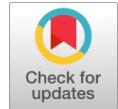


Determinants of Profitability in Indian Housing Finance Companies: An Empirical Analysis

Mahesh Chandra Sharma, Ashok Kumar



Abstract: *Housing Finance Companies (HFCs) are essential non-banking financial institutions (NBFIs) in emerging economies where housing remains an active area of development. To ensure that low-cost and hassle-free housing finance is accessible to customers, it is crucial that HFCs function profitably. While previous studies have studied determinants of risk in financial intermediaries that provide housing finance, this is the first study which focuses on the issue of profitability in the case of HFCs. Specifically, this empirical study identifies determinants of profitability in the case of Indian Housing Finance Companies (HFCs) using the panel data regression method. The study employs a panel dataset of 57 Indian HFCs for the period 2011-2019. The profitability of HFCs is measured using the Return on Assets ratio. The results present three interesting findings. First, HFCs with a larger size exhibit higher profitability, suggesting that smaller HFCs face diseconomies of scale and scope. Second, an increase in interest expenses and compensation to employees is associated with reduced HFC profitability. Lastly, ownership characteristics of the HFC are key determinants of profitability. Specifically, we find that being a subsidiary of a commercial bank increases HFC's profitability. Contrarily, being government-owned and being affiliated to a large business group is negatively associated with HFC profitability.*

Keywords: *HFCs, Housing Finance; Profitability, NBFIs*

I. INTRODUCTION

Housing finance or mortgage financing is regarded as an essential financial service that not only helps individuals and families fulfil their need for housing units but also incentivises real estate development in an economy. Consequently, housing finance companies (HFCs) are essential non-banking financial institutions (NBFIs), especially in emerging economies where housing remains an active area of development. To ensure that low-cost and hassle-free housing finance is accessible to customers, HFCs must function profitably and reach the underserved segments of the economy. However, profitability in HFCs is influenced by a multitude of factors that operate at the firm level.

To this end, we examine firm-level determinants of profitability in housing finance companies by estimating panel dataset regression models using data from Indian housing finance companies that are jointly regulated by the Reserve Bank of India and the National Housing Bank. The housing finance sector in India has witnessed significant growth in recent years, driven by factors such as rising urbanisation, increasing disposable incomes, and government initiatives to promote affordable housing [1]. These factors have contributed to the increased demand for mortgage lending, thereby impacting the profitability of housing finance companies. In addition, the favourable economic reforms implemented in India have created a stable environment in the real estate sector [2], further contributing to increased profitability in housing finance companies. Furthermore, the government's periodic interventions, such as fiscal incentives and exemptions to individuals and corporations, have played a crucial role in promoting finance-led growth in the housing sector and, consequently, in driving the profitability of housing finance companies. However, as the housing finance sector grows in India, HFCs face stiff competition from large commercial banks and new-age financial services firms ('Fintech') to grow further. The extant literature on the profitability of Indian HFCs is limited and includes only descriptive analyses of a small subset of all HFCs in India. Verma [3] studies Dewan Housing Finance Corporation and Canfin Homes for the period of 1991-2021 and concludes that access to low-cost, long-term sources of funds improves HFC profitability. Selvaraj and Kumarie [4] studied 5 Indian HFCs for the period 2010 to 2020 and found that HDFC and HUDCO are the best performing HFCs in India. Similarly, Menon [5] studied 5 Indian HFCs and found that liquidity issues reduce the profitability of HFCs. While these studies provide valuable insights into specific HFCs, a comprehensive analysis of the determinants of profitability in Indian HFCs is lacking. The present study aims to fill this gap by conducting an empirical analysis of firm-level determinants of profitability in Indian housing finance companies using a sample of 57 Indian HFCs for the period 2011-2019. Our results present three interesting findings. First, HFCs with a larger size exhibit higher profitability, suggesting that smaller HFCs face diseconomies of scale and scope. Second, an increase in interest expenses and compensation to employees is associated with reduced HFC profitability. Lastly, ownership characteristics of the HFC are key determinants of profitability. Specifically, we find that being a subsidiary of a commercial bank increases HFC's profitability. Contrarily, being government-owned and being affiliated to a large business group is negatively associated with HFC profitability.

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Our study makes a substantial contribution to the literature by being the first to employ a fixed effects regression model to identify determinants of HFC profitability. Lastly, our empirical results carry policy implications for the regulatory authorities.

II. REVIEW OF LITERATURE

In this section, we present a review of the available relevant literature on the determinants of profitability for housing finance companies. Amongst the earliest studies on the profitability of Indian HFCs, Bhalla and Arora [6] study the impact of financing, operating and staffing expenses on profitability measured using Return on Capital Employed (ROCE). The study employed a simple method of bivariate correlation analysis for a sample of selected Indian HFCs. Further, Manoj [7], [8] examine the operational efficiency and competitiveness in the Indian housing finance sector. The study remarks that apart from the size of the HFC, operational efficiency is a major determinant of HFC performance. To measure operational efficiency, Manoj [7] discusses some key aspects, such as provisioning for non-performing assets (NPAs), cost of source of funds, and asset-liability management (ALM). Ravindra et al. [9] conducted an evaluation of the operational and financial performance of LIC Housing Finance Limited and HDFC Limited using multiple parameters such as loan disbursements, composition of loan disbursements, average loan size, liquidity, solvency and profitability. In a similar effort, Verma [3] studied the growth and profitability of Dewan Housing Finance Corporation and CanFin Homes from 1990-91 to 2020 -21. The study found that based on various profitability measures, out of the two HFCs, CanFin Homes has maintained a superior performance. Following the CAMEL model of regulating financial companies, Chadha and Chawla [10] study a sample of six listed HFCs to conduct benchmarking based on the five factors of capital adequacy, asset quality, managerial efficiency, earnings, and liquidity. The study remarks that the observed profitability is low among the HFCs, and there exists a considerable mismatch in assets and liabilities. Recently, Priya [11]. and Menon [5]. studied the profitability of selected HFCs using correlation and regression analysis. The study explored a variety of firm-level factors such as liquidity, solvency, investment rate, provisioning for NPAs and operational efficiency. Since commercial banks are the primary competitors of HFCs in the housing finance segment, Prabitha and Chalil [12] compare the performance of banks with HFCs on the basis of loan disbursements and growth rates. Most recently, Selvaraj and Kumarie [4] studied efficiency, liquidity, revenues and profitability measures for the period 2010 to 2020 for a sample of five HFCs. In a similar effort, Kumar [13] studies profitability in a sample of six HFCs for the period of 2014 to 2021. The study employs the operating profit ratio, net profit ratio, return on capital employed, and return on assets as measures of HFC profitability. Upon reviewing the existing literature, we identify two major research gaps. Firstly, prior empirical studies have either studied a small sample of the HFCs or listed HFCs. While restricting the sample to the largest HFCs of the Indian economy is useful. However, the majority of Indian HFCs are small/medium-sized and remain

unlisted. Hence as the first major gap in the reviewed literature, we argue that prior studies on the determinants of HFC profitability have largely ignored the small and medium-sized HFCs in their analysis. Secondly, most prior studies have performed only descriptive analysis with the collected data. While descriptive analysis is useful in drawing first inferences about the determinants of HFC profitability, however, to provide credible evidence adopting a rigorous econometric methodology is essential. In the following section, we first describe our sample, which closely represents the population of HFCs in India, and secondly, we build a sound econometric methodology to address the two gaps in the existing literature on determinants of HFC profitability.

III. DATA AND METHODOLOGY

We obtained the data for this study from the Prowessdx database maintained by the Center for Monitoring Indian Economy (CMIE), which provides financial information for a large subset of reporting companies in India. The sample of our study includes 57 Indian HFCs. Data from the annual reports of the National Housing Bank shows that more than 80 unique HFCs operated during the sample period [14], [15], but we only include HFCs for which the database includes three or more years of data for all considered variables. The sample period of our study ranges from 2011 to 2019. We do not consider data from years beyond 2019 due to the onset of the COVID-19 pandemic in India in late January 2020. Following previous studies by Imtiaz et al. [16] and Bhavish et al. [17], we build a fixed effects regression model to estimate the effect of HFC size, interest expense costs, compensation costs and HFC ownership characteristics on HFC profitability measured using Return on Assets (See Eq.1). We use one-year lagged values of explanatory variables to partially alleviate the issue of endogeneity in our regression results (See Table I for the definitions). Further, we control for macroeconomic changes during our sample period by including annual GDP per capita. Lastly, we include year and firm fixed effects to control for unobserved time-invariant heterogeneity at the year and firm levels. This helps to eliminate the potential bias that may arise from time-invariant factors that affect both the dependent variable (HFC profitability) and the independent variables simultaneously.

$$ROA_{it} = \beta_0 + \beta_1 \cdot Size_{it-1} + \beta_2 \cdot ICR_{it-1} + \beta_3 \cdot CR_{t-1} + \beta_4 \cdot GO_{t-1} + \beta_5 \cdot BS_{t-1} + \beta_6 \cdot BG_{t-1} + \beta_7 \cdot GDP_{t-1} + Year\ FEs + Firm\ FEs + \varepsilon_{it} \quad Eq. (1)$$

Table - I: Variable Definitions

Variable	Definition
ROA	Return on Assets, calculated as the ratio of HFC's profit after tax divided by total assets.
Size	Natural logarithm of HFC's total assets.
ICR	Interest Cost Ratio, the ratio of HFC's interest expenses to total income
CR	Compensation Ratio, the ratio of HFC's compensation to employees to total assets.
GO	Government-Owned, the dummy variable for government ownership takes the value of 1 if the

	government is the controlling shareholder of the HFC. Otherwise, 0.
BS	Bank Supported, the dummy variable for bank support would take the value of 1 if the HFC was floated by a scheduled commercial bank. Otherwise, 0.
BG	The dummy variable for large business group affiliation takes the value of 1 if the HFC is floated by a large business group. Otherwise, 0.
GDP	Natural logarithm of Gross Domestic Product per capita.

IV. RESULTS AND DISCUSSION

We present the summary statistics in [Table II](#) for all the continuous variables employed in the regression models. The mean (median) value for our dependent variable, i.e., Return on Assets (ROA), is 0.4% (1.5%). The minimum and maximum values for ROA are -31.4% and 5.9%. We observe that around 15% of the values for ROA are negative, which suggests that many HFCs incurred losses during 2008-2019. The mean (median) values for the total assets of the HFCs in our sample are 193,923 million and 9,307 million, with a standard deviation of 680,213 million. These statistics indicate that a large disparity exists in the sizes of the HFCs in our sample. In terms of total assets, the largest HFC in our sample is the Housing Development Finance Corporation (HDFC) Limited, and the smallest HFC is the Sewa Grih Rin Limited. The mean (median) value for Interest Cost Ratio is 0.496 (0.549), which indicates that on average annual interest expenses amount to 50% of the HFC’s total income. Lastly, the mean (median) value for Compensation Ratio is 0.020 (0.013), which shows that, on average, Indian HFCs spend 2% of the total assets in paying staff expenses in a year.

Table - II: Summary Statistics

Variable	Mean	S.D.	Min	Max
ROA	0.004	0.048	-0.314	0.059
Size	9.014	2.948	1.660	15.867
Assets (in ₹ Millions)	193,923	680,213	4.9	7,777,999
ICR	0.496	0.184	0.007	0.767
CR	0.020	0.027	0.001	0.173
GDP	4.921	0.078	4.771	5.031

[Table III](#) presents the correlation matrix for all the explanatory variables in the regression model. We observe that Size is positively correlated with Interest Cost Ratio, Government Owned dummy, Bank Supported dummy, and Log of GDP but negatively correlated with Compensation Ratio. We foresee potential multicollinearity issues between Size, Interest Cost Ratio, and Compensation Ratio as cross-correlation between the three explanatory variables is more than 0.50 and statistically significant, at the 1% level. Hence, we calculate Variance Inflation Factor (VIF) values for all covariates in the estimated regression models. Since the VIF for all covariates remains less than three, it indicates that the estimated regression model does not have multicollinearity issues.

Table - III: Correlation Matrix

IVs	Size	ICR	CR	GO	BS	BG
ICR	0.55***					
CR	-0.50***	-0.59***				
GO	0.35***	0.37***	-0.26***			
BS	0.37***	0.30***	-0.23***	0.27***		
BG	0.071	0.07	-0.01	-0.24***	-0.21***	
GDP	0.33***	0.12*	0.02	-0.08*	-0.08	-0.04

Note: *p < 0.1; **p < 0.05, ***p < 0.01

Table - IV: Regression Results

	Dependent variable: Return on Assets (ROA)			
	(1)	(2)	(3)	(4)
Size	0.003** (0.001)	0.003** (0.001)	0.011*** (0.003)	0.011*** (0.002)
ICR	-0.066** (0.029)	-0.068** (0.028)	-0.090*** (0.021)	-0.095*** (0.021)
CR	-0.599*** (0.223)	-0.628*** (0.218)	-0.344 (0.259)	-0.383 (0.248)
GO	0.001 (0.004)	0.001 (0.004)	-0.024* (0.014)	-0.022* (0.013)
BS	0.002 (0.003)	0.002 (0.003)	0.030*** (0.007)	0.030*** (0.007)
BG	-0.001 (0.005)	-0.001 (0.005)	-0.039*** (0.014)	-0.039*** (0.013)
GDP	-0.039* (0.022)	-0.010 (0.020)	-0.121*** (0.034)	-0.096*** (0.031)
Constant	0.221** (0.111)	0.082 (0.100)	0.546*** (0.154)	0.422*** (0.141)
Year FEs	No	Yes	No	Yes
Firm FEs	No	No	Yes	Yes
Obs.	382	382	382	382
R ²	0.213	0.239	0.597	0.618
Adj. R ²	0.198	0.206	0.528	0.540
RSE	0.026 (df = 374)	0.026 (df = 365)	0.020 (df = 325)	0.020 (df = 316)
F-Stat.	14.450*** (df = 7; 374)	7.179*** (df = 16; 365)	8.611*** (df = 56; 325)	7.877*** (df = 65; 316)

Note: *p < 0.1; **p < 0.05, ***p < 0.01

We present our main results in [Table IV](#), which reports the estimated coefficients for the regression model presented in Eq. (1). In Table IV, we sequentially introduce fixed effects in the estimation model as we move from columns (1) to (4), to observe the sensitivity of estimated coefficients to alternate specifications. We report the included fixed effects for every column/model in the lower section of the table. The Adjusted R² increases as we sequentially include the fixed effects but remains within the acceptable range, i.e., 0.198 to 0.540. The F test for all the columns is statistically significant at the 1% level, which establishes that the overall significance of the estimated models is greater than the intercept-only model.

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We report heteroskedasticity and autocorrelation (HAC) robust standard errors in the parentheses. Our results in Table IV provide three key findings. First, we find that size is a major determinant of HFC profitability. The coefficient of Size is positive and statistically significant in all columns, which indicates that larger HFCs exhibit higher profitability, ceteris paribus. Second, we find that interest expenses and staff expenses are negatively associated with HFC profitability. The coefficient for Interest Cost Ratio is negative and statistically significant in all columns in Table 4, which establishes that an increase in interest expenses of the HFC is associated with a reduction in HFC profitability. Further, the coefficient for Compensation Ratio is negative in all columns but statistically significant only in columns (1) and (2). The statistical significance of the coefficient disappears once we include firm fixed effects in the model, as shown in columns (3) and (4). Overall, these results show that an increase in staff expenses is negatively associated with HFC profitability. Our third major finding relates to the ownership characteristics of the HFCs in our sample. To investigate the role of ownership, we employ three dummy variables that relate to government ownership, bank support and business group affiliation. We find that the coefficients of ownership dummies gain statistical significance once we include firm fixed effects, i.e., in columns (3) and (4) of Table IV. The coefficients for Government Owned dummy are negative and statistically significant at the 10% level. This indicates that HFCs with government ownership exhibit lower profitability. Such a result could be indicative of either lack of management expertise at the HFCs or the social welfare role of these HFCs. Next, we find that the coefficients for Bank Supported dummy are positive and statistically significant at the 1% level. This indicates that HFCs promoted by commercial banks exhibit higher profitability than the other HFCs in our sample. A possible explanation for this result may be reduced interest expenses and cross-selling benefits due to the supporting bank. Lastly, we find that the coefficients for BG dummy are negative and statistically significant at the 1% level. This result shows that HFCs that are affiliated to business groups exhibit lower profitability. Given that previous studies have presented evidence of poor governance and tunnelling in business group firms, this result may be indicative of similar issues in BG-affiliated HFCs.

V. CONCLUSION

The study employs a panel dataset of 57 Indian housing finance companies for the period of 2011-2019 and investigates if size, costs, and ownership characteristics are significant determinants of profitability for HFCs. Our results present three interesting findings. First, HFCs with a larger size exhibit higher profitability, suggesting that smaller HFCs face diseconomies of scale and scope. Second, an increase in interest expenses and compensation to employees is associated with reduced HFC profitability. Lastly, ownership characteristics of the HFC are key determinants of profitability. Specifically, we find that being a commercial bank subsidiary increases HFC's profitability. Contrarily, being government-owned and affiliated with a large business group is negatively associated with HFC profitability. This study makes a substantial contribution to the literature on housing finance companies by discussing the role of size, costs, and ownership characteristics in determining their profitability.

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