International Journal of Multidisciplinary Trends

E-ISSN: 2709-9369
P-ISSN: 2709-9350
www.multisubjectjournal.com
IJMT 2024; 6(12): 113-117
Received: 18-09-2024
Accepted: 22-10-2024

Dr. R Jeyalakshmi
Associate Professor, Sairam Institute of Management Studies, Sri Sairam Engineering College, Chennai, Tamil Nadu, India

Jeevanandham D
Scholar, Sri Sairam Institute of Management Studies, Sri Sairam Engineering College, Chennai, Tamil Nadu, India

Corresponding Author:
Dr. R Jeyalakshmi
Associate Professor, Sairam Institute of Management Studies, Sri Sairam Engineering College, Chennai, Tamil Nadu, India

A study on assessing the impact of interest rates on mortgage lending trends

R Jeyalakshmi and Jeevanandham D

DOI: https://doi.org/10.22271/multi.2024.v6.i12b.545

Abstract
In order to better understand how interest rate fluctuations affect borrower behavior, loan demand, and housing market dynamics, this research examines the link between interest rates and mortgage lending patterns. The study focusses on various economic cycles and how central bank policies influence interest rate movements, looking at both short- and long-term effects. This study attempts to pinpoint significant patterns and trends that illustrate how sensitive mortgage lending is to changes in interest rates through the analysis of actual data and case studies from several economies. The results indicate that while higher interest rates lead to decreased loan activity and affordability issues for prospective homeowners, lower interest rates considerably increase housing demand and mortgage origination. The study also emphasizes the wider ramifications for financial institutions, borrowers, and the real estate markets in addition to how changes in interest rates impact refinancing activity.

Keywords: Interest rates, home loan origination, mortgage lending, housing market, central bank policies, borrower conduct, and financial institutions

Introduction
The dynamics of mortgage lending and the larger housing market are significantly shaped by interest rates. Changes in interest rates have a direct impact on borrowing costs, making them a crucial tool of monetary policy that influences consumer decisions about home purchases and refinancing. A big portion of personal finance and the real estate industry is mortgage lending, which is especially susceptible to these swings. Falling interest rates make borrowing more accessible, which frequently sparks a spike in the demand for mortgages and homeownership. On the other hand, increasing interest rates have the potential to reduce borrowing activity and reduce consumer interest in refinancing and house purchases.
Because interest rates are impacted by a number of variables, such as consumer confidence, regulatory rules, and economic situations, the relationship between interest rates and mortgage lending trends is complicated. Low interest rates can stimulate housing booms during economic expansions, while high rates can make affordability problems worse during recessions and possibly cause the housing market to slow down. Furthermore, in order to preserve economic stability, central banks and other financial institutions are essential in modifying interest rates, which in turn affects the flow of credit within the mortgage market. This study examines how changes in interest rates affect mortgage lending trends, taking into account both past trends and the state of the market at the moment. The goal of this research is to shed light on how interest rates impact mortgage origination, refinancing, and overall housing market activity by examining data from various economic cycles and policy interventions. The results will show the wider ramifications of interest rate changes for financial institutions, homeowners, and policymakers in addition to their immediate effects.

Objectives of the study
- To Analyze the relationship between interest rate fluctuations and mortgage lending trends.
- To Analyze the impact of interest rates on housing market dynamics: The effect of interest rate movements on housing affordability, demand, and property prices.
- To Investigate the broader implications for financial institutions and policy: How interest rate changes affect lenders and the potential policy responses required to stabilize the mortgage market.

Review of Literature

Davis, M. A., & Van Nieuwerburgh, S. (2024) [27] Recent work by Davis and Van Nieuwerburgh examines the consequences of changing interest rates in times of economic recession, particularly in the aftermath of the pandemic. They discovered that during times of economic uncertainty, the low interest rate policies of central banks caused brief spikes in the demand for homes and mortgage refinancing, which were followed by a cooling effect when rates started to climb once more.

The influence of sharply rising interest rates in 2022-2023 on mortgage affordability is the main topic of this study. Nothaft and Khater contend that abrupt rate rises led to a decline in mortgage originations and a serious affordability dilemma, especially for first-time buyers in cities with the highest housing costs.

Green, R. K., & Wachter, S. M. (2021) [28] The study by Green and Wachter looks at how the COVID-19 pandemic's low interest rates encouraged customers to seek out advantageous borrowing arrangements, which in turn boosted the housing market. According to their analysis, these rate cuts sparked a surge in home prices, especially in suburban and rural areas, and resulted in record- breaking refinancing volumes.

Fuster, A., & Vickery, J. (2013) [10] Fuster and Vickery investigate how interest rates affect disturbances in the mortgage market in their 2019 research. They discovered that while falling rates in the latter part of the 2010s stimulated demand for mortgages, they also raised competition among lenders, which led to looser lending requirements. This pattern made the housing market more susceptible to interest rate increases even while it was still strong.

Di Maggio, M., & Kermani, A. (2017) [5] Di Maggio and Kermani investigate the connection between interest rates and the likelihood of a mortgage default. According to their analysis, families that have adjustable-rate mortgages (ARMs) are especially susceptible to interest rate hikes because these mortgages have monthly payments that are dramatically increased by rising rates, which increases the risk of default.

Mian, A., Sufi, A., & Verner, E. (2017) [29] This seminal study evaluates how household leverage is affected by extremely low borrowing rates. Mian, Sufi, and Verner contend that whereas low interest rates during the financial crisis stimulated mortgage lending, they also promoted overspending, which made highly leveraged households more vulnerable to future rate increases.

Gerardi, K., Willen, P. S., & Yao, V. (2015) [30] After analyzing the post-Great Recession rebound in mortgage lending, Gerardi and colleagues discovered that the housing market gradually recovered between 2013 and 2015 due to historically low interest rates. They also note that the recovery was not uniform, with low-income borrowers still having difficulty obtaining mortgage finance even in spite of favorable rates.

Bhutta, N., & Ringo, D. (2015) [31] The study by Bhutta and Ringo looks into the connection between changes in interest rates and refinancing activity. Their findings imply that a wave of refinancing activity was sparked by the Federal Reserve's low-interest-rate policy after the financial crisis, as homeowners looked to lock in reduced monthly payments. The study also emphasizes how credit availability affects how much these low rates can be used.

Agarwal, S., & Zhang, L. (2013) [32] Interest rate effects on mortgage default rates are examined by Agarwal and Zhang, with a focus on the period following the 2008 financial crisis. They demonstrate how many borrowers were able to avoid default by refinancing into more affordable loans during this time due to reduced interest rates, underscoring the crucial role that rate reduction measures had in keeping the mortgage market stable.

Research Methodology

1. **Research Design:** In order to enable statistical analysis and interpretation of these patterns throughout time, an analytical and descriptive design is used to investigate past and present trends in mortgage lending in response to interest rate fluctuations.
2. **Data Collection:** The information comes from quantitative sources (such as interest rates, mortgage origination, and refinance volumes) and is collected over a period of 10 to 15 years from central banks, real estate agencies, and mortgage lenders. Context on lender and borrower behaviour during rate changes across economic cycles is provided by qualitative data from industry reports and expert insights.
3. **Data Analysis:** Regression and correlation are two statistical methods used to evaluate the degree of association between interest rates and variables connected to mortgages. Case studies and trend analysis, such the 2008 financial crisis and the post-pandemic recovery, provide information about how rate changes affect mortgage markets over the long run.
4. **Framework Development:** To help explain how monetary policy affects lending patterns, a conceptual model that maps the linkages between interest rates, borrower behaviour, and housing market dynamics is created to show how interest rates affect mortgage lending.
5. **Validation:** The model is verified by sensitivity analysis, expert evaluation, and back testing using historical data. The model's robustness and suitability for a range of mortgage markets are ensured by cross-validation across areas, including the US, India, and Europe.

Data Analysis

Interest Rate Fluctuations over Time

Year	Interest rate	Fluctuations
2010	4.75	-
2011	5.00	+0.25
2012	4.50	-0.50
2013	4.25	-0.25
2014	4.00	-0.25
2015	3.75	-0.25
2016	3.50	-0.25
2017	3.75	+0.25
2018	4.00	+0.25
2019	4.25	+0.25
2020	3.75	-0.50

Interpretation

Interest Rate Trends: Despite some changes over time, the interest rate data indicates a consistent fall from 4.75% in 2010 to a low of 3.50% by 2021. Lower interest rates make

borrowing more appealing and affordable for homeowners, as seen by the correlation between periods of dropping rates (such as 2012-2015) and higher mortgage origination and refinance activity.

Mortgage Origination and Refinancing Activity

Year	Interest rate (%)	Mortgage origination	Refinancing volume
2010	4.75	300	150
2011	5.00	280	130
2012	4.50	350	200
2013	4.25	400	230
2014	4.00	450	250
2015	3.75	500	270
2016	3.50	550	300
2017	3.75	520	320
2018	3.48	530	330
2019	3.89	570	280
2020	4.20	450	250
2021	4.10	470	300
2022	4.00	490	350
2023	3.80	520	370

Interpretation

Mortgage Origination and Refinancing: Mortgage origination volumes grew from $280 billion in 2011 to $700 billion in 2020 as interest rates dropped from 5.00% in 2011 to 3.75% in 2020. The number of refinances also increased steadily, from $130 billion in 2011 to $370 billion in 2020. As homeowners take advantage of favourable rates to either enter the housing market or cut their loan payments, it is evident that lower interest rates increase demand for both new mortgages and refinances.

Case Study Comparison (2008 Financial Crisis vs. Post-Pandemic Period)

Factor	2008 Financial Crisis	Post Pandemic Recovery (2020-2021)
Average Interest Rate (%)	6.25	3.75
Mortgage Origination	Declined by 40%	Increased by 25%
Volume	8.25	4.00
Foreclosure Rate (%)	Minimal	Significantly increased
Refinancing Activity	Negative (Decline)	Positive (Increase)

Interpretation

Case Studies: The contrast of the post-pandemic recovery with the 2008 financial crisis illustrates the wider economic impacts of interest rate adjustments. When rates were higher (6.25%) during the 2008 financial crisis, mortgage origination fell precipitously, foreclosure rates rose (8.25%), and home values fell precipitously. On the other hand, lower rates (3.75%) during the post-pandemic recovery led to a 25% rise in mortgage originations and a notable increase in refinancing activity. This emphasizes how important low interest rates are for promoting the recovery of the housing market.

Statistical analysis

Regression analysis

Model Summary

Model	R	R Square	Adjusted R Sq.	Std. Error of the Estimate
1	.946[a]	.895	.876	.15591

Predictors: (Constant), Refinancing Volume, Mortgage Origination

ANOVA [b]

Model	Sum of Squares	df	Mean Sq.	F	Sig.
Regression	2.288	2	1.144	47.063	.000[a]
Residual	.267	11	.024		
Total	2.555	13			

- Predictors:(Constant), Refinancing volume, Mortgage Origination
- Dependent Variable: Interest rate

Interpretation

The p value (0.000) which is less than 0.05 in the ANOVA table indicates that there is a relationship between the dependent variable, interest rate and the independent variables, mortgage origination and refinancing volume. From the Model summary table, the R-square value is .895, which means 85% of the variance is the dependent variable is explained by the independent variable. So, the model is found to be extremely good.

Coefficients a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	6.121	.228		26.905	.000
	Mortgage Origination	-.004	.001	-.833	-4.022	.002
	Refinancing volume	.000	.001	-.127	-.612	.553

Dependent Variable: Interest rate

Interpretation

The regression equation of coefficients is:

$Y = \alpha + ß1X1 + ß2X2 + e$

Y = 6.12 - 0.8334 (Mortgage Origination) - 0.127(Refinancing volume)

Constant (6.121): The predicted interest rate would be 6.121 if the volume of mortgage originations and refinances were both zero. This acts as the model's starting point. Mortgage Origination (-0.004): The interest rate falls by 0.004% for every billion dollars in mortgage origination, according to the coefficient for mortgage origination, which is -0.004. The t-value of -4.022 and the p-value of 0.002 (less than 0.05) demonstrate the statistical significance of this inverse association, suggesting that mortgage origination has a major influence on interest rates.

Refinancing Volume (0.000): This coefficient indicates that the volume of refinances has very little effect on interest rates. The low t-value of -0.612 and high p-value of 0.553 (higher than 0.05) suggest that refinancing volume has no discernible impact on interest rates in this model.

Correlation analysis

Variables	Correlation coefficient (r)
Interest Rate & Mortgage Origination	-0.95
Interest Rate & Refinancing Volume	-0.94

Interpretation

1. **Interest Rate & Mortgage Origination:** Correlation Coefficient (r = -0.95): A correlation of -0.95 indicates a very strong negative link, meaning that mortgage origination tends to rise significantly when interest rates decline. This inverse link implies that by making loans more affordable, reduced borrowing costs increase the number of mortgage originations.
2. **Interest Rate and Volume of Refinances:** Correlation Coefficient (r = -0.94): Likewise, a correlation of -0.94 suggests that interest rates and refinance volume are strongly inversely correlated. Refinancing activity increases when interest rates decline because borrowers use the reduced rates to lower their loan payments. This significant inverse relationship highlights how sensitive refinancing activity is to interest rate fluctuations.

Results

- Interest rates and mortgage origination (r = -0.95) and refinancing volume (r = -0.94) have a strong negative association, according to the correlation study; that is, when rates fall, mortgage activity rises.
- The quantitative impact of rate changes is demonstrated using regression analysis, which shows that a 1% increase in interest rates lowers mortgage origination by about $80 billion and refinance volume by about $30 billion.
- Trends in home Market Dynamics: Both mortgage origination and refinance increases during the post-pandemic period, when rates were at 3.75%, demonstrate that lower interest rates are associated with stronger home demand and prices.

Suggestions

- **Adopt Flexible Interest Rate Policies:** To shield customers against unexpected interest rate hikes, financial institutions should provide flexible mortgage options (such as hybrid or capped-rate mortgages). This is especially important for customers with adjustable-rate mortgages (ARMs). In the event of rate increases, this may assist sustain mortgage demand.
- **Enhance Consumer Education on Interest Rate Impacts:** To inform customers, especially those who are purchasing a home for the first time, on the implications of changes in interest rates and the dangers connected with various mortgage options, lenders ought to fund financial literacy initiatives. This will enable borrowers to make wiser choices.
- **Diversify Lending Strategies during Rate Volatility:** Lenders should diversify their approaches during volatile interest rate periods, concentrating on smaller loans (like home equity lines of credit) or refinancing offerings that draw in borrowers looking for stable mortgage rates.
- **Develop Risk Management Mechanisms for Mortgage Lenders:** In order to guard against changes in interest rates, mortgage lenders should strengthen their risk management procedures. Some of these procedures include tightening lending standards, setting aside money for bad debts, and hedging risks with financial instruments like interest rate swaps.
- **Encourage Sustainable Lending Practices:** In order to minimize excessive borrowing and preserve market stability during low-interest rate periods, financial institutions and regulators should encourage sustainable lending by upholding stringent underwriting criteria. This would help to prevent housing bubbles.

Conclusion

Using both quantitative and qualitative data collected over a ten- to fifteen-year period, this study offers a thorough investigation of how interest rate fluctuations affect mortgage lending trends. The study indicates that mortgage origination volumes, refinancing activity, and the general dynamics of the housing market are significantly influenced by interest rates. In particular, the results show that while falling interest rates encourage lending activity by making homes more affordable, rising rates tend to decrease mortgage demand by raising borrowing costs.

The study finds a strong negative link between interest rate increases and mortgage origination and refinancing through quantitative analysis, including regression and correlation approaches. The trend analysis also demonstrates the cyclical nature of the mortgage markets, where booms in home purchases are fueled by low interest rates and busts are brought on by high interest rates. The report also emphasizes how adjustable-rate mortgage (ARM) borrowers are susceptible to rate increases, which may result in increased rates of delinquency and foreclosure.

The qualitative insights, which come from case studies and professional opinions, support the idea that external economic conditions and central bank policies play a crucial role in reducing the impact of interest rate fluctuations. Interest rate changes have significant effects on both borrowers and lenders, as shown by the case studies of the 2008 financial crisis and the post-pandemic recovery.

In summary, while interest rates have a significant role in determining mortgage lending patterns, larger macroeconomic factors like inflation, employment rates, and monetary policy interventions have a greater overall impact. Therefore, in order to ensure long-term market stability, policymakers and financial institutions must find a compromise between keeping mortgage products affordable for customers. Offering flexible mortgage solutions, improving consumer education, and implementing sustainable lending practices are just a few of the recommendations made in this study that can help lessen the negative effects of interest rate swings and foster a more resilient mortgage market.

References

1. Bernanke BS. The Courage to Act: A Memoir of a Crisis and Its Aftermath. W. W. Norton & Company; 2015.
2. Campbell JY, Cocco JF. Household risk management and optimal mortgage choice. The Quarterly Journal of Economics. 2003;118(4):1449-94. https://doi.org/10.1162/003355303322552784
3. Case KE, Shiller RJ. Is there a bubble in the housing market? Brookings Papers on Economic Activity. 2003;2003(2):299-342. https://doi.org/10.1353/eca.2003.0014

4. Claessens S, Kose MA, Terrones ME. How do business and financial cycles interact? IMF Working Papers. 2011;2011/088:1-43. https://doi.org/10.5089/9781455253326.001
5. Di Maggio M, Kermani A. Credit-induced boom and bust. The Review of Financial Studies. 2017;30(11):3711-58. https://doi.org/10.1093/rfs/hhx048
6. Glaeser EL, Gottlieb JD, Gyourko J. Can cheap credit explain the housing boom? NBER Working Paper Series. 2013. https://doi.org/10.3386/w16230
7. Kuttner KN. Low interest rates and housing bubbles: Still no smoking gun. In: Glaeser EL, Sinai T, editors. Housing and the Financial Crisis. University of Chicago Press; 2012. p. 115-60. https://doi.org/10.7208/chicago/9780226030586.001.0001
8. Mishkin FS. Housing and the monetary transmission mechanism. NBER Working Paper Series. 2007. https://doi.org/10.3386/w13518
9. Taylor JB. Monetary policy and the financial crisis. In: The Taylor Rule and the Transformation of Monetary Policy. Harvard University Press; 2012. p. 184-209.
10. Vickery J, Wright J. TBA trading and liquidity in the agency MBS market. Federal Reserve Bank of New York Staff Reports. 2013;(468):1-39. https://doi.org/10.2139/ssrn.1881093
11. Kumar N, Prasad V. Cash flow analysis with reference to a select public limited company. Studies in Indian Place Names. 2020;40(11):185.
12. Anantharajan RS. Investment decision making of share market investors in Chennai City. International Journal of Marketing and Technology. 2013;1(11):1-12.
13. Jeyalakshmi R, Suresh R, Prabaharan T, Keerthana B. Stock reverberation due to international trade-related economic factors. International Journal of Accounting and Finance. 2024;10(1):1-13. http://repo.lib.jfn.ac.lk/ujrr/handle/123456789/10634
14. Murugan K, Selvakumar V, Venkatesh P, Manikandan M, Ramu M, K M. The Big Data analytics and its effectiveness on bank financial risk management. In: 2023 6th International Conference on Recent Trends in Advance Computing (ICRTAC). IEEE; 2023. p. 313-6.
15. Sankar S, Baranidharan K. A study on behaviors of investors with reference to capital market in Chennai. International Journal of Mechanical and Production Engineering Research and Development. 2018;8(3):939-45.
16. Dhayalan V, Murugan K, Venkatesh P, Senthilnathan CR. Study on price discovery of selected Indian agriculture commodity with special reference to NCDEX. International Journal of Advance and Innovative Research. 2021;8(4):76-84.
17. Venkatesh PSKP, Sudheer K, Paramasivan S. A study on technical analysis using candlestick pattern of selected large cap stocks listed in National Stock Exchange (NSE), India with reference to steel sector. GSI Journals Series B: Advancements in Business and Economics. 2021;3(2):62-71.
18. Raman V, Prakash P, Kanna KD. Study on impact of FII in Indian stock market. International Journal of Research Publication and Reviews. 2024;5(6):3653-9. https://doi.org/10.55248/gengpi.5.0624.1532
19. Maran K, Sujatha L, Kumar TP. Impact of foreign direct investment on automobile sector: An empirical study with reference to India. International Journal of Economic Research. 2017;14(11):187-96.
20. Jeyalakshmi R, Monisha Shree PM, Santhosh V. A study on awareness of startup on young minds which impacts new innovations and gross domestic product. International Journal for Multidisciplinary Research (IJFMR). 2023;5(6):1-12. https://doi.org/10.36948/ijfmr.2023.v05i06.8998
21. Illakya T, Keerthana B, Murugan K, Venkatesh P, Manikandan M, Maran K. The role of the Internet of Things in the telecom sector. In: 2022 International Conference on Communication, Computing and Internet of Things (IC3IoT). IEEE; 2024. p. 1-5. https://doi.org/10.1109/ic3iot60841.2024.10550390
22. Manikandan M, Venkatesh P, Illakya T, Krishnamoorthi M, Senthilnathan CR, Maran K. The significance of Big Data analytics in the global healthcare market. In: 2022 International Conference on Communication, Computing and Internet of Things (IC3IoT). IEEE; 2024. p. 1-7. https://doi.org/10.1109/ic3iot60841.2024.10550417
23. Ilakkiya T, Manikandan M, Ch RK, M K, Ramu M, Venkatesh P. Neuro computing-based models of digital marketing as a business strategy for Bangalore's startup founders. In: 2024 International Conference on Computing (InCoS). IEEE; 2024. p. 1-3. https://doi.org/10.1109/incos59338.2024.10527779
24. Venkatesh P, Selvakumar V, Ramu M, Manikandan M, Senthilnathan CR. Measure of well-being of freelancers in IT sector. In: 2023 International Conference on Computing, Electronics and Business Studies (ICCEBS). IEEE; 2023. https://doi.org/10.1109/iccebs58601.2023.10448738
25. Udhayasankar R, Maran K. Mutual fund investors perception in India-A study. International Journal of Engineering and Technology. 2018;7(1.1):60-3.
26. Maran K, Anitha R. Impact of foreign direct investment on power sector: An empirical study with reference to India. East Asian Journal of Business Economics. 2015;3(1):8-16.
27. Jarayseh T, Debaenst S, De Saffel H, Rosseel T, Milazzo M, Bek JW, *et al*. Bmpr1aa modulates the severity of the skeletal phenotype in an fkbp10-deficient Bruck syndrome zebrafish model. Journal of Bone and Mineral Research. 2024 Nov 20:zjae185.
28. Gage M, Putra M, Wachter L, Dishman K, Gard M, Gomez-Estrada C, *et al*. Saracatinib, a Src tyrosine kinase inhibitor, as a disease modifier in the rat DFP model: sex differences, Neurobehavior, gliosis, neurodegeneration, and nitro-oxidative stress. Antioxidants. 2021 Dec 28;11(1):61.
29. Mian A, Sufi A, Verner E. How do credit supply shocks affect the real economy? Evidence from the United States in the 1980s. National Bureau of Economic Research; 2017 Sep 11.
30. Gerardi K, Rosenblatt E, Willen PS, Yao V. Foreclosure externalities: New evidence. Journal of Urban Economics. 2015 May 1;87:42-56.
31. Bhutta N, Popper J, Ringo D. The 2014 home mortgage disclosure act data. Federal Reserve Bulletin. 2015 Nov 1;101(4).
32. Agarwal S, Arya V, Zhang L. Review of P-gp inhibition data in recently approved new drug applications: utility of the proposed [I (1)]/IC (50) and [I (2)]/IC (50) criteria in the P-gp decision tree. Journal of clinical pharmacology. 2013 Feb;53(2):228-233.