International Journal of Business Management and Commerce; Vol. 5 No. 1; April 2020
International Journal of Business Management and Commerce
Published by Center for Contemporary Research

THE IMPACT OF MARKET INDICATORS ON RUSSIA MORTGAGE LOAN REPAYMENT

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ABSTRACT

AIM*: This article examined the factors that contributed to the accumulation of overdue mortgage loans repayments for the period of 2007-2017 in the Russian Federation. The article discusses the complex nature of issue, its impact on the Russian economy and lesson learned to prevent Russian economy to withstand such crisis in the future. The factors include, mortgage bonds volume, home ownership rate, mortgage loan interest rate and mortgage loan approved.*
METHODS*: The data for this study was obtained from statistical books of Russian Central Bank and Federal State Statistic Service. The analysis was performed using mixed method involving qualitative and quantitative procedures. Multiple regression analysis assessed the magnitude of effect of each of the factors on unpaid mortgage loan.*
RESULTS*: The study found that both mortgage interest rate and mortgage loan amount have a large positive effect on overdue debt. Mortgage Subprime loan amount has no adverse effect on overdue mortgage loan payment. Mortgage Subprime loan amount did not behave as expected in that showed high subprime amount having a large low effect on overdue mortgage loan payment, and therefore hypothesis 3 is not confirmed. Homeownership amount has small effect on overdue mortgage loan payment amount. Hence, hypothesis 4 is not confirmed.*
CONCLUSION AND RECOMMENDATIONS*: The impact of the high interest rate and uncontrolled amount of the mortgage loans on Russia's economy was impressive. The growth of the overdue debt resulted in social and economic problems. Conclusions are that the Central Bank and the government should pay more attention to the regulation of the interest rate and to control the amount of the mortgage loans.*

Key words: mortgage market, financial management, banking system, economic policy, subprime lending.

INTRODUCTION

The genesis of the Russian financial industry crisis can be traced back to 2007 with a gradual collapse of the global financial industry propelled by a decline of the subprime mortgage market in the United States with an adverse collateral effect on the banking industry in countries around the world including Russia. In a short period of time, this decline in subprime mortgage industry rapidly developed into an international banking crisis which affected not only banks, but non-financial institutes worldwide. The magnitude of the crisis was unprecedented and staggering.

The crisis was unexpected as most of economists were certain that recent structural changes would enhance the ability of economic to absorb shocks and to control inflation. The crisis created a need to identify the causes and magnitude of the crisis in order to prevent its occurrence in the future.

The specific causes of the crisis can be identified by examining the key economic indicators in the business cycle that directly influence fluctuations of the mortgage loan overdue debt or overdue mortgage loan repayment (Moulton (1999). Interference of these economic indicators of the cycle that triggers a crisis in the economy is unavoidable but understanding and tracking their trends may provide a mean of takin corrective action to prevent the decline to develop into a mortgage industry financial crisis. To do so involves assessing the performance of these indicators on mortgage loan overdue payment over a designated time period. The purpose or goal of this research is to assess the source and impact of the 2008 Financial Crisis and how it may relate to for the current mortgage loan overdue payment crisis in the Russian banking industry.

Previous research

Numerous researches have conducted on the causes of the increase of overdue debt on mortgage loans. For example, Mejia (1999) found that the supply of mortgage loans and their amount may cause default on mortgage loans. Specifically, the study found that inadequate timing of the mortgage supply cycle resulted in an upsurge of mortgage default.

Other research found a positive correlation between the amount of subprime mortgage loans and overdue payment (Jones & Stacy (2011). Also, Waddell et al. (2019) found that housing prices and homeownership amount had a positive effect on mortgage loan overdue payment

Furthermore, Zhao (2019) found that increase in mortgage interest rate increased the probability of default on mortgage loan payment. Collectively, the findings of these studies suggest that amount of mortgage, amount of subprime mortgage loan, amount of homeownership and mortgage interest rate had a positive effect on overdue mortgage loan payment.

Research Objectives

The research objectives are:

1. To assess the effect of mortgage interest rate on overdue debt payment.
2. To assess the effect of mortgage amount on overdue debt payment
3. To assess the impact of mortgage subprime loan amount on overdue loan debt payment.
4. Home ownership volume on overdue mortgage debt of the Russian mortgage debt payment.

Research hypotheses

Based on previous research cited above, the following research hypotheses were tested.

1. Mortgage loan amount will have a negative effect on overdue mortgage debt payment
2. Mortgage subprime loan amount will have a negative effect on overdue loan payment.
3. Home ownership volume will have a negative effect on overdue debt of the Russian mortgage repayments.

MATERIAL AND METHOD

Research Design: The study used One-shot Case Study Longitudinal Design (Cohen et al. 2018; Ary el al. 2018; Isaac & Michael 2014; McNabb 2018). A schematic representation of the research design is presented in Figure 1 below.

Treatment	Post-test
T_1 T_2 …T_{11}	O_1 O2…O11

Figure 1: One-shot Longitudinal Case Study Design

Where $T_{1...}T_2$ are annual financial indicators including mortgage interest rate, amount of mortgage loan, amount of subprime rate, and amount of homeownership of Russian Banking industry. $O_{1;;;}O_{11}$ are annual overdue mortgage payments of Russian Banking industry.

Measures

Homeownership volume is measured by the total rubles amount of home owned per year. Mortgage Rate is operationalized as the percentage of interest on mortgage loan per year. Mortgage Loan volume is measured by the total amount in Rubbles of mortgage loan annually. Mortgage subprime loan volume is operationalized as the total rubles amount of mortgage subprime loan annually. Overdue mortgage loan payment volume is measured by the total ruble amount of overdue mortgage repayment per year.

Data Collection Method

The data for this study was obtained from Russian Government Department of Commerce and Banking annual financial transactions database. The data was originally in Excel format, and it was converted in SPSS format for analysis. All personal identifiers were deleted from the data set. The Statistical Program for Social Sciences (SPSS) version 26.0 was used to analyze the data. Linear multiple regression analysis procedure was used to estimate the effects of homeownership volume, mortgage rate, mortgage loan volume, and mortgage subprime volume on overdue mortgage loan payment volume.

Data Analysis

Linear multiple regression analysis procedure was used to estimate the effects of homeownership volume, mortgage rate, mortgage loan volume, and mortgage subprime volume on overdue mortgage loan payment volume. The magnitude of effect of homeownership volume, mortgage rate, mortgage loan volume, and mortgage subprime volume on overdue mortgage loan payment volume on overdue mortgage payment was determined by estimating the standardized regression coefficients (Beta coefficients (β) or factor loadings), with β's below .05 too small to be considered meaningful effects on overdue mortgage payment, even when they are statistically significant; those between .06 and .09 were considered small effects on mortgage loan payment; those between .10 to .25 were considered moderate effects on overdue mortgage loan payment; and those above .25 considered large effects on overdue mortgage loan payment (Keith 2019).

RESULTS

A multiple linear regression was calculated to estimate the effect of overdue mortgage payment based on homeownership volume, mortgage interest rate, mortgage loan amount, and mortgage prime loan amount. A significant regression model was found ($F(7,4) = 13.234$, $p<.05$), with an $R2$ of .883.

Table 1 displays the result of the standardized coefficient (Beta weights, β) associated with each of the independent variables in the overdue mortgage loan repayment-related multiple linear regression model. Mortgage interest rate and mortgage loan amount had a large positive effect on overdue loan payment amount (β=.90, t=.385, p= .712 and β=.95, t=1.522, p=.172, respectively). Mortgage subprime rate had a large negative effect on overdue loan payment amount (β=.95, t-.754, p=.75). Homeownership amount had a small positive effect on overdue mortgage payment amount (β=.06, t=.024, p=.982). The effects of all the independent variables on the dependent variable in multiple regression model were not statistically significant. However, many researchers have criticized statistical significance test as not a valid measure of the effect of independent variables on a dependent variable for many reasons (Carver 1978; Falk and Greenbaum 1995; Ziliak & McCoskey 2008; Gorard 2016). First, significance test is based on the null hypothesis which seeks to support or not to support it from the data, as well as claiming to determine whether or not findings occur by chance or not (Cohen, Mannon & Morrison 2018). However, this basis and claim relies on random sampling which in practice, such random sampling rarely occur (Gerard 2016) as in the present study. Furthermore, numerous researchers argue that even if true random sampling is assumed to occur, this does not solve the problem of assuming that the null hypothesis given that in significance testing the true null hypothesis is unknown (Carver 1978, p. 380; Cohen 1994; Krueger 2001, p. 17). As Carver (1978, p. 381) asserts, "Statistical significance simply mean statistical rareness, not certainty". Second, statistical significance varies with the sample size of the study. Second, statistical significance varies with the sample size of the study. Ziliak and McCloskey (2008) assert that calculating statistical significance as a function of sample size makes it highly unlikely to find statistically effect if large samples are used. Third, since statistical significance is seen as arbitrary in its cut-off points and not so helpful obstacle rather than facilitator, Keith (2004) cautions that it may encourage dichotomous thinking where a finding may be considered or not be considered statistically significant.

Finally, and perhaps more germane to our study, statistical significance does not tell us what we want to know, that is, the magnitude of effect that the independent variables has on the dependent variable (Ziliak and McColoskey 2008; Ellis 2010). A measure of effect size such beta coefficients may be more useful than statistical significance. In fact, Cohen and colleagues assert that statistical significance on its own is no indication of effect or impact, which is what we want to establish.

Table 1: Multiple Regression unstandardized and Standardized coefficients of homeownership amount, mortgage interest rate, mortgage loan amount, mortgage subprime loan amount on overdue mortgage payment amount.

Independent Variables	b	S.E.	β	t	ρ
Homeownership Amount	.041	1.732	.06	.024	.982
Mortgage Interest Rate	2433.635	6317,501	.90	.385	.712
Mortgage Loan Amount	.032	.012	.95	1.522	.174
Mortgage Subprime Loan Amt.	5438.067	16658.33	-.92	-.326	.754

Dependent Variable: Overdue Mortgage Loan Payment Amount
N = 11; Squared Multivariate Correlation = 88.3%

Table 1 displays the estimated unstandardized and standardized regression coefficients associated with each of the independent variables in multiple regression model. The results of the study show that both mortgage interest rate and mortgage loan amount have a large positive and statistically insignificant effect on overdue debt ($\beta = 0.90$, $t = 0.385$, $p = 0.712$; $\beta = 0.95$, $t = 1.522$, $p = 0.174$, respectively). Hence, hypotheses 2 and 3 are confirmed. Mortgage subprime loan amount has a large negative and statistically insignificant effect on overdue mortgage loan payment ($\beta = -0.92$, $t = -0.326$, $p = 0.754$) suggesting that mortgage Subprime loan amount did not behave as expected, and therefore hypothesis 4 is not confirmed. Homeownership amount has small positive and statistically insignificant effect on overdue mortgage loan payment amount ($\beta = 0.06$, $t = 0.024$, $p = 0.982$). Hence, hypothesis 4 is not confirmed.

The effects of each the independent variables on the dependent variable in multiple regression model were not statistically significant. However, many researchers have criticized statistical significance test as not a valid measure of the effect of independent variables on a dependent variable for many reasons (Carver 1978; Falk and Greenbaum 1995; Ziliak & McCoskey 2008; Gorard 2016). First, significance test is based on the null hypothesis which seeks to support or not to support it from the data, as well as claiming to determine whether or not findings occur by chance or not (Cohen, Mannon & Morrison 2018). However, this basis and claim relies on random sampling which in practice, such random sampling rarely occur (Gerard 2016) as in the present study. Furthermore, numerous researchers argue that even if true random sampling is assumed to occur, this does not solve the problem of assuming that the null hypothesis given that in significance testing the true null hypothesis is unknown (Carver 1978, p. 380; Cohen 1994; Krueger 2001, p. 17). As Carver (1978, p. 381) asserts, "Statistical significance simply mean statistical rareness, not certainty". Second, statistical significance varies with the sample size of the study. Second, statistical significance varies with the sample size of the study. Ziliak and McCloskey (2008) assert that calculating statistical significance as a function of sample size makes it highly unlikely to find statistically effect if large samples are used. Third, since statistical significance is seen as arbitrary in its cut-off points and not so helpful obstacle rather than facilitator, Keith (2004) cautions that it may encourage dichotomous thinking where a finding may be considered or not be considered statistically significant. Finally, and perhaps more germane to our study, statistical significance does not tell us what we want to know, that is, the magnitude of effect that the independent variables has on the dependent variable (Ziliak and McColoskey 2008; Ellis 2010). A measure of effect size such beta coefficients may be more useful than statistical significance. In fact, Cohen and colleagues assert that statistical significance on its own is no indication of effect or impact, which is what we want to establish.

CONCLUSION AND DISCUSSION

The purpose of this study was to assess the impact key mortgage market indicator (i.e., homeownership amount, mortgage interest rate, mortgage loan amount, and mortgage subprime loan amount) on overdue mortgage payment. The goal of the study was to identify which of these bank market indicators contributed to the financial crisis of the Russian Federal banking industry in 2008. A 11 years longitudinal data on banking decisions and government public policies for each of these indicators were analyzed using multiple regression analysis procedures. Based on the results of the study, it can be concluded that during the 11 years periods studied, banking and government policy decisions for most part may have contributed the accumulation of overdue mortgage loan repayment which invariably led to the 2008 financial crisis in Russia federation driven for the most part by lack of close monitoring of mortgage loan interest rate and the mortgage loan amount approved.

Hence, to prevent a re-occurrence of the 2008 financial crisis in the future, banking and government decision makers may consider closely monitoring fluctuations of the mortgage interest rate and mortgage loan amount in the business cycle, and make the necessary financial industry adjustment decisions to normalize the behavior of the Russian financial industry or market over time. In particular, The Russia Central Bank may reduce the mortgage interest as overdue mortgage loan payment and gradually increase it as the overdue debt declines. Meanwhile, in the event of increasing or decreasing trend in the amount of mortgage loan amount and subprime mortgage loan amount, government may regulate the amount of the mortgage loans by passing and enforcing the implementation of distributive and protective regulatory policies. Distributive public policy is a course of government aimed to promoting efficiency in the production and distribution of good and services in the private sector that is considered to beneficial to society as a whole (Ripley & Franklin 1986). This type of public policy uses general tax revenue or other nonuser taxes to provide assistance or subsidies in the form cash payment to a particular private industry in time of a crisis to voluntarily limit or increase production of the particular goods or services considered to be the source of the crisis (Meier 1993). The protective regulatory public policy is government action to protect the marketplace from harm and danger such as disturbance in the global economy (Meier, 1987, Ripley and Franklin 1991). This can be accomplished by enacting policies that appropriate reserve funds in the Russia's annual budget for use in resolving financial crisis caused by spillover effect from decline in the global economy, poor banking management decisions or government policies.

The redistributive public policy is government action to ensure equity in the production and distribution of goods and services (Meier 1987). The most recommended strategy for mortgage loan industry is for government to provide temporary cash subsidies or subsidized public housing to individuals and households who fall below the national poverty threshold who are not able to obtain a mortgage loan until they are able to leverage their employability skills in order to obtain meaningful employment. This policy may be accompanied by subsidized vocational or job training for low income individuals and households based on the merit system. Finally, the success of these public policies may hinge upon the Russian government increasing the income threshold employed citizen and eliminate the current cap placed how much its citizens earn. This study had one methodological limitation that must be acknowledged. That is, the study use data for eleven years only. This small sample size is simply not sufficient to conduct an adequate statistical analysis. Future studies should consider increases the sample to a minimum of the recommended 200 sample size.

Acknowledgements

We extend our gratitude and appreciation to the staff of the Russia Central Bank for allowing us access to the mortgage loan data. We also thank the Administration, faculty and staff members of Altai State University who assisted us in conducting the study and downloading and organizing the data for analysis.

Contributors

Authors EG and TV designed the study and wrote the protocol and conducted the literature searches and provided summaries of previous studies. Author MYM conducted the statistical analyses, interpreted the results and summarize the conclusions. All three authors contributed to the discussing the conclusions and writing and approval the final manuscript.

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