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Article

Determinants of Intercorporate Investments: An Empirical Investigation of Indian Firms

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Abstract: We examine the determinants of intercorporate investments for a sample of 127 firms listed in the National Stock Exchange (NSE) in India for the period 2015–2019. This research indicates that the investor firm's intercorporate investments are influenced by free cash flows, dividend yield, promoter holding, and leverage. Interestingly, contrary to anecdotes in the financial press, the investor firms where promoter holding (equity) is more, prefer to invest less in the other firm's capital (as part of intercorporate investment). Using OLS regression, this analysis does not find evidence for the variables, that is, the firm's age, the capital expenditure required, growth in earnings per share, board independence, and CEO duality for significant influence on intercorporate investments. Further tests for industry effect reveal the consumer and retail sector's intercorporate investments to be significantly different (i.e., lower) from the manufacturing and service sectors.

Keywords: intercorporate investments; free cash flows; leverage; capital expenditure; board independence; earnings per share

JEL Classification: G3; G300; G390



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1. Introduction

Like individuals, companies too can invest in other companies. Any investment made by one company in the securities of another company is called intercorporate investment (ICI) (Beechy 2013). This investment can take the form of subscription of shares, subscription or purchase of share warrants, subscription (purchase) of debentures, bonds, and similar securities (Sec 186(1) of Companies Act, 2013). Both short-term and long-term motives can drive such investments. Companies buy (or sell) marketable securities of other firms as an alternative to holding excess (idle) cash and earning short-term returns. Long term motives include strategic considerations of gaining competitive advantage by achieving additional profitability, diversifying their asset base (McNaughton and Green 2006), entering a new market, strengthening relations with suppliers, etc. The intercorporate investments can significantly impact the investing company's financial performance and position both in the short term and long run.

The investment in securities varies in terms of the type of securities and the purpose of such investments. They can be classified into two categories, namely debt and equity securities. Debt securities represent a creditor relationship, while equity securities represent an ownership interest in another entity. The accounting for debt securities differs based on its nature, that is, held to maturity (HTM), trading, and available for sale (AFS). In contrast, the accounting for equity securities differs based on the degree of influence, that is, no influence (Ownership < 20%), significant influence (Ownership ≥ 20% but less than 50%), and control (ownership ≥ 50%). The nature of equity securities can be either trading or available for sale. Studies (Cohen 1966; Comiskey and Mulford 1986) document the

compliance of earlier accounting standards and principles relating to ownership criterion¹ and treatment of losses or gain on intercorporate transactions under the equity method.

Our study is undertaken in the Indian capital market setting, which has some distinguishing features compared to developed economies. First, the Indian economy has grown exponentially in terms of the number of listed companies/stocks, trading volumes, market capitalization, investors, and resources mobilized, emerging as one of the world's fastest-growing capital markets. Second, India has a well-developed equity derivative market since 2000, which is at par with world standards and among the most prominent globally in terms of turnover. Third, another peculiarity of the Indian capital market is the two prominent Indian stock market platforms Bombay Stock Exchange (BSE) and National Stock Exchange (NSE)², that feature the top 15 stock exchanges worldwide. Since the commencement of the NSE in 1994, the number of listed companies has increased from 135 in the year 1995 to 1931 in the year 2019, growing by 11%. As a percentage of its GDP (market capitalization to GDP ratio), India's market capitalization rose from 55% in 2011 to 88% in 2020, as per the World Bank estimates (Kant 2020). The volume of trading at the NSE platform has witnessed a Compound Annual Growth Rate (CAGR) of 10% from the year 2011 to the year 2019. In the year 2019, the trading volumes on the NSE reached their highest level to INR 795,000 billion (A Plinth for Economic Growth, 2020). So, an India-centric study is conducive to better understanding intercorporate investment behavior and contrasting views with the extant literature predominantly based on the western world.

The intercorporate investments take various forms based upon the intensity of control. Control is exercised by holding equity shares of the company. In India, ICI, coupled with interlocking directorships and the integration of financial and industrial activities, helps in exercising control with little equity stake (Reed 2001). The concept has gained popularity over the years. The book value of intercorporate shareholdings of Bajaj Auto Ltd. rose from INR 93,448.9 million on 31 March 2015 to INR 181,751.7 million on 31 March 2019. Through this research, we seek answers to the following two research questions. First, what are the key determinants of intercorporate investments in India? Second, what is the nature and proliferation of ICI across industrial sectors? Our study goes beyond the existing literature on ICI by employing unique Indian data with a current timeframe, incorporating additional explanatory variables, that is, Sales Growth, EPS Growth, CEO Duality, CAPEX, and dividend yield in the model. We examine the importance of these previously ignored variables in explaining ICI. We also incorporate the existence of sectoral effect in ICI.

This paper makes two important contributions to the literature. First, to the best of our knowledge, this is the first paper that identifies the prime factors of importance, which determines the degree of intercorporate investment for firms listed on the Indian capital market (NSE). The second contribution lies in identifying if there is any industry effect that influences the level of ICI. Our work adds value to the different strands of literature. First, it adds to the existing literature on corporate investment decision-making. We make a significant contribution by highlighting the prime factors of importance that influence a firm to decide on the degree of equity investment in other firms. Second, by analyzing equity shareholdings, it also addresses the literature on cross-shareholdings and strategic alliances. Third, we also contribute to the existing literature on the sectoral distribution of intercorporate investments.

Several studies, that is, Sheard (1991); McDonald (1991); Prowse (1992); Flath (1993); and Berglof and Perotti (1994), examine the role of intercorporate shareholdings as a rationale for corporate governance in the context of Japanese keiretsu system. Bøhren and Norli (1997) explore other rationales (i.e., strategic alliance, adverse selection

¹ 20% ownership percentage criterion for the application of equity method as per accounting standard influences a firm's investment decisions (Comiskey and Mulford 1986).

² The National Stock Exchange (NSE) is the leading stock market in India and the second largest in the world in terms of the number of trades in equity shares from January to June 2018 according to world federation of exchanges report.

costs, transaction costs) in addition to the corporate governance mechanism for firms listed on the Oslo Stock Exchange (OSE). We investigate factors such as free cash flows (FCF), dividend yield, the firm's age, capital expenditure as a percentage of assets, leverage, and growth in earnings per share as determinants of ICI. We also complement the corporate governance issue by taking the promoter's shareholding in the company, the percentage of independent members in the board of directors, and CEO duality as its proxies as independent variables. Using a sample of Nifty 200 companies spanning five years beginning from 31 March 2015 up to 31 March 2019 (based on their availability of data) ensuring that no individual firm is repeated, we find that free cash flows, promoter's shareholding, dividend yield, and leverage are significant to explain intercorporate investments of the firm.

The rest of the paper is organized as follows. Section 2 discusses the existing background literature surrounding intercorporate investments. A summary of empirical literature helps to identify the research gap in this area. Section 3 covers data and methodology. Section 4 discusses the empirical results. Section 5 concludes the paper along with the implications for theory and practice.

2. Extant Literature

Existing research on the determinants of ICI by [Bøhren and Norli \(1997\)](#), in their paper, describes the anatomy of intra-firm equity investments by analyzing ownership structure data for all firms listed on the Oslo Stock exchange (OSE) in 1980–1994. They explore theoretical predictions of the determinants of ICI by drawing on the rationales of its role in corporate governance, ICI as a financial slack for growing firms, and being a liquidity buffer for companies. They conclude that there is no single dominant determinant for intercorporate shareholdings. The range can vary from strategic issues in corporate governance to issues in the daily cash flow management system. The results also support the argument that managers of takeover targets cross-invest in each other to jointly guard their human capital in the market against corporate control.

The three perspectives on accounting method choice for ICI, namely opportunistic behavior, efficient contracting, and information perspectives, are compared by [Holthausen \(1990\)](#). [Malmquist \(1990\)](#) and [Mian and Smith \(1990\)](#) address the issue of accounting method choice from the perspective of efficient contracting by examining its merits and pitfalls. Efficient contracting suggests methods that maximize firm value. [Malmquist \(1990\)](#) work relates to the choice of full cost or successful efforts accounting method to monitor the efficiency of a contract in the oil and gas industry. Opportunistic behavior calls for corporate lobbying on accounting standards, which maximizes the manager's utility in terms of their compensation and the firm's stock price ([Watts and Zimmerman 1978](#)). The rationale for the information perspective is that with an increase in intercompany transactions between parent and subsidiary, the probability of manager reporting consolidated statements increases as it is easier to approximate future cash flows based on information obtained from a combined entity's disclosures than separate results. The three views, therefore, are not mutually exclusive and can coexist together.

Using theories of opportunistic behavior and the information asymmetry of accounting method choice on a sample of Oslo Stock exchange-listed firms for the period 1984–1994, [Bøhren and Haug \(2006\)](#) predict the choice of equity method over the cost method for accounting for 20–50% intercorporate investments³. Their findings are consistent with the results of [Morris and Gordon \(2006\)](#), who support opportunistic behavior, but not efficient contracting on the cost/equity choice in Australia. Operationalizing these theoretical constructs of accounting method choice by different hypotheses, firms choose between cost and equity methods to reduce debt renegotiation costs or avoid regulatory attention.

³ The Norwegian GAAP(NGAAP) rule of using the equity method is left to management discretion, unlike IndAS norms where the equity method of accounting is mandatory if the investment lies in the 20–50% range.

According to [Mazay et al. \(1993\)](#), the management of associated companies in Australia makes an accounting method choice that maximizes the firm's value, which is consistent with the efficient contracting perspective and does not provide support for opportunistic determinants. The findings revealed that Australian firms in 1984 preferred equity-method accounting in case of material interdependencies between investors and associates. The efficient use of accounting methods in reporting financials helps in mitigating the opportunistic use by managers of interdependencies between related corporations ([Whittred 1987](#); [Mian and Smith 1990](#)).

[Huynh et al. \(2020\)](#) conducts a study in Vietnam and finds that information asymmetry may also influence investment decision-making, casting a significant adverse effect on firm value. [Siddiqua et al. \(2019\)](#) find that financial constraints moderate the relationship between the degree of inter-firm investments and cash-holdings adjustments to achieve the target level of cash for Pakistani firms. They find that after controlling for financial constraints, the speed of downward adjustment of cash holdings towards an optimal/target level remains higher than upward adjustment. [Trong and Nguyen \(2020\)](#) document the exploitation of debt and dividend policy in the Vietnam context to limit excessive FCF, constraining the problem of overinvestment.

Several empirical and experimental studies ([Lee et al. 2013](#); [Barrett 1971](#); [Wilkins and Zimmer 1985](#)) have analyzed the effect of equity-method reporting on decisions made by specific users of that data (professional financial analysts in making forecasts and lenders in undertaking credit risk assessment). [Lee et al. \(2013\)](#) establish two hypotheses (effects) to study the impact of the equity method of accounting for intercorporate investments on the annual analyst's earnings per share (EPS) forecasts. They argue that although the study is consistent with both the hypotheses, the opacity⁴ effect operates more prominently than the diversification effect⁵ in its impact on the analyst's forecast environment, yielding reduced forecast accuracy with an increase in forecast errors and dispersion. The increased analyst forecast errors and dispersion can be traced to firm-year observations with equity-method investments and not to the nature of the firm and its activities due to concise equity-method disclosures and increased information asymmetry about investee earnings. Also, depending on the extent of the investor firm's internal segment-based diversification, the opacity effect is attenuated (but not removed) with the diversification effect dominating.

Extending this financial accounting controversy by studying the causal relationship between changes in accounting reporting methods used and its effect on judgment and decision-making, [Barrett \(1971\)](#) conducts a behavioral field experiment involving professional financial analysts and suggests that if given a choice of accounting method for intercorporate investments, the equity method will be preferred by such analysts over the cost method. A significant variable influencing such a choice is the level of footnote disclosure in financial statements about income and asset information computed under the equity method of accounting for firms that employ the cost method making it equivalent to the equity method. Consistent with these studies, [Wilkins and Zimmer \(1985\)](#) suggest that the two alternative accounting methods for investments (cost and equity) can affect the lender's credit risk assessment. The existence of intercompany guarantees determines such an evaluation, that is, when the investee guarantees the investor's debt.

The equity method is the optimal predictor of the future cash flows of non-majority owned intercorporate investments ([Mckinnon and Halvorsen 1993](#)). Comparing the three methods of cost, equity, and market value on a sample of 148 firms, they document that the equity-method income is closest in their estimates (in 78 out of 148 firms) to annualized cash yield (ACY) income than cost-method or market-method income.

⁴ Opacity effect asserts that reduced disclosures under the equity method give rise to information asymmetry leading to increased analysts' forecast errors and dispersion.

⁵ The diversification effect suggests that higher external diversification of investor and investee earnings streams improves the predictability of earnings leading to fewer forecast errors and dispersion.

Few studies in the literature relate intercorporate investments leading to earnings management. The incentives of Australian firms to indulge in earnings management in a reporting environment facilitating opportunism are investigated by Lambert and Lambert (2003). They argue that using the cost method against the equity method significantly boosts the consolidated return on investment for firms having a lower ex-ante probability of managing accounting earnings from an investment in associates. Bøhren and Haug (2006) find that managers of firms listed on the Oslo stock exchange do not indulge in earnings management for their motives or to signal private information to capital markets. They further suggest that highly levered Norwegian firms choose between the cost and equity methods by utilizing the flexibility of the Norwegian Generally Accepted Accounting Practices (NGAAP) to maximize reported earnings to reduce debt renegotiation costs or avoid regulatory attention. Table 1 below underlines the summary of critical studies on intercorporate investment and its implications for corporate decision making.

Table 1. Research Themes of existing literature and their implications on ICI.

Author/s (Year)	Research Theme	Implications for Intercorporate Investment
Barrett (1971)	Effects of equity method accounting/reporting	Preference of equity method over cost method by analysts.
Watts and Zimmerman (1978); Whittred (1987); Holthausen (1990); Malmquist (1990); Mian and Smith (1990); Mazay et al. (1993); Bøhren and Haug (2006); Morris and Gordon (2006)	Determinants of choice of accounting method	Factors influencing the three perspectives on accounting method choice, namely opportunistic behavior, efficient contracting, and information perspectives, are analyzed for their impact on the choice of accounting method for ICI. Mixed reviews were received
Wilkins and Zimmer (1985)	Lenders credit risk-assessment	Lender's credit risk evaluation depends on the existence of intercompany guarantees, that is, when the investee guarantees the debt of the investor.
Mckinnon and Halvorsen (1993)	Prediction of future cash flows	A comparative analysis of the three methods (cost, equity, and market value) reveals that the equity method is the optimal predictor of the future cash flows of non-majority owned intercorporate investments.
Bøhren and Norli (1997)	Determinants of Intercorporate investments	The determinants of ICI can vary from strategic issues in corporate governance to issues in the daily cash flow management system.
Lambert and Lambert (2003); Bøhren and Haug (2006)	Earnings Management	Highly levered Norwegian firms by utilizing the flexibility of NGAAP choose between cost and equity method to maximize reported earnings to reduce debt renegotiation costs or to avoid regulatory attention.
Lee et al. (2013)	Analysts EPS Forecasts	Condensed equity-method disclosures and increased information asymmetry about investee earnings increase the analyst's forecast errors and dispersion.

Thus, limited literature exists in the area of intercorporate investments offering a huge research gap. From Table 1 above, it is inferred that key areas of research in this field center around determinants of the choice of accounting method of ICI. An analysis of intercorporate investments in the Indian context is an untapped area of research. Undertaking such research contributes in an enormous way to the body of knowledge. Hence, the objective of this paper is to study key factors that determine the intercorporate investments in the Indian context.

3. Data and Methodology

3.1. Sample Selection

Firms included in the Nifty 200 index listed on the NSE, India comprise our sample. The study's time spans five years from March 2015 to March 2019, based on data availability for sample firms. We use firm-level data from the Prowess database, which is the leading database collected by the Centre for Monitoring the Indian Economy (CMIE), India, from company balance sheets and income statements. This database covers an extensive base of manufacturing, services, utilities, and financial industries. We also cross referred

the secondary data with the primary source, including the firms' annual reports. The data which is not available in the Prowess database is extracted from the Bloomberg database. Table 2 outlines the sample for the study.

Table 2. Sample Description and Selection.

Selection Criterion	Number of Firms
Total number of firms on the NSE Nifty 200 during 2015–2019	200
(–) Banking firms	20
(–) Investment-service companies	03
(–) Other-financial services companies	23
Non-Financial and non-Banking firms	154
(–) Firms lacking complete data regarding ICI, financial and other qualitative information	27
FINAL SAMPLE	127

From this set of Nifty 200 firms, we exclude:

- (a) Firms offering financial services (banking and investment) as their sole purpose of investment, which defeats the paper's underlying objective.
- (b) Firms for which there is a lack of data available for any of the dependent or explanatory variables.

The following arguments are proposed for the selection of the sample period, that is, 2015–2019:

- Data being available for most of the companies.
- The proximity of data to the current period.

3.2. Description of Variables

This section discusses the sample selection, including the period of study, empirical methodology, selection of variables, and descriptive statistics for the sample firms.

3.2.1. Dependent Variable

Intercorporate investment (ICI): We define ICI as investments in equity securities of other companies consistent with the work of [Bøhren and Norli \(1997\)](#). They are captured at their book value. Book value is the value at which an asset is carried in the company's books of accounts. The study of [Bøhren and Norli \(1997\)](#) includes the market value of each Norwegian firm's portfolio of intercorporate shareholdings disclosed in the company's balance sheet as the dependent variable. Due to a lack of availability of data on the market value of intercorporate shareholdings in the Indian context, book value was taken.

3.2.2. Explanatory Variables

Free cash flows (FCF): [Damodaran \(2012\)](#) describes free cash flows as the sum of all cash flows to all claim holders in the firm, that is, stockholders, bondholders, and preferred stockholders. FCF is operationalized as cash flow from operating activities plus after-tax interest expense minus capital expenditures. Given the transaction cost rationale suggested by [Bøhren and Norli \(1997\)](#), we find that equity holdings in other firms in the form of ICI are viewed as an integrated part of an optimal cash flow management system. A premium return can be expected by holding equity rather than being kept as cash in hand. Hence, in line with the existing study of [Bøhren and Norli \(1997\)](#), we hypothesize that the value of intercorporate shareholdings increases with the investor's free cash flow.

Age of the firm (AGE): We define firm age as the number of years since the company's date of incorporation. The age of the firm is calculated as the year of study minus the date of incorporation. [Sleutjes \(2012\)](#) conducts a study in the context of entrepreneurial

investments in which he finds a robust negative correlation between age and investment growth. In later stages of a firm's life cycle, they tend to stabilize (Garnsey 1998), making it less urgent to make large investments. So, as compared to younger firms, mature firms are more profit-oriented than being growth-oriented, which calls for reduced equity investments in other companies. Hence, we hypothesize that an increase in the age of the firm brings a decrease in the level of intercorporate investment.

Dividend yield (DY): The figure is directly taken from the Prowess database, which is calculated as dividends as a percentage of the closing market price for the year. Unlike dividend per share, dividend yield gives a market perspective by measuring dividend payments with the stock price. Conceptually, it is appealing for the managers to prefer larger payouts than equity investments in other firms when the existing shareholders do not perceive value addition from intercorporate investments by the firm. Existing literature argues the independence of dividend policy in driving a firm's investment decisions (Miller and Modigliani 1961). Thus, we check for any deviation from the null hypothesis of no significant relationship.

Capital Expenditure (CAPEX): This is calculated as a change in plant, property, and equipment (PPE) plus depreciation on PPE for the respective year of study. This calculated value is then expressed as a percentage of total assets. It is intuitively true that higher amounts devoted to capital expenditures in a year make lesser amounts available for the current year's stockholdings in other firms. Arguably, if the firm has better prospects for growth within, the managers prefer to invest heavily in the capital expenditure rather than buying equity from other firms. Hence, we hypothesize that a higher amount of CAPEX in a particular year will reduce ICI for that year.

Leverage (LEV): This is computed as the book value of total debt divided by the book value of total assets for the firm. Such computation is also observed in the work of Böhren and Norli (1997) in the past literature. The adverse selection argument proposed by Myers and Majluf (1984) puts forth that the firms prefer debt over equity as an external funding source to finance new investments in long-term assets, and therefore increased leverage results in reduced ICI (in the form of intercorporate equity holdings). A positive association between ICI and leverage in the study by Pushner (1995) reflects the alignment of managers and debtholders in the absence of an active equity influence. Hence, we hypothesize that levered firms can either step-up or step-down intercorporate investments in other firms.

Growth in Earnings Per Share (G-EPS): The basic EPS figure is obtained from the Prowess database. Prowess calculates basic EPS under AS-20⁶. The value of EPS captured in this field is the value as disclosed in the company's Annual Report. Growth is simply calculated as a percentage difference of the current year's EPS over the previous year. Though the literature is silent, it can be intuitively believed that increased growth in earnings per share of a firm would lead to lesser ICI. This can be understood as firms with high growth in EPS would retain their shareholdings, offering premium returns in their firm rather than invest it outside. Hence, we hypothesize that increased growth in EPS will bring a decreased level in ICI.

The intercorporate investment is primarily a strategic choice of the owner, including top management. Subject to the promoter dominated board the managers align the policy of the owner (promoter) while investing surplus money in buying equity of other firms. The corporate governance practice of the firm bears a significant influence on the ICI. To capture the firm's corporate governance mechanism, we use three proxies, that is, promoters holding, presence of independent directors, and CEO duality. Following is the detailed estimation and rationale for these proxies for corporate governance.

⁶ As per INDAS-20, basic earnings per share is calculated by dividing the net profit or (loss) attributable to equity shareholders by the weighted average number of equity shares outstanding during the period (the number of equity shares outstanding at the beginning of the period, adjusted by the number of equity shares bought back or issued during the period, multiplied by the time-weighting factor).

(a) Promoter's shareholding (PH): This percentage of the total shareholding is obtained directly from the Prowess database. Based on an existing study by [Bøhren and Norli \(1997\)](#), the higher the fraction of equity held by promoters in a firm, the more they are reluctant to invest in outside equity in the form of ICI. This may also involve restricting managerial discretion over free cash flows and their propensity to misuse organizational resources. Hence, *we hypothesize that firms where promoter group retention (or holding) is more do not step-up intercorporate investments in other firms.*

(b) Percentage of Independent members in the board of directors (BI): Board independence is measured by the proportion of independent directors to the board size (i.e., the total number of directors on the board). In their study, [Nor et al. \(2017\)](#) observed no significant relationship between board independence and the firm's level of investment. The independent directors act as a watchdog by monitoring the firm's investment activities so that they do not overinvest or underinvest. The strict control of managers by independent directors minimizes agency costs and limits their overinvestment in unprofitable investment ventures ([Khanchel 2007](#); [Pham and Tran 2019](#)). Not having familiar relations with the organization's management, the independent directors can challenge the management preventing managers from misuse and expropriation of organizational resources ([Boo and Sharma 2008](#); [Niu 2006](#)). Firms with a greater degree of board independence are found to have a negative association with capital investments while a positive association with R&D investments after controlling for other determinants of investments ([Lu and Wang 2015](#)). Hence, *we hypothesize that the degree of board independence can either increase or decrease the ICI level.*

(c) CEO Duality (CEO-D): This refers to CEO holding dual positions, that is, the CEO also serving as chairman of its board of directors. This data is obtained directly from the Bloomberg database for an individual firm in that year. This has a dichotomous nature of variable (dummy) with 0 and 1. A value of 1 indicates a "Yes" (i.e., firms having CEO duality) while 0 indicates a "No". [Kim and Buchanan \(2008\)](#) hold the view that CEO duality leads to reduced risk-taking propensity and risk-minimization managerial preferences of the firm leading to reduced ICI. Based on this conceptual understanding, *we hypothesize that firms with the CEO performing the chairman's role will have reduced ICI levels.*

3.3. Econometric Model

A multivariate OLS regression model is employed to examine the impact of a range of explanatory variables, that is, FCF, AGE, DY, CAPEX, LEV, G-EPS, PH, BI, and CEO-D, as shown in equation (1). The variables written in this equation are for a given time period t and firm i . The dependent variable ICI is log-transformed to take care of the skewed distribution of the data. ε denotes the error term. The other variables are the same as described in Section 3.2.

$$\text{Log}(ICI)_i = \alpha_0 + \beta_1(\text{FCF})_i + \beta_2(\text{AGE})_i + \beta_3(\text{DY})_i + \beta_4(\text{CAPEX})_i + \beta_5(\text{LEV})_i + \beta_6(\text{G} - \text{EPS})_i + \beta_7(\text{PH})_i + \beta_8(\text{BI})_i + \beta_9(\text{CEO} - \text{D})_i + \varepsilon_i \quad (1)$$

3.4. Summary Statistics

Table 3 given below explains the descriptive statistics for the sample of firms during the period 2015–2019. The average amount of ICI for the sample stands at INR 104,491 million. The larger values for skewness and kurtosis evidenced that the data distribution is skewed. The average and median amount of FCF is close, however, with a wide variation in mode. The zero-modal value of leverage depicts a high frequency of un-levered firms in the data. The data for the percentage of independent members in the board of directors can be observed to be normally distributed with a kurtosis value close to three. Out of all the variables, FCF and promoter's shareholding is observed to be negatively skewed with skewness for promoter's shareholding close to zero. ICI exhibits a large degree of skewness and kurtosis. Log transformation has been affected, which takes care of such skewness and kurtosis. The skewness and kurtosis reported for Log (ICI) are -0.244 and 0.419 , respectively. Log transformation of FCF and G-EPS cannot be done as they contain

negative values. The age of the firms in the sample ranges from a minimum of 4 years to a maximum of 156 years. The modal value of dividend yield helps to infer that most of the companies do not pay dividends. Similarly, in most companies, the CEO does not occupy the chair position of the board of directors. The minimum and maximum values for the proportion of independent members in BOD are 25% and 100%, respectively. In the sample, REC Ltd. has all its members on its board (directors) as independent.

Table 3. Descriptive Statistics for the sample during the year 2015–2019.

Variables	Mean	Median	Mode	Std. Deviation	Min. Value	Max. Value	Kurtosis	Skewness
ICI	104,491.000	24,615.900	14,400.000	315,281.730	49.500	3,315,368.600	86.864	8.698
AGE	45.512	40.000	24.000	25.640	4.000	156.000	2.235	1.219
FCF	2756.600	3482.200	−802,762.700	93,892.584	−802,762.700	429,043.700	46.611	−4.121
DY	1.490	0.860	0.000	1.825	0.000	10.260	5.794	2.272
PH	54.545	54.380	0.000	17.192	0.000	90.000	1.284	−0.786
BI	53.318	50.000	50.000	13.285	25.000	100.000	3.083	0.348
CEO-D	0.236	0.000	0.000	0.426	0.000	1.000	−0.427	1.257
CAPEX	4.509	3.346	−10.930	4.557	−10.930	26.150	5.070	1.453
LEV	0.209	0.159	0.000	0.196	0.000	0.780	−0.216	0.737
G-EPS	88.732	13.753	−936.760	822.241	−936.760	9169.580	120.781	10.848

Jarque–Bera normality test: 0.8926 Chi(2) = 0.64; Jarque–Bera test for Ho: normality.

Table 3 summarizes the characteristics of 127 firms during the period 2015–2019. The variable ICI and FCF are reported in INR million. The number of observations for each of the years (sample period) is as follows: 117 firms in 2019, 6 firms in 2018, 1 firm in 2017, 2 firms in 2016, and 1 firm in 2015. All the variables are defined under Section 3.2. Jarque–Bera test results are also reported retaining the null hypothesis of normality.

4. Results and Discussion

In this section, we present the results of the regression equation (1) explained above. We discuss the impact of a range of variables, that is, FCF, AGE, DY, CAPEX, LEV, G-EPS, PH, BI, and CEO-D on ICI. Table 4 shows that the variables FCF, DY, PH, and LEV are statistically significant in explaining ICI. However, the variables, that is, AGE, CAPEX, G-EPS, BI, and CEO-D, fail to explain the variation in ICI. The significant variables, that is, FCF, DY, and LEV, are found to be positively associated with ICI, while PH is inversely related to ICI. Table 4 also reports the standardized and unstandardized coefficients along with their test statistic, VIF, and level of significance. The model summary parameters are also reported, which include Adjusted R square, F-statistic, and the Durbin–Watson (DW) test statistic. The DW statistic is also reported for testing the independence of residuals. For this regression model, the DW test statistic is close to 2, implying no autocorrelation. The VIF values for all explanatory variables are less than 5, indicating no multicollinearity issue between them.

Table 4. Regression Results for Equation (1).

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	Beta	Std. Error	Beta			Tolerance	VIF
(Constant)	4.898	0.392		12.491	0.000		
AGE	0.001	0.002	0.023	0.274	0.784	0.928	1.078
FCF	1.584×10^{-6}	0.000	0.203	2.381	0.019 **	0.896	1.116
DY	0.081	0.034	0.202	2.423	0.017 **	0.941	1.063
PH	−0.011	0.004	−0.239	−2.822	0.006 ***	0.914	1.094
BI	−0.007	0.005	−0.131	−1.499	0.137	0.857	1.167
CEO-D	0.068	0.150	0.039	0.453	0.652	0.875	1.143
CAPEX	0.003	0.013	0.021	0.250	0.803	0.961	1.040
LEV	1.413	0.320	0.376	4.413	0.000 ***	0.900	1.111
G-EPS	0.000	0.000	0.043	0.506	0.614	0.903	1.107

Model Summary: Adjusted R² = 0.19, F-Statistic = 4.245, Durbin–Watson statistic = 2.069; ** explains a 5% level of significance, *** explains 1% level of significance.

Table 4 reports the regression results of equation (1) mentioned under the econometric model. It also includes the test statistic value along with adjusted R square, DW test statistic, and F statistic. Log of intercorporate investments (book value) is taken as the dependent variable. Explanatory variables include Age, FCF, DY, PH, BI, CEO-D, CAPEX, LEV, G-EPS. Sample data is obtained from Nifty 200 companies from which exclusions are made, as mentioned before. The time duration of the study ranges from March 2015 to March 2019. All the variables are defined under Section 3.2.

Over the entire sample period, it is empirically observed that FCF has a positive and significant relationship with ICI. This indicates that the higher the free cash flows, the higher are the intercorporate investments. This result is consistent with the study of [Bøhren and Norli \(1997\)](#) that supports transaction cost theory, which calls for maintenance of liquidity buffer fetching positive expected return rather than kept as cash in hand. Our paper also complements the work of [Carpenter and Guariglia \(2008\)](#) and [Nguyen and Dong \(2016\)](#), who also find cash flow significant in corporate investment decision making for the UK and Vietnam firms, respectively.

The FCF shows significance at 5%, indicating a relatively high explanatory power. There are a couple of observations that can be made of this relationship. First, cash-rich firms' have strong capabilities to expand their investment in the high-growth avenues not only in the same firm but also in other firms having premium growth stories. Second, firms with larger free cash flows might not see enough growth opportunities in the same firm. Hence, the management prefers to invest in other firm's equity. Third, excess cash does not earn a premium return for the firm unless the excess cash gets invested in firms with a higher return on equity than the investor firm. However, our findings are inconsistent with the study of [Saquido \(2003\)](#), who finds an insignificant relation between liquidity (cash flow) and investment. Moreover, our results are even unchanged while scaling FCF by the percentage of total assets.

The promoter's shareholding (PH) predicts ICI at a 1% level of significance. The correlation is negative, indicating that a higher promoter stake in the firm's equity results in a lesser manager's preference for intercorporate investments. In other words, the promoter dominated firms shy away from investing in another firm's equity. This finding is consistent with the conceptual understanding that closely held firms are not in favor of diversifying their investments in terms of another firm's equity; instead, they prefer to invest in their firm. Put differently, managers of firms with low promoter's holding diffuse ownership structure by way of more ICI to lower diversifiable risk and protect their human capital in the market against corporate control. We find it consistent with the study of [Bøhren and Norli \(1997\)](#) but is inconsistent with regard to the nature of the significance of the variable (positively correlated in their study).

Leverage is consistent with being significant at a 1% level rejecting the null hypothesis of no significant relationship. A highly levered company is observed to go for more ICI, which is inconsistent with adverse selection costs rationale as discussed in the paper of [Bøhren and Norli \(1997\)](#). Additionally, it reconciles with the work of [Pushner \(1995\)](#), who also found a strong positive association between intercorporate shareholdings and leverage. He opined that a high level of ICI might insulate management from the external influence, which may permit higher leverage by reducing the alignment of shareholders and management. A plausible explanation for this relationship is that levered firms being at a high risk wish to reduce (or diversify) risk and thereby look for investing in profitable ventures in the form of increasing intercorporate shareholdings, which adds to their profitability. So, this can also be understood as maintaining a trade-off between risk and profitability for such companies so that when ICI fetches more profitability, high leverage can be compromised. Contrary to our findings, using the US and Canadian data, respectively, [Lang et al. \(1996\)](#) and [Aivazian et al. \(2005\)](#) find leverage and investment inversely related.

We also notice from Table 4 that dividend yield has a positive correlation with the investment firm's intercorporate investments, at 5% significance. We noted that high

dividend-paying firms also invest heavily in equities of other firms as part of intercorporate investments. High dividend yield firms are characterized by depressed share prices and declining market conditions. This calls for a higher ICI by such firms to broaden their growth and investment opportunities to fetch premium returns and thereby enhance the firm's value. Intercorporate ownership raises the stock prices of the member firms (Osano 1996).

We found no evidence of Age, CAPEX, CEO duality, growth in EPS as drivers of ICI. A very weak significance of board independence is observed (p -value = 0.137). Its negative coefficient is explained by greater monitoring in firms with a high degree of board independence, adopting a conservative approach by limiting ICI. Instead, they emphasize internal growth. Our evidence supports the study of Ullah Ehsan (2017), who finds CEO Duality insignificant and a weak significance of board independence to influence ICI. The value of adjusted R-square elucidates a 19% change in the dependent variable explained by FCF, DY, PH, and LEV.

Testing for Industry Effect

From the descriptive table in the one-way ANOVA test (details in Table 5), our sample data produces a difference in the mean scores of the six levels of different industry sectors⁷ (construction and real estate, consumer and retail, manufacturing, pharma, power, and services). The post-hoc tests (details in Table 6) reveal the significant differences in ICI between different industry clusters. The value of intercorporate shareholdings of the consumer and retail sector is significantly lower than the value of intercorporate equity holdings for manufacturing (p -value = 0.007) and services sectors (p -value = 0.039) at a 5% level of significance. Other sectors are found to be statistically insignificant.

Table 5. Descriptive: One-way ANOVA.

Industry	N	Mean	Std. Deviation
Construction and Real Estate	13	4.394	0.738
Consumer and Retail	20	3.862	0.781
Manufacturing	46	4.568	0.816
Pharma	14	4.220	0.631
Power	8	4.757	0.451
Services	26	4.519	0.683
Total	127	4.387	0.773

Levene's test for homogeneity of variances is insignificant, retaining the null hypothesis of constant variances across all groups (sectors), which is a necessary condition for conducting ANOVA tests. The ANOVA model is found to be significant (p -value = 0.008). This can be explained as the manufacturing and services sector account for a major portion in contributing to India's Gross Value-Added (GVA), serving as the growth engine of the economy as compared to the consumer and retail sector. The services sector contributed 54.3% to India's Gross Value Added (GVA) in 2018–2019, while the manufacturing sector's share was 29.6% (Brand India 2019). India is the world's fifth-largest global destination in the retail space (Brand India 2020). With the increasing intervention of e-commerce, the sector has gained much attention, but it is still less than the manufacturing and services sector. The consumer and retail industry accounts for over 10% of the country's Gross Domestic Product (GDP) and around 8% of the employment (Brand India 2020).

⁷ Considering firm-effect and year effect in the fixed-effects panel data regression (results not unreported here), our results stands unchanged. In addition to FCF, DY, PH, and LEV, BI is also found significant at 10% significance level. Incorporating the industry(sector) effect also produce qualitatively similar results.

Table 6. Post-hoc tests: Multiple Comparisons.

Dependent Variable: LOGICI Tukey HSD (Method)						
(I) Clusters	(J) Clusters	Mean Difference (I–J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Construction and Real Estate	Consumer and Retail	0.532	0.263	0.338	−0.232	1.296
	Manufacturing	−0.175	0.233	0.975	−0.848	0.499
	Pharma	0.174	0.285	0.990	−0.652	1.000
	Power	−0.364	0.333	0.883	−1.327	0.600
	Services	−0.125	0.252	0.996	−0.854	0.603
Consumer and Retail	Construction and Real Estate	−0.532	0.264	0.338	−1.296	0.232
	Manufacturing	−0.707 *	0.198	0.007	−1.281	−0.133
	Pharma	−0.358	0.258	0.734	−1.105	0.389
	Power	−0.896	0.309	0.051	−1.793	0.001
	Services	−0.656 *	0.220	0.039	−1.295	−0.019
Manufacturing	Construction and Real Estate	0.175	0.233	0.975	−0.499	0.848
	Consumer and Retail	0.707 *	0.198	0.007	0.133	1.281
	Pharma	0.349	0.226	0.637	−0.306	1.003
	Power	−0.189	0.284	0.985	−1.010	0.632
	Services	0.049	0.182	1.000	−0.477	0.575
Pharma	Construction and Real Estate	−0.174	0.285	0.990	−1.000	0.652
	Consumer and Retail	0.358	0.258	0.734	−0.389	1.105
	Manufacturing	−0.349	0.226	0.637	−1.003	0.306
	Power	−0.538	0.328	0.575	−1.488	0.413
	Services	−0.299	0.245	0.826	−1.010	0.411
Power	Construction and Real Estate	0.364	0.333	0.883	−0.600	1.327
	Consumer and Retail	0.896	0.310	0.051	−0.001	1.793
	Manufacturing	0.189	0.284	0.985	−0.632	1.010
	Pharma	0.538	0.328	0.575	−0.413	1.488
	Services	0.238	0.299	0.968	−0.629	1.105
Services	Construction and Real Estate	0.125	0.252	0.996	−0.603	0.854
	Consumer and Retail	0.658 *	0.220	0.039	0.019	1.295
	Manufacturing	−0.049	0.182	1.000	−0.575	0.477
	Pharma	0.299	0.245	0.826	−0.411	1.010
	Power	−0.238	0.299	0.968	−1.105	0.629

* The mean difference is significant at the 0.05 level.

5. Conclusions

When a company indulges in the purchase of securities of another corporation, it is called an intercorporate investment. We investigate a range of variables, that is, free cash flows, dividend yield, age of the firm, capital expenditure as a percentage of assets, leverage, growth in earnings per share, promoter's shareholding, the percentage of independent members in the board of directors and CEO duality, which drive intercorporate investments. Besides, the study also identifies the presence of any industry effect that affects the level of ICI.

A sample of Nifty 200 companies from March 2015 to March 2019 is taken based on data availability, ensuring that no firm is repeated. A multivariate OLS regression model is employed to examine the determining power of explanatory variables for ICI. We find that free cash flows, dividend yield, promoter's shareholding, and leverage are statistically significant in determining intercorporate investments. The positive association between FCF and ICI can be interpreted that the investor firms opportunistically making it an integrated part of the cash flow management system. The result is consistent with the study of [Bøhren and Norli \(1997\)](#) that supports transaction cost theory. Promoter's proportion of shareholding is observed to be negatively related to ICI, which can be understood as companies with larger promoter's stake retain control of the firm and are reluctant to raise outside equity, which calls for lower intercorporate shareholdings. Levered firms invest more in the other firm's equity as part of their intercorporate investments. The positive coefficient of dividend yield is explained as a higher dividend yield recognized with depressed share prices calls for more investment in intercorporate shareholdings. A one-

way ANOVA test reveals the presence of industry effect on the degree of ICI. A post-hoc test (Tukey) provides evidence that the consumer and retail sector's ICI is significantly different from the manufacturing and service sectors.

Our work does not include a comprehensive corporate governance index (excludes governance variables discussed in (Shahid et al. 2020)). Our study does not account for financial constraints, cash-holding adjustments, and information asymmetry, which might drive the ICI degree. This offers future research scope. Also, we limit our research to the Indian database. Therefore, conducting a cross-country analysis of the same for a more extended period might be an extension of this work. Moreover, it would be interesting to determine the nature of intercorporate investments, that is, whether it is related (within the same industry segment) or unrelated (different industry segment).

6. Implications for Theory and Practice

The empirical relationship documented between intercorporate investments and their determinants attempts to serve as a useful insight to investors to gauge a firm's inclination (or drive) towards the investor firm's investment strategy as far as an equity investment in other firms is concerned. This paper's evidence is potentially useful to influence investor's behavior, risk-attitude, and help them frame suitable strategies to fetch greater returns from their investment portfolio. The investor firms would benefit by understanding the empirical evidence of firm-level variables and their impact on intercorporate investment. This paper shall be useful for future researchers and practitioners working in the area of intercorporate investments. Finally, our evidence is important to policymakers consistently framing rules and restrictions governing intercorporate investments.

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