# Ownership concentration, institutional ownership and stock return: An Intelligent Machine Learning Approach

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## Abstract

The main focus of this paper is to find out the effect of ownership concentration and institutional ownership on the stock return during the pre and post-crisis period. To carry this study, two study periods are used- the pre-crisis and the post-crisis period- and the global financial crisis 2008 considered as a base. The pre-crisis period is covered from FY2000-01 to FY 2007-08, whereas post-crisis period is covered from the FY 2008-09 to FY 2016-17. Further, NSE-500 listed companies are used as the sample size for this study. Dynamic panel data methodology, for instance system GMM, is employed to test the research hypotheses. Firm-specific factors such as firm size, age, risk, profitability, leverage, liquidity, and dividend pay-out are considered as control variables. The model findings indicate that ownership concentration has a negative effect, while institutional ownership has no effect on the stock returns during the pre-crisis phase.

**Keywords:** Crisis, ownership, variables,

# 1 Introduction

Ownership structure is considered as one of the key governance mechanisms for the enhancement of the corporate efficiency and performance (Shleifer and Vishny, 1986). Hence, early literature has studied the effect of the ownership structure on the financial performance, where it witnessed a mixed effect of ownership holdings. The existence, and the role, of differential ownership structure and types of equity ownership fuel the debate of determining the stock return (Laporta et al., 1999).

This paper investigates the effect of ownership concentration and institutional ownership on the stock return during the pre- and post-crisis phases and analyses the difference in the effect due to distinctive economic conditions.

Rest of the paper is structured as follows. Section-2 reviews the extant literature. Section-3 describes the sample and variables. Section-4 explains the research methodology. Secttion-5 discusses the empirical findings. Section-6 summarises the paper.

# 2 Literature review

### 2.1 **Ownership concentration and stock return**

Early evidence on the relationship between the ownership concentration and firm performance can be traced back to the work of Demsetz and Lehn (1985); their study showed a non-significant association. Further, the study of Clark and Wojcik (2005) on the German corporates revealed that concentrated ownership negatively affect the stock return.

### 2.2 **Institutional ownership and stock return**

The empirical evidence of Han and Suk (1998) indicated that institutional investors in US market have efficient monitoring abilities that result in a higher stock return.

### 2.3 **Institutional ownership leads to higher firm-level stock return**

Cella (2009) made a study on European firms to examine the effect of ownership structure on stock returns, where it was concluded that institutional holdings deleteriously affect the stock returns. Additionally, in an emerging market like China, it is found from the analysis of Ying et al. (2015) that institutional owners enhance the price efficiency.

# 3 Data and variables

### 3.1 **Study period and sample**

The study period spans over 16 years from FY 2000-2001 to FY 2016-2017. The US financial crisis 2008-2009 is considered to be one of the worst financial epidemics in the last century, which halted the growth of the world economy (Sikorski, 2011).

To construct the sample for this study, NIFTY-500 indexed companies are selected from the National Stock exchange (NSE), India.

### 3.2 **Dependent variable**

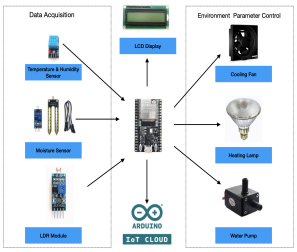
Stock return: It is a widely used measure to quantify the profitability of the stock that affects the investors' sentiment profusely.

### 3.3 **Independent variable**

This study considers two major ownership structure measures such as ownership concentration and institutional ownership as independent variables.

### 3.4 **Control variables**

Certain firm-specific factors based on




previous studies are considered to control their effect on the stock return. This study includes firm size, firm age, firm risk, profitability, leverage, current ratio, and dividend pay-out to gauge the effect.

Figure 1: Block Diagram of the automation system.

# 4 Methodology and model specifications

This study used dynamic panel models to curb endogeneity issue due to the unobserved heterogeneity and simultaneity (Wooldridge, 2013). Under dynamic panel models, two-step system-generalized method of moments (GMM) is considered.

## 4.1 **Model specifications**

Here, it is hypothesised that ownership concentration and institutional ownership affects the stock return of listed companies. Based on this hypothesis, the following empirical research models are developed.

$$SR_{it} = \alpha + \beta 1 OC_{it} + \beta 2 FS_{it} + \beta 8 DP_{it} + \varepsilon_{it} \quad (1)$$

$$SR_{it} = \alpha + \beta 1 IO_{it} + \beta 7 LIQ_{it} + \beta 8 DP_{it} + \varepsilon_{it} \quad (2)$$

Where, SR, OC, IO, FS, FA, FR, FP, LEV, LIQ and DP denote stock return, ownership concentration, institutional ownership, firm size, firm age, firm risk, firm performance, leverage, liquidity, and dividend payout. Ownership concentration includes two proxies such as holdings single largest shareholder (OC1) and five largest shareholders (OC5). The measurements of all these variables are depicted in the Table 1.

# 5 Empirical results

## 5.1 **Pre-crisis estimations**

*5.1.1* ***Summary statistics*****:** The summary statistics of dependent, independent and control variables for pre-crisis period are presented in the Table 2.

Table 1: Pre-crisis summary statistics.

| Variables | Minimum | Maximum | Mean | Median | Standard deviation | Total observation |
|---|---|---|---|---|---|---|
| SR | -4.203 | 50.044 | 0.389 | 0.27 | 1.811 | 2528 |
| OC1 | 0.05 | 0.761 | 0.334 | 0.27 | 0.209 | 2528 |
| FS | 1.01 | 15.008 | 8.864 | 8.86 | 1.971 | 2528 |

| | | | | | | |
|---|---|---|---|---|---|---|
| FA | 3.349 | 4.98 | 0.01 | 3.301 | 0.791 | 2528 |
| DP | 0.01 | 97.09 | 26.533 | 24.075 | 17.529 | 2528 |

(*Source: Author's compilation)*

SR varies within -4.203 and 50.044 with a mean value of 0.389. The average values of OC1 and OC5 are 0.334 and 0.577, respectively. Institutional ownership is having an average value of 0.213. In India, the concentration level is very high, which means most of the ownership holdings lies in the hand of few large shareholders.

*5.1.2* ***Correlation analysis***

The correlation matrix for the pre-crisis period is depicted in the Table 1.
It is observed that ownership concentration and institutional ownership has no significant correlation with stock return.

5.1.3 ***Dynamic panel estimations***

The two-step GMM estimations (Models: 1-3) are reported in the Table 4.
The model findings indicate that ownership concentration (OC1) has an adverse effect on the stock return during the pre-crisis period, which is similar to the early findings of (Clark and Wojcik, 2005).

5.2 **Post-crisis estimations**

Findings for post-crisis indicate that ownership concentration has no effect on the firm-level stock return.

*5.2.1* ***Summary statistics*****:** The summary statistics of dependent, independent and control variables for post-crisis period are presented in the Table 5.

SR varies within -0.094 and 8.525 with a mean value of 0.332. The average values of OC1 and OC5 are 0.374 and 0.618, respectively.

5.2.2 ***Correlation analysis***

The correlation matrix for the post-crisis period is depicted in Table 6. It is detected that the co-efficient values between the variables are below the permissible limit of 0.8 (Kennedy, 1985), except between the OC1 and OC5.
Ownership concentration and institutional ownership have significant negative correlation with stock return while firm performance has a positive correlation with stock return.

*5.2.3* ***Dynamic panel estimations***

The two-step GMM estimations (models: 1-3) are reported in the Table 1.

# 6 Conclusion

This study has tested the effect of ownership concentration and institutional ownership on the

firm-level stock return for the pre-crisis and post-crisis period. Here, it can be inferred that institutional ownership diminishes the stock return during the slowing economy. Further, the effect of firm age also has a time-dependent effect.

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