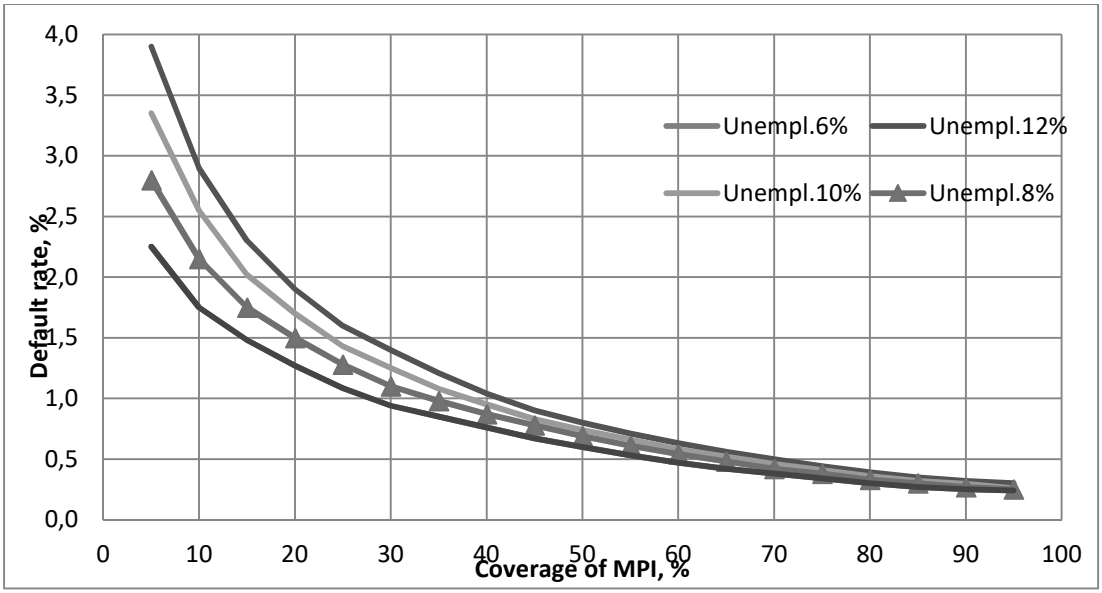

Figure 8. **Relationships between the default rates and the coverage of MPI at different levels of unemployment.** Source: Calculated by the authors, based on the best fit regression model

According to the calculations performed, it can be concluded that an MPI coverage increase from the existing level to 60% (current Estonian and Lithuanian) offers a possibility to reduce the default rate 2.1-2.3 times depending on the unemployment level. If the coverage ratio increases to 100%, the effect is even larger: 3.5-4.3 times; see Table 8.

Table 8

Decrease in default rates from an MPI coverage increase compared to the existing level

Unemployment rate	MPI coverage 60%	MPI coverage 100%
12%	2.32	4.30
10%	2.25	4.10
8%	2.15	3.77
6%	2.07	3.54

It is no surprise that a higher effect is expected at a higher unemployment rate, reaching 2.3 (4.3) times, respectively. This means a significant reduction of credit risk in Latvian financial institutions that perform mortgage-lending activities.

CONCLUSIONS

The active development phase of housing lending in Latvia started approximately in 2002. It developed rapidly up to the year 2006 and mortgage loans made up a significant share of commercial banks' income in this time period. However, the rapid growth of mortgage lending, reaching an average increase of 90% per annum, slowed considerably starting from mid-2007, following the adoption of an anti-inflation plan by the Cabinet of Ministers of Latvia.

The financial crisis of 2009-2010 showed the shortcomings of mortgage lending practices:

- The liberal banking credit policy, the reliance on collateral appreciation, and the failure to assess the risks of borrowers' income adequacy and stability led to significant credit losses in the Latvian banking sector;
- Borrowers' overconfidence in the constant rise in income and housing prices led to excessive commitments and the subsequent inability to repay them.

The most relevant factors for the NPL increase in Latvia during the financial crisis were "external circumstances" such as unemployment and occupational disability (temporary or permanent), real wages and the decrease in GDP.

The behaviour of households themselves has influenced the quality of loan portfolios in Latvian commercial banks. The most influential factors are excessive commitment and insufficient savings, mismanagement of personal income, increase in costs of living and personal competitiveness in the labour market (qualifications and experience).

At the beginning of 2019, less than one third of Latvia's commercial banks' housing loans were covered by mortgage payment protection insurance, whereas in Estonia and Lithuania coverage rates were ca. twice as high. In contrast, the loss rates in Latvia were ca. twice as high, and this proves that the problem is not being addressed at the moment accordingly.

The survey conducted by the authors in the context of this study showed that the main reason why mortgage payments are not insured is risk underestimation, particularly unemployment, against which less than a fifth of borrowers are insured.

As part of this study:

- The likelihood of unemployment was analysed per age group based on Latvian SSIA data from 2013-2018. As a result of the two-factor ANOVA test, we found statistically significant evidence ($a < 0.000001$), that likelihood of unemployment is dependent on age group and year;

- Indemnity rates were analysed per age group. As a result of the two-factor ANOVA test, we concluded that there is no statistically significant evidence at a = 0.05 that indemnity rates in case of unemployment are dependent on age group.

The research conducted by the authors shows that MPI offers a possibility to reduce the mortgage loan default rate in Latvia approximately 3 to 5 times depending on the risk profile of borrowers of mortgage loans, including occupation, qualification, age, etc.

The research shows that 76.3% of default rate variations can be explained by changes in the unemployment rate and related factors, e.g. wage changes, etc. The default rates rise rapidly with unemployment exceeding 9-9.5%. It is relatively easier to find a new job at an unemployment level of up to 7-8% in a shorter period after the loss of previous work, while unemployment benefits only slightly reduce income levels and some expenses can be covered by savings.

In order to achieve a significant improvement in the context of mortgage payment insurance and at least achieve the Estonian and Lithuanian level in the coming years, the following is necessary:

- The FCMC should initiate the process of educating borrowers about the effectiveness of mortgage payment insurance – the ability to protect families from material losses in the event of a failure to pay mortgage according schedule;
- Reinforcing cooperation between commercial banks and insurance companies to more actively promote the benefits of mortgage payment insurance products for borrowers;
- Latvian credit institutions should improve their mortgage pricing methodologies by including a corresponding reduction in the underlying price of a loan (interest rate), taking into account the objective reduction of the borrower's individual credit risk level.

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