PRICING OF RESIDENTIAL MORTGAGE BACKED SECURITIES: A STUDY ON HOUSING FINANCE SECTOR IN INDIA

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DEDICATED

TO

My Mother

Late Srimati Prabhavati Tripathi

CERTIFICATE

This is to certify that the thesis entitled **"Pricing of Residential Mortgage Backed Securities: A Study on Housing Finance Sector in India"** being submitted by **Mr. Gireesh Chandra Tripathi** to the Indian Institute of Technology, Delhi for the award of the degree of Doctor of Philosophy, is a record of bonafide research work carried out by him. He has worked under my guidance and supervision and has fulfilled the requirements for submission of this thesis, which to my knowledge, has reached the requisite standard.

The results contained in this thesis have not been submitted in part or in full, to any other university or institute for award of any degree or diploma.

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ABSTRACT

In a developing country like India, housing is a major economic issue. Funds for housing are in short supply while its demand is continuously rising. As a result there has been an acute shortage of dwelling units. Specialized Housing Finance Institutions (HFIs) have been created to ease the problem, but they are also constrained by shortage of funds. Thus there is a need for evolution of new ways for continuous fund generation. Securitization of home loans is one such method, through which capital market funds can be channelized to housing thorough instruments termed as Residential Mortgage-Backed Security (RMBS).

The first RMBS instrument in India came to existence in 2000, when National Housing Bank (NHB) securitized a pool of housing loans originated by Housing Development Finance Corporation (HDFC) Limited. However, RMBS market could not develop due to absence of necessary financial infrastructure. As a result, only a handful of pools are securitized so far and only Pass Through Certificates (PTCs) are being transacted through the private placement route. This prompted the researcher to undertake the present study towards development of a ready to use model for pricing of securitized instruments.

The scope of study is limited to 13 NHB pools, data of which was collected for the period between June 2000 and September 2008. Since the pools commenced on different dates, the data set represents an unbalanced panel with 13 cross sections. Questionnaire survey has been conducted to evaluate stakeholders' perception on risk premiums. The cash-flows are estimated based on prepayment, default and prepayment penalty variables. These cash-flows are discounted by the required rates

and summed up to generate the equilibrium price. It has been illustrated with the help of a test pool with similar characteristics as the running pools.

Important findings of are that the prepayment is autoregressive and indifferent to the current level of interest rate. Prepayments ensure that the actual maturity period of the pools is only 65% of the scheduled maturity period. Yield on Government of India Bonds with 10-year maturity is favored as a proxy for the risk free rate and also has been found to follow ARIMA model with reasonable accuracy. The risk premium for PTC-A and PTC-B has been perceived to be 250 and 370 basis points respectively.

Keywords: *Residential Mortgage Backed Securities; Prepayment Models; Securitized Instruments; Pricing; Interest Rate Risk.*

TABLE OF CONTENTS