

THE SEM (STRUCTURED EQUATION MODELING) APPROACH TO THE STUDY OF FUNDING OF REAL ESTATE BY NATIONALIZED BANKS IN INDIA

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ABSTRACT:

The purpose of this study is to examine different lending interest rates for Real estate loans and to see the influence of Real Estate advances, Indirect Loans by public sector banks on total Real estate sector development in India by Measurement Model assessment and Structural Model assessment by using the Partial Least Square Structured Equation Modeling (PL-SEM) Method. The outcome of Structural model that is bootstrapping technique shows that there is the influence of Real Estate Advances, Indirect Loans by public sector banks on Total Real estate sector development in India. In other words, Public sector banks are contributing more to Real Estate Sector development in India.

Keywords: Real Estate Advances, Interest Rates, Public Sector Banks, Amos, Path Diagram

Jel Codes: L85, R33, G21, C1, R45

INTRODUCTION:

The Real Estate Market of India has a growing and significant market which is untapped. India is the very price sensitive and competitive market for Real Estate Sector Development in India. The Real Estate Advances plays the pivotal role in the growth of the Real Estate Sector Development in India. The tax incentives given to the Real Estate Sector Finance by the government of India in the annual budget of 2001 leads to increase the transactions related to the Real Estate buying and selling of the properties as compared to the other periods.

The buyers are basically the end-users rather than the investors as the new class of buyers are basically young and they have the knowledge of all the legal documents and approvals. As related to the economy of India the Real Estate sector has the capacity to generate the demand and income for the types of equipments, materials and, services [2].

The realty expansion in India has given a new face to finance sector in India to the real estate advances. This helps the finance companies to provide the investment for Real estate sector development in India as they are facing competition but leads to increase in investment of the Real Estate Sector Development in India [7].

The study related to the Real Estate Advances and Interest Rates of Public Sector Banks should be taken into consideration to know the aspects of banks in Real estate sector development in India. The banks include State bank of India, Punjab National Bank, Canara Bank, Industrial Development Bank of India (IDBI) and Indian Bank which provides Real estate advances and Indirect Loans for development of Real estate sector in India has been taken into consideration by using Partial Least Square Structural Equation Modeling (PL-SEM).

Partial Least square Structured Equation Modeling (PL-SEM) helps in using multiple variables and criteria variables construct the unobserved (latent Variables) and also helps in constructing model errors in measurement of observed variables [8].

1. REVIEW OF LITERATURE:

Ghosh Amit [4] examined the real estate loans which reflect regional banking and economic conditions. The purpose of this paper is to examine state-banking industry specific as well as regional economic determinants for real estate lending of commercial banks across 52 states.

Mamata.T [7] has analyzed the study on issues related to Housing Finance: an experience with State Bank of India. It highlights certain areas of the banker and customer in specific to State Bank of India in housing finance in comparison with competitors in the housing industry and also focuses on recovery system followed by State bank of India.

Deb Sumanta [1] studies the Indian real estate market and potential of House price Indices as an indicative Tool: Cases and Concepts. The study is based on the management of prices of real estate particularly

residential housing is important to the market economy as well as individual household.

Durafe Anirudha and Singh Manmeet.Dr.[2] study the Banks capital buffer and the business cycle: Evidence for India. The Regression analysis has been applied both to public and private sector banks which show business cycle is having the insignificant impact on the capital buffer but with different signs.

Yadav S.K.S Dr. [11] analyzes the Performance evaluation of Banks in India. The study is related to the examination of the performance of consolidated operations of public and private sector banks in India.

Objectives of the Study:

- To Study the trend of Lending Rate of Interest on Real Estate Sector Loans provided by Public Sector Banks in India.
- To Study the impact of Real Estate Advances and Indirect Loans by public sector banks on total real estate sector development in India.

2. RESEARCH METHODOLOGY:

The research is descriptiveⁱⁱⁱ in nature. The data is collected from the research papers, reports. The data is based on the secondary sources. The sample banks include State bank of India, Punjab National Bank, Canara Bank, Industrial Development Bank of India (IDBI) and Indian Bank which provide loans at different (lending) interest rates, real estate advances and Indirect Lending for the development of Real estate sector have been taken into consideration for the study.

Statistical Tools:

The Measurement Model has and Structural Model assessment has been employed to study the impact of Real estate advances and indirect loans by Public Sector Banks on Total Real Estate Sector Development in India by using Partial Least Square Structured Equation Modeling.

Hypothesis^{iv} of the Study:

Ho^v: There is no impact of Real Estate advances and Indirect Loans by public sector banks on Total Real Estate sector development in India.

H1^{vi}: There is the impact of Real Estate advances and Indirect Loans by public sector banks on Total Real Estate Sector development in India.

Public Sector Banks Interest Rates for Real Estate Sector Loans in India:

Table1: State Bank of India (SBI) Interest Rates For Real Estate Sector Loans in India

Years	MCLR	Cash Credit		Demand Loan		Term Loan(for all tenures)	
		Rate of Interest		Rate of Interest		Rate of Interest	
		Min	Max	Min	Max	Min	Max
2012	9.875	6.25	16.8125	4.875	15.875	4	17.3125
2013	9.8	7	17	6	16.45	4	17.55
2014	9.925	7	17.025	6	16.45	4	17.8
2015	9.675	7	17.05	6	16.45	4	17.95
2016	8.925	9	17.05	7.5	16.45	4	18
2017E	9.0325	8.9	17.145	7.65	16.68	4	18.255

Source: Reserve Bank of India Database.

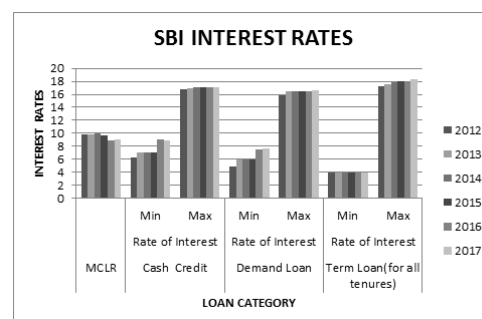


Figure1: State Bank of India (SBI) Interest Rates for Real Estate Loans

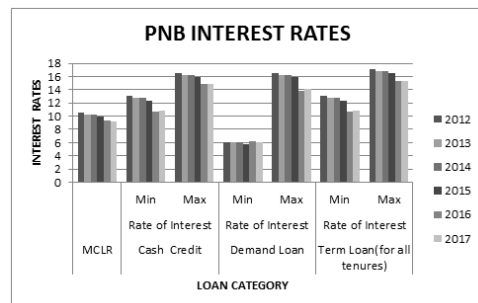
Interpretation:

The Table 1 and Figure 1 show Marginal Credit Lending Rate (MCLR) and lending interest rate for Real Estate Sector by the State Bank of India (SBI). The Marginal Credit Lending Rate (MCLR) is 9.875, 9.8, 9.925, 9.675, 8.925, and 9.0325 which shows the decrease in some points. The Rate of Interest for Cash Credit ranges between (Minimum 6.25 , 7 , 7 , 7 , 9 , 8.9) and (Maximum 16.8125 , 17 , 17.025 , 17.05 , 17.05 , 17.145) , for demand loan category ranges between (Minimum 4.875 , 6 , 6 , 6 , 7.5 , 7.65) and (Maximum 15.875 , 16.45 , 16.45 , 16.45 , 16.45 , 16.68) and for Term Loan ranges between (Minimum 4 , 4 , 4 , 4 , 4) and (Maximum 17.3125 , 17.55 , 17.8 , 17.95 , 18 , 18.255). It reflects that rate of interest shows the increasing trend for different loan category for Real Estate sector development in India.

Table 2: Punjab National Bank (PNB) Interest Rates for Real Estate Loans in India

Years	MCLR	Cash Credit		Demand Loan		Term Loan(for all tenures)	
		Rate of Interest		Rate of Interest		Rate of Interest	
		Min	Max	Min	Max	Min	Max
2012	10.5	13.06	16.5	6	16.5	13.06	17.06
2013	10.25	12.75	16.25	6	16.25	12.75	16.75
2014	10.25	12.75	16.25	6	16.25	12.75	16.75
2015	9.96	12.4	15.9	5.71	15.9	12.4	16.46
2016	9.3	10.7	14.9	6.1625	13.9	10.7	15.3
2017	9.245	10.811	14.895	5.985	14.095	10.811	15.321

Source: Reserve Bank of India Database.

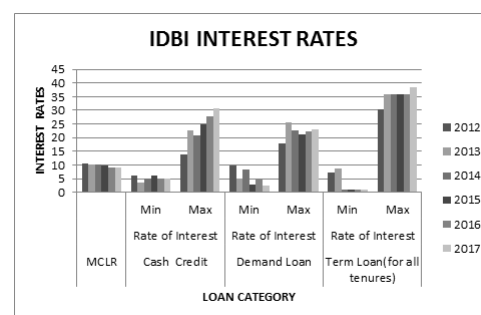
**Figure2: Punjab National Bank Interest Rates for Real Estate Loans****Interpretation:**

The Table 2 and Figure 2 show Marginal Credit Lending Rate (MCLR) and lending interest rate for Real Estate Sector by the Punjab National Bank (PNB). The Marginal Credit Lending Rate (MCLR) is 10.5, 10.25, 10.25, 9.96, 9.3, and 9.245 which shows the decrease in some points. The Rate of Interest for Cash Credit ranges between (Minimum 13.06 , 13.06 , 12.75 , 12.75 , 12.4 , 10.7 , 10.811) and (Maximum 16.5 , 16.25 , 16.25 , 15.9 , 14.9 , 14.895) , for demand loan category ranges between (Minimum 6 , 6 , 6 , 5.71 , 6.1625 , 5.985) and (Maximum 16.5 , 16.25 , 16.25 , 15.9 , 13.9 , 14.095) and for Term Loan ranges between (Minimum 13.06 , 13.06 , 12.75 , 12.75 , 12.4 , 10.7 , 10.811) and (Maximum 17.06 , 16.75 , 16.75 , 16.46 , 15.3 , 15.321). It reflects that rate of interest shows the increasing trend for different loan category for Real Estate sector development in India.

Table3: IDBI (Industrial Development Bank of India) Interest Rates for Real Estate Loans in India:

Years	MCLR	Cash Credit		Demand Loan		Term Loan(for all tenures)	
		Rate of Interest		Rate of Interest		Rate of Interest	
		Min	Max	Min	Max	Min	Max
2012	10.5625	6.25	13.75	10	17.75	7.375	30.2
2013	10.25	3.6875	22.625	4.9675	25.6875	8.875	36
2014	10.25	4.9375	20.9375	8.2875	22.75	1	36
2015	10	6	24.6875	2.8075	21.0625	1	36
2016	9.2375	5	27.725	4.9125	22.25	1	36
2017	9.1	5.1	30.9	2.4	23.2	1	38.3

Source: Reserve Bank of India Database.

**Figure3: Industrial Development Bank of India (IDBI) Interest Rate for Real Estate Loans**

The Table 3 and Figure 3 show different Marginal Credit Lending Rate (MCLR) and lending interest rate for Real Estate Sector by Industrial Development Bank of India (IDBI). The Marginal Credit Lending Rate (MCLR) is 10.5625, 10.25, 10.25, 10, 9.2375, and 9.1 which shows the decrease in some points. The Rate of Interest for Cash Credit ranges between (Minimum 6.25 , 3.6875 , 4.9375 , 6 , 5 , 5.1) and (Maximum 13.75 , 22.625 , 20.9375 , 24.6875 , 27.725 , 30.9) , for demand loan category ranges between (Minimum 10 , 4.9675 , 8.8275 , 2.8075 , 4.9125 , 2.4) and (Maximum 17.75 , 25.6875 , 22.75 , 21.0625 , 22.25 , 23.2) and for Term Loan ranges between (Minimum 7.375 , 8.875 , 1 , 1 , 1 , 1) and (Maximum 30.2 , 36 , 36 , 36 , 36 , 38.3). It reflects that rate of interest shows the increasing trend for different loan category for Real Estate sector development in India.

Table 4: Canara Bank Interest Rates for Real Estate Loans in India:

Years	MCLR	Cash Credit		Demand Loan		Term Loan(for all tenures)	
		Rate of Interest		Rate of Interest		Rate of Interest	
		Min	Max	Min	Max	Min	Max
2012	10.5	11.06	17.75	11.06	17.75	11.06	18.31
2013	10.1	10.78	17.16	10.78	17.16	10.78	17.16
2014	10.2	10.9	17.21	10.9	17.21	10.9	17.21
2015	9.9	10.15	16.96	10.15	16.96	10.15	17.525
2016	9.3	9.65	16.65	9.65	16.65	9.65	17.4
2017	9.2	9.4	16.4	9.4	16.4	9.4	17.08

Source: Reserve Bank of India Database.

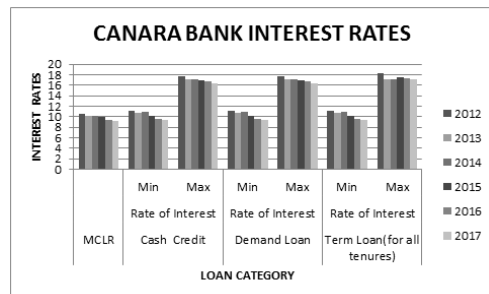


Figure4: Canara Bank Interest Rates for Real Estate Loans

Interpretation:

The Table 4 and Figure 4 show Marginal Credit Lending Rate (MCLR) and lending interest rate for Real Estate Sector by the Canara Bank. The Marginal Credit Lending Rate (MCLR) is 10.5 , 10.1 , 10.2 , 9.9 , 9.3 , 9.2 which shows the decrease in some points. The Rate of Interest for Cash Credit ranges between (Minimum 11.06 , 10.78 , 10.9 , 10.15 , 9.65 , 9.4) and (Maximum 17.75 , 17.16 , 17.21 , 16.96 , 16.65 , 16.4) , for demand loan category ranges between (Minimum 11.06 , 10.78 , 10.9 , 10.15 , 9.65 , 9.4) and (Maximum 17.75 , 17.16 , 17.21 , 16.96 , 16.65 , 16.4) and for Term Loan ranges between (Minimum 11.06 , 10.78 , 10.9 , 10.15 , 9.65 , 9.4) and (Maximum 18.31 , 17.16 , 17.21 , 17.525 , 17.4 , 17.08). It reflects that rate of interest shows the increasing trend for different loan category for Real Estate sector development in India

Table 5: Indian Bank Interest Rates for Real Estate Loans in India:

Years	MCLR	Cash Credit		Demand Loan		Term Loan(for all tenures)	
		Rate of Interest		Rate of Interest		Rate of Interest	
		Min	Max	Min	Max	Min	Max
2012	10.5625	7.9375	19.0625	10.5625	19.0625	7.9375	19.5625
2013	10.2	7	19.9	10.2	19.9	4	21.4
2014	10.225	7	19.9	10.225	19.9	4	21.4
2015	9.875	10.025	19.75	10.025	19.75	4	21.35
2016	9.425	9.725	19.6	9.725	19.6	4	21.3
2017	9.27	10.3	19.9	9.5	19.9	2.4	22.03

Source: Reserve Bank of India Database.

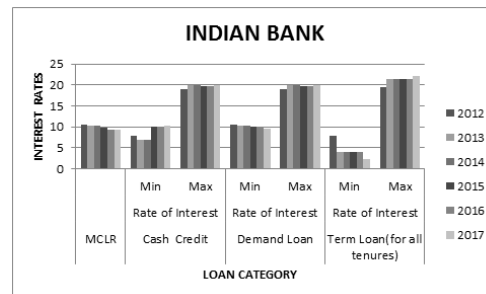


Figure 5: Indian Bank Interest Rates for Real Estate Loans

Interpretation:

The Table 5 and Figure 5 show Marginal Credit Lending Rate (MCLR) and lending interest rate for Real Estate Sector by the Indian Bank. The Marginal Credit Lending Rate (MCLR) is 10.5625 ,10.2 ,10.225 ,9.875 ,9.425 ,9.27 which shows the decrease in some points. The Rate of Interest for Cash Credit ranges between (Minimum 7.9375 , 7 , 10.025 , 9.725 , 10.3) and (Maximum 19.0625 , 19.9 , 19.9 , 19.75 , 19.6 , 19.6 , 19.9) , for demand loan category ranges between (Minimum) and (Maximum) and for Term Loan ranges between (Minimum 7.9375 , 4 , 4 , 4 , 4 , 2.4) and (Maximum 19.5625 , 21.4 , 21.4 , 21.35,21.3,22.03). It reflects that rate of interest shows the increasing trend for different loan category for Real Estate sector development in India.



Figure 6: Partial Least Square Structured Equation Modeling Output showing Impact of Real Estate Advances and Indirect Loans by public sector banks on Real Estate Sector Development in India

Source: Authors Own Compilation

Interpretation:

The Figure 6 shows that Real Estate Advances and Indirect Lending are the exogenous variables (Independent Variables) and Total Real Estate Lending is endogenous variable (Dependent Variable). This graph is showing the relationship between exogenous and endogenous variables.

Table 6: Reliability and Validity

	AVE	Composite Reliability	R Square	Cronbachs Alpha	Communal ity	Redundancy
INDIRECT LENDING	0.5828	0.8676	0	0.8134	0.5828	0
REAL ESTATE ADVANCES	0.91	0.9915	0.8862	0.9893	0.9591	0.8494
TOTAL REAL ESTATE LENDING	0.99	1	0.979	0.9999	0.9998	-0.5026

Source: Authors Own Compilation

Interpretation:

The outer model was first assessed by values of composite reliability^{vii} (to assess internal consistency), average variance extracted (AVE) (to assess convergent validity). Cronbach Alpha [6] shows all indicators to be equally reliable. Table 6 shows that the value of the composite reliability is greater than the prescribed value of .70 [5] and value of AVE is found to be greater than 0.50.

Table 7: Correlations

	INDIRECT LENDING	REAL ESTATE ADVANCES	TOTAL REAL ESTATE LENDING
INDIRECT LENDING	1	0	0
REAL ESTATE ADVANCES	0.9414	1	0
TOTAL REAL ESTATE LENDING	0.9902	0.996	1

Source: Authors Own Compilation

Interpretation:

Table 7 demonstrates that the square root of the AVE values for all the correlations was higher than the inter-construct correlations [3] thus establishing the discriminant validity.

Table 8: Cross Loadings

	INDIRECT LENDING	REAL ESTATE ADVANCES	TOTAL REAL ESTATE LENDING
IndirectLending of Canara Bank	0.8314	0	0
IndirectLending of IDBI Bank	0.4301	0	0
IndirectLending of Indian Bank	0.9191	0	0
IndirectLending of PNB Bank	0.9038	0	0
IndirectLending of SBI Bank	0.6131	0	0
Real Estate Advances of Canara Bank	0	0.9726	0
Real Estate Advances of PNB Bank	0	0.9969	0
Real Estate Advances of SBI Bank	0	0.9858	0
Real Estate Sector of Indian Bank	0	0.9956	0
Real Estate advances of IDBI	0	0.9449	0
Total Real Estate Lending of IDBI	0	0	1
Total Real Estate Lending of Indian Bank	0	0	1
Total Real Estate lending of Canara Bank	0	0	1
Total Real Estate lending of PNB Bank	0	0	0.9998
Total Real estate lending of SBI BANK	0	0	0.9996

Source: Authors Own Compilation

Interpretation:

The Table 8 show loadings of the individual category are higher than the respective cross-loadings which provide the proof of discriminant validity. The item loadings are higher than the value of the 0.6 which has been prescribed [9]. Some indicator items from the variables should be dropped that resulted in improved reliability and validity of those variables.

Structural Model Assessment:

Table 9: Bootstrapping Technique (Path Coefficients)

Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	Standard Error (STERR)	T Statistics (O/STERR)
INDIRECT LENDING -> REAL ESTATE ADVANCES	0.9414	0.9414	0.0009	1078.9149
INDIRECT LENDING -> TOTAL REAL ESTATE LENDING	-0.2457	-0.246	0.0067	36.9243
REAL ESTATE ADVANCES -> TOTAL REAL ESTATE LENDING	1.2173	1.2176	0.0061	198.4701

Source: Authors Own Compilation

Interpretation:

The Table 9 show Inner model was assessed to test the relationship between the exogenous and endogenous variables. The path coefficients were obtained by using non-parametric, bootstrapping routine technique [10]. In this, the two exogenous variables indirect lending and Real estate advances have R square about 0 and 0.8862 which shows the sufficient accuracy of the structural model. Since the t- value is greater than 1.96 which reflects that alternative hypothesis is accepted i.e. there is the impact of Real estate advances and indirect loans by public sector banks on total real estate sector development in India.

Table10: Blindfolding Technique (Calculation of Q square)

Total	SSO	SSE	Q square(1-SSE/SSO)
REAL ESTATE ADVANCES	40	8.7604	0.781
TOTAL REAL ESTATE LENDING	40	2.9174	0.9271
Case 1	SSO	SSE	1-SSE/SSO
REAL ESTATE ADVANCES	8.0439	0.7036	0.9125
TOTAL REAL ESTATE LENDING	6.1799	0.5413	0.9124
Case 2	SSO	SSE	1-SSE/SSO
REAL ESTATE ADVANCES	7.5679	1.7035	0.7749
TOTAL REAL ESTATE LENDING	2.5715	0.1206	0.9531
Case 3	SSO	SSE	1-SSE/SSO
REAL ESTATE ADVANCES	6.3789	1.8982	0.7024
TOTAL REAL ESTATE LENDING	2.7421	0.1214	0.9557
Case 4	SSO	SSE	1-SSE/SSO
REAL ESTATE ADVANCES	2.6459	1.6705	0.3687
TOTAL REAL ESTATE LENDING	6.0471	0.4895	0.9191
Case 5	SSO	SSE	1-SSE/SSO
REAL ESTATE ADVANCES	1.8176	0.5794	0.6812
TOTAL REAL ESTATE LENDING	7.2229	0.4627	0.9359

Source: Authors Own Compilation

Interpretation:

According to Table 9 the value of Q square is greater than zero which shows the predictive relevance and reflects that the alternate hypothesis (There is no impact of Real Estate advances and Indirect Loans by public sector banks on Total Real Estate Sector development in India) is accepted and null hypothesis is rejected (There is no impact of Real Estate advances and Indirect Loans by public sector banks on Total Real Estate Sector Development in India.) It also reflects the structure of the model is also correct.

2. CONCLUSION:

The State bank of India, Punjab National Bank, Industrial Development Bank of India, Canara and Indian bank shows different lending interest rate for Real Estate Loans for different time periods. The bootstrapping and blindfolding technique show that there is impact of Real estate advances and indirect

loans by public sector banks on total real estate sector development in India which reflects that alternate hypothesis is accepted and null hypothesis (There is no impact of Real Estate advances and Indirect Loans by public sector banks on Total Real Estate sector development in India) is rejected.

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ⁱⁱⁱ Descriptive research is used to describe characteristics of a population or phenomenon being studied

^{iv} A hypothesis is a statement created by researchers when they speculate on outcome or experiment.

^v Null Hypothesis (It shows there is no observed relationship between two measured phenomena.)

^{vi} Alternate Hypothesis (It states that the population parameter is different than the value of the population parameter in Null Hypothesis)

^{vii} Composite reliability is an appropriate measure of internal consistency reliability because it accounts for different outer loadings of the indicator.

