Intangible assets, Market Inequality, and Superstar firms

Abstract

This study explores the increasing influence of intangible investment, such as software, patent, brand equity, R&D strategy and Marketing technique on altering market dynamics and inequality. Additionally, the analysis focuses on how these intangible investments support the evolution of superstar firms' phenomenon in which, a handful of firms in each industry and sectors occupied a dominant position with competitive advantages and superior performance. Analyzing the firm level data from Centre for Monitoring Indian Economy (CMIE) prowess and employing System GMM, the study analyses the determinants of market share inequality. Furthermore, employing logistic regression model; the research investigates the role of intangible assets, R&D strategy, Marketing technique on the incidence of superstar firm. The study provides insights into the mechanisms of driving market share inequality and evolution of star firms. It also provides policy recommendations to address the market inequality prolonged with the superstar firms' phenomenon.

Keywords: Intangible investment, Market inequality, Superstar firms, R&D, Marketing Expenditure, System GMM

Introduction

The role of intangible assets in enhancing market competitiveness and business performance is being attaining crucial attention since last few decades. Several research studies point out that intangible-intensive firms obtain higher growth, innovation, and productivity compared to other firms (Ayyagari, Demirgüç-Kunt & Maksimovic, 2018; 2024). It has also been observed that As corporate spending is altering, where intangible assets are substituted by tangible or physical assets. Basically, the composition of tangible and intangible assets is changing with the alteration of business dynamism ( ). Consequently, the productivity trends and factor shares alter in various sectors ( ). Further, these trends result in variations in performance within and across various sectors (Crouzet et al., 2022). In the digital economy, as big businesses like Apple, Google, and other Star firms have exhibited extraordinary performance and market power by heavily relying on intangible capital investment (Ewens, Peters & Wang, 2024). Investing more on digital capital, such as software, technology, and data, these firms obtains competitive advantages and acquires larger profits relative to its competitors firms. Such a trends contributes to market concentration and market inequality in the sector moreover in the economy. Therefore, to understand the rising concentration of market and inequality, it is essential to grasp the market investment phenomenon, especially the investment in intangible assets for the present time.

Intangible capital refers to productive assets such as patents, trademarks, software, licenses, franchise agreements, databases, and institutional and firm-specific human capital (Crouzet et al., 2022). These include non-monetary assets like knowledge and organizational capabilities as well ( ). Book consider advertisement expenditure, marketing expenditure, and training are also the components of intangible assets. Characteristically, intangible assets lack the physical form but need a storage medium, i.e., physical capital like a document for a patent and trademark, a computer for software, or an individual for methods and knowledge, and so on. Additionally, the storage medium can be located in multiple places simultaneously. Additionally, simultaneous use of capital leads to economies of scale ( ). Therefore, investment in intangibles is non-rival, and marginal product depends on that particular storage medium.

However, in the digital economy, intangible assets play a crucial role in the evolution of star firms phenomenon. Star firms are generally highly productive firms known for its exceptional performance, profitability, and market power in their respective industries and sectors. The recent research attributed the rise of market concentration with investment of intangible assets (Covarrubias, Gutiérrez & Philippon, 2019; Ayyagari, Demirgüç-Kunt & Maksimovic, 2024). Basically, large firms owe a significant amount of intangible assets to obtain competitive advantage in the technology-based economy. Because intangible investments like intellectual property and human capital initiate innovation that enables the firms to perform better and stay ahead of competitors. By spending on R&D and and other intangible investment, these companies continuously advance new goods and services ( ). Unfortunately, such a trend contributes to market concentration and inequality.

The recent trend of investment shows that large firms are increasingly paying more attention to intangible assets. It has also been anticipated the due to the increasing use of intangible assets the the physical investment is being replcaed. Few research studies shows that the labor share is declining over the period of time in a few sectors due to the advancement of technology ( ). So, it is essential to identified the assets compositions of the firms to understand the strategy of the firms. due to the growth of the But it has also been observed that due to study attempts to study the role of intangible.

Regretfully, both theoretical and empirical research have paid scant attention to the simultoious analysis of firm inequality and intangible investment (Husted, Henriques, and Crane, 2014). Furthermore, the part that enterprises play in theories of economic inequality has received little consideration (Haskel & Westlake, 2018). Although some research studies talk about the disparity in wages and productivity inequality among businesses, that does not comprehensively address the issue of market inequality (Rhoades, 1995). In order to address and comprehend the market structure and the phenomena of lopsided development—which is crucial for the design of policy—it is thus necessary to examine market investment and how it contributes to market variation.

Additionally, the trend towards intangible investments is especially noticeable in star enterprises, which stand out for their quick expansion, inventiveness, and market leadership. So, this study

basically focuses on theoretical foundations and empirical research on the connection between intangible investments and star enterprises' performance.

This study contributes in three ways. Firstly, we analyze the firm's inequality and the factors associated with such inequality. To cater the objective, we discuss industrial concentration and firm inequality. Generally, the changes in business tactics influence and alter the business environment.

Secondly, we elucidate the factors supporting the evolution of the superstar firms phenomenon. Because the determinants of market inequality play a significant role not merely in policy measures but also in the market structure. Here, we pose the question of whether the investment of intangibles such as advertisement intensity, R&D intensity, and marketing intensity are the crucial determinants of the market concentration and evolution of superstar firms.

We use the Center for Monitoring and Indian Economy (CMIE) database to gather the necessary data and information at the company level for the period 2000 to 2020. As our goal is to pointed out the factors that contribute to market inequality, and role of intangible investment on the evolution of star firms, we build a panel dataset. Here to cater the first objective, we apply the system GMM for to understand the . Due to the unbalanced dataset, endogeneity problems may arise with the projected variables. Thus, we apply dynamic panel model i.e GMM system to address the problems and to cater the objectives.

We organized the study in the following manner. The literature review on market inequality,

Intangible Asset, Market Inequality, and Superstar Firms

The importance of intangible investment in identifying a company's competitive advantage and market position has been widely recognized. Existing literature evaluates the theoretical and empirical base of intangible investments and how they influence market inequality, obtaining comparative advantages. Intangible investment such as investment in R&D, technological advancement, and marketing expenses significantly contributes to the business's profitability and productivity ( ). Especially investments in R&D and technological innovation also help the company's potential for future expansion by increasing the shareholder value through patents, designs, and trademarks ( ). So, the intangible-intensive firms acquire a potential to perform for long-term profitability (Teece, 2015).

Unfortunately, mainstream economic theory has paid little attention to intangible investment in the theory. However, Adam Smith has often talk about how the potential of managers and organizations contribute to obtaining profitability by coordinating tangible and intangible assets (Teece, 2015). However, Barney (1991) discusses the resources-based view (RBV) that postulates the competitive advantage, which relies on distinct and non-imitable resources and skills. Since

the availability of the inputs helps to gain profitability and contribute to the company's growth, intangible assets like human capital, software, unique technology, and brand reputation etc are suitable for this approach. Additionally, Pertusa-Ortega et al. (2010) argues that high-tech firms attain relatively more competitive advantage than laggard firms employing larger available resources. Purbasari et al. (2020) complement with the Market-Based View (MBV) incorporating transition moves, where digital and skilled-based industries optimize the resources R&D and marketing investment.

The dynamic capability theory discusses the potential skill and strategy of the firms (Gremme & Wohlgemuth, 2017). Land et al. (2022) suggest that firms get a competitive edge by increasing technology, spending on R&D, and other activities by leveraging the available resources and capabilities. In that, big businesses are more likely than small competitors to invest in higher R&D expenditures (Basant, 1997), which contributes to market inequality. To expand on the idea, Cetindamar et al. (2009) developed a technological management framework that elucidates how factors like skill optimization and ongoing technology advancement encourage to consolidate and regulate both internal and external capabilities (Teece, 2010; Saddam et al., 2023).

Highlighting the significance of knowledge as a vital organizational resource, Grant (1996) extends the RBV. According to the knowledge-based approach, firms' capacity to generate, integrate, and apply knowledge through intangible assets is indispensable to gain a competitive edge. This perspective emphasizes the importance of the intangible asset in organizational culture from a strategic standpoint.

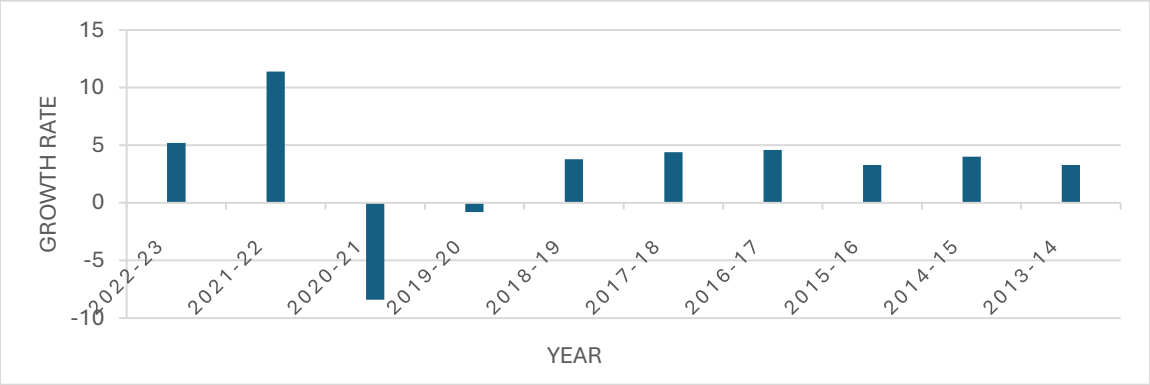
So far, the relation of intangible assets with market inequality is concerned. Schumpeter (1947) discussed the creative destruction phenomenon that acts as an endogenous aspect in extending monopoly power and unequal market share. In short, technological growth led to higher market concentration which further results in inequality (Patrick & Mellacher, 2021).

The occurrence of platform economies and digitization widens the markets arena that instigates the consumer to select the product based on relative performance rather than absolute performance, that resulting in the "winner takes most/all " phenomenon (Schulz. & Mayerhoffer, 2021). The research also posits that even a small difference in productivity leads to larger variation in market shares that extend the superstar dynamics in the industry. Again, behind this phenomenon, investment of intangible assets plays a sine-qua-non role in the growing gap between top-performing firms and the rest of the economy (Ayyagari, Demirgüç-Kunt & Maksimovic, 2024) future. The study of star firm by Ayyagari., Demirguc-Kunt. & Maksimovic (2019) also clarified that by adopting advanced technology and doing intangible investment, firms grow faster and gain market power which pretend their potential to reduce competition in the future (Ayyagari., Demirguc-Kunt. & Maksimovic, 2019). Consequently, this results in market inequality (Schiersch & Stiel, 2020).

Scenario of Indian Industry and Inequality

India has a diversified and growing industrial sector which contributes a significant share to the country's GDP. Figure-1 depicts the growth rate of industrial production since 2013-14. Except the covid-19 period, industrial growth has increased positively over the period.

Figure-1. Growth Rate of Industrial Production



Source: Reserve Bank of India Report

However, in the positive growth, few researchers observed an unequal and uneven pattern of growth. Similar to developed nations (such as the US, Japan, and other European countries), India has perceived extensive productivity gaps across the firms and industry. The study on Indian manufacturing firms shows that the productivity of the 90th percentile firm is five times that of the 10th percentile firm, which denotes higher disparities than even China and the US (Hsieh & Klenow, 2009). Giri, Pandey, & Mohapatra (2021) addressed the skilled gap and pointed out that the technological progress and financial globalization led to wage and income inequality in India. But they postulate that globalization also benefits small-scale industries by encouraging competition with the frontier industries.

So far, the technological factor is concerned, capital intensive technology is growing faster in Indian manufacturing sector along with declining role of labor to capital ratio (Kapoor, 2020). Consequently, the labor emolument shares of gross value added (GVA) has declined from 34.7% to 22.4% during 2000-2001 to 2011-12. In addition, the wage share of GVA fell from 26.9% to 18.5%. during the period. Again, the study of Dhanora, Sharma & Jose (2020) asserts that the majority of firms in an industry are not technologically savvy and do not pose a credible threat to the large dominant firms". In a recent article, Peters & Zilibotti (2023) have analyzed a comparative analysis of Indian and US industries and denoted that India lacks in creative

destruction. The observed reasons are firstly, the new businesses experience higher entry costs; secondly, the prevailing firm lacks investment to expand; and third, the subsistence firm owner owns many firms. But neither the pattern of creative accumulation nor the influence of large firms on various economic activities have been mentioned in the study. However, the discussion somehow indicates the superstar effect on the economy. Besides other disparities symptoms are also observed such as slowdown in productivity growth, rising productivity dispersion, declining wage growth, rising wage dispersion and rising mark-up dispersion (shown in the Table-1) And All these indicates the rising gap and inequality within and across the industry (De Loecker, Obermeier, & Van Reenen, 2022).

Table 1. Comparison of US and UK borrowed from, and India's scenario presented from various literature.

Indicators	**US**	**UK**	**India (References)**	
Aggregate productivity growth	Slowdown since Great Recession	Slowdown since Great Recession	Slowdown since Great Recession (in manufacturing Sectors)	Rijesh (2019) Erumban & Das, (2016)
Productivity dispersion	Increase	Increase	TFP differences are sizable	Ray, 2019 Orr, 2022
Aggregate wage growth	Slowdown since Great Recession	Slowdown since Great Recession	Aggregate wage growth has accelerated. Follow a mixed trend.	Crust, Daly & Hobijn (2020)
Wage dispersion	Increase	Increase	wage dispersion within and across sub-sectors due to the growth in labor productivity Overall wage inequality increased during the first decade (1993-2005) and declined somewhat during the next decade (2004-2012).	Sidhu, H. (2010) Kannan, (2018)
Aggregate markup	Increase	Increase	Fall in aggregate markups till 2013 and then a slight rise. Lower aggregate markups for emerging economies, including India. Growth rate of markups is alarming over the past few decades	Jacoba, Paula & Senc (2021) De Loecker and Eeckhout (2018)
Markup dispersion	Increase	Increase		No study found
Share of activity in large firms	Increase	Increase	Increase	Siddharthan, & Pandit (1998) Ayyagari, Demirguc-Kunt, & Maksimovic, (2021).
Industrial concentration	Increase	Increase	Increase in few industry	Dilip (2011). Suma, et al., (2006)
Labour share	Fall	Stable (falls after adjustments)	Secular decline in labor share	Jayadev & Narayan, (2020). Maiti (2019).
Dispersion of labour share	Increase	Increase	Rising	Jayadev & Narayan, (2020). Kapur (2020)

Share of activity in young firms	Fall	Stable / Fall	Rising	

Sources: Comparison of US and UK scenario is borrowed from the study of De Loecker, Obermeier, & Van Reenen, (2022) entitled as "Firms and inequality"….. and India's scenario presented from various literature.

The overall literature study describes an uneven pattern of growth in the economy along with rapid rise of few companies in different sectors. Starting from productivity dispersion to wage dispersion and markup dispersion indicates firm inequality in the industries and sectors. And such a structure of growth indicates a rising concentration of a few entities with a rising market share. However the study of market share is underexplored in the literature with respect to its reasons and consequences, this study is an attempt to explore the gap.

Measurement and Empirical strategy

Measuring firm inequality

The previous study mainly focusses on wage inequality and productivity inequality while the present study focusses on market share inequality. Few studies discuss the market concentration to understand the market structure. But the study of (Mishra & Rao, 2014) posits that lower concentration among sellers does not substantially relate to higher level of market competition. Nonetheless, the degree of competition hinges on the size distribution. That's why additive measures are imperfect to capture the market competition accurately (Rhoades, 1995). Rather inequality in firm size distribution is relatively appropriate to understand the market structure.

Again, the inequality measure such as Gini coefficient and other measures consider the mean and number of firms to highlight the average market share differences in the industry. The inequality measure proposed by Rhoades (1995) reflects the share inequality of which is estimated as the sum of the difference of market share between top firm and subsequent firm and so on. This also represents inequality at the industry level. But all these measures do not show the inequality at firm level. As our objective is to understand the phenomenon of firm inequality, we need to evaluate the market share disparities at firm level. So, we partially follow the methods of Rhoades (1995) and calculate the market share inequality by calculating the gap between the contiguous firms' share. The formula is presented below in equation (1) and (2).

$$I_1 = MS_i - MS_{i+1} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (1)$$

$$I_2 = (MS_i - MS_{i+1})^2 \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (2)$$

Here, I_1 is the simple difference between the top1 firm to top 2 firm and so on while I_2 is the square of I_1 which gives greater weight to larger firm.

Again, we explore another measurement which incorporates deviation. This finds out the difference between market share of individuals firm and mean share of the industry (presented in the equation (3).

$$I_3 = MS_i - MS_{mean} \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots (3)$$

Measuring Intangible Assets

Hunter, Webster & Wyatt (2005) highlight the primary purpose of measurement of intangible assets. Firstly, measuring the assets helps to maximize business performance, minimize the cost of capital contributed by lenders and shareholders, and optimize the sustainability of supplier and customer relations.

Broad category	**Type of Investment**	**Measurement indicators**
Computerized Information	Software and Database development	Patent, copy-right, design IPR, trade- mark, others which are included in Intangible Assets
Innovative Property	R&D	R&D expenses
Economic Competencies	Marketing Branding	Marketing Expenditure Advertisement Expences

3.2.3. Measuring Superstar Firms

Identifying Superstar Firms

So far superstar firm is a relative concept unlike the concepts of multinational enterprises, and other identifying the firm with a precise definition is difficult and challengeable. So, different researchers have identified the firms basically based on the particular context of the analysis. For instance, Rosen (19) discussed the firm by focusing on labour perspective and … … analyse talk about the export superstar. Discussing the …point of view,

The initial literature review explains the superstar firms considering market capitalisation and turnover (Tambe et al., 2020; Autor et al., 2020). Similarly, Grullon et al (2019) Hall (2018) went

a step ahead and calculated on basis of profit margin and markup. Gallemore and Maydew (2023) and Cheng et al., (2023) have combine both the measure and identified on the basis of profit margin and market capitalisations.… De Loecker and Warzynski (2012) study focused on markup to detect the firms. In this study we have considered sales (turnover), mark-up and profitability to identify the superstar firms. We categorise the firms at 3-digit NIC code percentile basis and consider the top decile firms based on both turnover as well as mark up. Again, we look into the positive growth profitability over the period of time. The firms which have at least 3 years of positive growth of profitability, then we term those firms as superstar firms.

High markups represent a firm's capacity to impose a higher price and generate economic rents (De Loecker et al. 2020). And it talks about the pricing power in product market which might not tell about the size of the firms. Then higher market share or profitability in a particular time is a weaker analysis of superstar firms. Superstar firms are generally having more concentrated and powerful over the period of time with gaining market power. Analysis of Cheng (2023) considered the rise in mark up from previous year. Again, Gallemore & Maydew (2023) classified the firms into deciles and taken the top deciles firm on the basis of market capitalisation. Then they called superstar firms to the firms having high profit margin firms (profit margin greater than equal to 15% in previous five year).

In the present study, we considered the turnover (sales), profit margin (markup) to identify the star firms. Several steps have been undertaken to identify superstar firms. First, we segregate based on turnover or sales and consider the top decile firms of at the three-digit industries level. In the second step, positive markup growth is taken into consideration of all firms and classified into deciles. Then, we find out the inter-section between top decile firms based on the market share and firms having positive markup growth. All these firms are regarded as superstar firms.

Data & Methods

The main source of data is Centre for Monitoring Indian Economy (CMIE) prowess database. The CMIE is an independent think tank that gathers economic and business databases of Indian manufacturing economy. The Prowess data are obtained from annual reports, quarterly financial statements, stock exchange feeds, and other sources. We have gather the information of …..firms including large and medium and small sized from 2000 to 2020 and broadly classified into …industries as per the 3-digit NIC (National Industrial Classification) 2008. It includes both listed and unlisted companies on Bombay stock exchanges measures including public sector enterprises and private sector entities. So far, the database covers a wide range of information related to industrial activities and financial information, we extract the…..indicators including…. as per the need of the analysis. However, the CMIE-Prowess database has a significant number of missing sales values and values of other indicators as well. So, we consider the firms for our analysis which have at least sales values. Besides, the data found non-reporting and factors unrelated to firms are excluded. In addition, the negative data points of a few indicators such as sales, R&D expenditure, advertising expenditure are excluded due to its accounting issues. Details of variables employed in the study are described in Table 1.

4.4. Variable Description

To estimate the relationship, a multiplicative functional form is applied, such that market share is the function.

Table-2. Descripting of the variables and indicators

	Variables	***Definitions***	***Formula***	***Data Source***
1	Market Share	Market share is the ratio of a firm's sales to aggregate sales of industry in a fiscal year.	$\frac{Sales\ of\ Firm}{Sum\ of Sales\ od\ Industry}$	CMIE Prowess
2	R&D Intensity	Ratio of the R&D expenditure to sales in a fiscal year	$\frac{\text{R\&D expenditure}}{Sales} * Market\ Share$	CMIE Prowess
3	Advertisement Intensity	Ration of advertisement expenditure to sales of the firms in a fiscal year	$\frac{Advertisement\ Expenditure}{Sales} * Market\ Share$	CMIE Prowess
4	Marketing Intensity	Ratio of marketing expenditure to sales of the firms in a fiscal year	$\frac{Marketing\ Expenditure}{Sales} * Market\ Share$	CMIE Prowess
5	Intangible Asset Intensity	Ratio of intangible assets to sales of the firms in a fiscal year	$\frac{Intangible\ Asset}{Sales} * Market\ Share$	CMIE Prowess
6	HHI	Sum Square of market share of firms in a particular industry	$\sum_{i=1}^{m} \text{Market Share}_i^2$	CMIE Prowess
7	Export Intensity	Ratio of Total Export to sales of the firms in a fiscal year	$\frac{Total\ Export}{Sales} * Market\ Share$	CMIE Prowess
8	Size	Natural Logarithm of Total Fixed Assets	Log (Total Fixed Assets)	CMIE Prowess

	Mark-up	Mark-up is the profitability over turnover	$\frac{\text{SALEit} - (\text{RWit} + \text{PFit} + \text{WSit} + \text{ADit})}{\text{SALEit}}$	CMIE Prowess

4.2. Empirical Strategy

Structure-conduct-performance theory of Bain (1956) posits a unidirectional relationship among structure, conduct and performance. But the new paradigm of the theory postulates a dynamic relationship between the three. Performance indicators such as profitability and mark-up export are also explaining the firm heterogeneity (Barla, 2000; Boar & Midrigan, 2019; Bakker, 2019). The Sutton (1991) discusses that competitive and technological factors break the size-structure relation. According to him rising expenditure on R&D expenditure, advertisement expenditure enhances profitability and market share. Again, the conduct- structure phenomenon also pointed out that the incentives like R&D, marketing, advertising, and other intangible investment influence the market share and market concentration (Mishra & Vikas, 2010). Moreover, level concentration depends upon not only the market size but also competitive and technological intensity such as marketing, R&D, advertisement, and intangible assets intensity (Suma & Kapur, 2007). Again, intangible assets intensity also explains the firm heterogeneity (Arrighetti, Landini & Lasagni, 2014). On similar grounds, we investigate that firm share inequality is also determined by these factors. The specified model is

Market Share Inequality = f (HHI, Markup, Advertisement Expenditure Intensity, Intangible Asset Intensity, Marketing Expenditure Intensity, R&D Expenditure Intensity, Export Intensity, Size)

To perform the analysis, a dynamic panel regression model is being utilized which provides a robust inference of parameters. The advantage of the panel regression model is to cater to the omitted variable biases occurring due to unobserved heterogeneity (Hsiao, 2003). Additionally, dynamic models capture the endogeneity issues because inequality is possibly path dependent because past inequality can influence present inequality. So, the econometric specification of the observed model is presented as follows in equation (1).

$$\begin{aligned}\boldsymbol{Market\ Share\ Inequlaity}_{i,t} &= \boldsymbol{\alpha} + \boldsymbol{\beta}_1 \boldsymbol{Market\ Share\ Inequlaity}_{i,t-1} + \boldsymbol{\beta}_1 \mathbf{HHI}_{j,t} + \boldsymbol{\beta}_2 \boldsymbol{Markup}_{i,t} \\ &+ \boldsymbol{\beta}_3 \mathbf{Advertisement\ Intensity}_{i,t} + \boldsymbol{\beta}_1 \mathbf{Intangible\ Asset\ Intensity}_{i,t} \\ &+ \boldsymbol{\beta}_1 \mathbf{Marketing\ Expenditure\ Intensity}_{i,t} + \boldsymbol{\beta}_1 \mathbf{Export\ Intensity}_{i,t} \\ &+ \boldsymbol{\beta}_1 \boldsymbol{Size}_{i,t} + \Psi_{jt} + \boldsymbol{T}_t \\ &+ \boldsymbol{\varepsilon}_{i,t} \qquad (\mathbf{1})\end{aligned}$$

Here i represents firm, j stands for industry, t denotes year. Variables details are presented in Table-2. We prefer the system GMM over fixed effect and random effect model as the methods cater the endogeneity issue. Because the past value of the dependent variables also affects the current one. Additionally, endogeneity among independent variables was also observed in our model. Again, the system GMM resolves the problem of weak instruments that include the regression in first difference and in levels (Arellano & Bover, 1995). So, it is an appropriate method for our model.

In the second part we analyze the incidence of superstar firms where we consider the incidence of superstar firm is 1 if that is qualified the criteria for superstar firss as discussed in the measurement section, otherwise zero.

The equation can be represented as

$$\begin{aligned} \boldsymbol{Superstar\ firms_{i,t}} &= \boldsymbol{\alpha} + \boldsymbol{\beta_1 Market\ Share\ Inequlaity_{i,t-1}} + \boldsymbol{\beta_1}\mathbf{HHI}_{j,t} + \boldsymbol{\beta_2 Markup_{i,t}} \\ &+ \boldsymbol{\beta_3}\mathbf{Advertisement\ Intensity}_{i,t} + \boldsymbol{\beta_1}\mathbf{Intangible\ Asset\ Intensity}_{i,t} \\ &+ \boldsymbol{\beta_1}\mathbf{Marketing\ Expenditure\ Intensity}_{i,t} + \boldsymbol{\beta_1 Age_{i,t}} + \Psi_{jt} + \boldsymbol{T_t} \\ &+ \boldsymbol{\varepsilon_{i,t}} \end{aligned}$$

We go binary logit model to analyses the data and information.

Results & Discussion

5.1. Descriptive Statistics

In this section, we provide a descriptive statistical account of India's foreign trade and industrial characteristics during the study period. First, we analyze the pattern of a few indicators such as market share, mark up, advertisement expenditure, etc. demonstrating the overall trend since 2000. Then we follow the discussion on composition of the collected data from industry perspective which is grouped at the 3-digit level, for this study.

As the table depicts, the market share of the firm has declined over the period of time. And the market share of the top deciles is higher. Additionally, the gap between the top 5 percentile firm and top 10 percentile (top decile) firm is rising (shown in Figure-2).

Table-2. Correlation Matrix

	Inequality_1	Inequality_2	Inequality_3	R&D Intensity	Intangible Intensity	Advertisement Intensity	Ma Int
Inequality_1	**1**						
Inequality_2	**0.8494***	**1**					
Inequality_3	**0.8396***	**0.5850***	**1**				

R&D Intensity	**0.5955***	**0.5726***	**0.5016***	**1**			
Intangible Intensity	**0.1216***	**0.0557***	**0.1884***	**0.1086***	**1**		
Advertisement Intensity	**0.3987***	**0.2058***	**0.4765***	**0.0798***	**0.2058***	**1**	
Marketing Intensity	**0.3274***	**0.1615***	**0.4627***	**0.2256***	**0.1339***	**0.3783***	**1**
Export Intensity	**0.2332***	**0.0978***	**0.3291***	**0.1811***	**0.2515***	**0.1108***	**0.1**
Markup	**0.0012**	**0.0004**	**0.0027**	**0.0006**	**0**	**0.0075**	**0.0**
Size	**0.1720***	**0.0657***	**0.3864***	**0.1606***	**0.1741***	**0.1883***	**0.2**
HHI	**0.1364***	**0.1081***	**0**	**0.1575***	**0.0381***	**0.0436***	**0.0**

Table-4. Descriptive Statistics & Multicollinearity Test

Descriptive Statistics						**VIF Results**		
Variable	Observations	Mean	Std.	Min	Max	Variable	VIF	1/VIF
Inequality_1	126,797	0.001141	0.011838	0	0.66899	Marketing Intensity	1.31	0.764627
Inequality_2	126,797	0.000141	0.004697	0	0.447548	Size	1.28	0.781733
Inequality_3	126,797	-7.65E-13	0.021152	-0.025	0.723057	Export Intensity	1.26	0.791324
R&D Intensity	21,359	0.000129	0.000964	4.24E-09	0.035857	Advertisement Intensity	1.18	0.844745
Intangible Intensity	46,714	0.000258	0.002432	4.24E-09	0.182895	R&D Intensity	1.1	0.907103
Advertisement Intensity	52,592	0.000108	0.00072	4.24E-09	0.034722	Intangible Intensity	1.1	0.910425
Marketing Intensity	89,764	0.000124	0.000598	4.24E-09	0.033887	HHI	1.1	0.912265

Export Intensity	52,576	0.002178	0.013684	1.15E-08	2.223981	Markup	1.04	0.963226
Markup				-8400.8	1	Mean	VIF	1.17
Size	125,294	5.641891	2.005428	-2.30259	15.36307			
HHI	126,797	0.054259	0.05733	0.00907	0.555631			

The System GMM result presented in Table-5 displayed with three columns where three results are identical but different measures of inequality have been applied column (1), (2) and (3). Most of the indicators reap the expected results. Generally, HHI. The history of market share inequality has a significant impact on the present inequality. And the behavior of the firm such as R&D expenditure and advertisement expenditure has positive and significant influence on market share inequality. Evidently, one unit change in R&D expenditure intensity and advertisement expenditure intensity lead to 1.60- and 2.80 unit change in market share inequality. (shown in column-(1). The studies compatible with the results of Wang, Du, Koong, & Fan (2017) and Ravselj & Aristovnik, (2019) which established that R&D investment increase the market share of the firm by increasing its market value. And that translates into market share inequality. For instance, in last few decades high-tech companies are like Tesla, Alibaba, Microsoft, are spending huge R&D investment in order to gain market performance of the companies which translate into rising market share of those companies and that results in share inequality (Hsu & Cohen, 2020). This indicates that large firms spend more on R&D expenditure relative to small ones. The study of Gardiner & Hajek, (2023) also confirmed that research and development expenditure have a direct and significant association (R-squared=34%) in rising market share of the firms. However, the study of Gardiner & Hajek (2023) denotes the bidirectional and favorable impact of R&D investment on firm heterogeneity.

Similarly advertising expenditure affects market share and power through various means. Primarily, it impedes the entry of new companies because new firms face higher scale of average cost which provides advantages to established firms. In addition, it helps to establish brand loyalty in consumers' minds which convinces them to pay higher prices. Overall, the study finds that advertising generally has a positive effect on competition and tends to reduce market power in long run (Das, Chappell & Shughartii, 1993; Kapur & Suma, 2007). In addition marketing expenditure also stimulates rising share of the firm which spends on ….. and that generates the gap between the high spending and less spending firms (Kapur & Suma, 2007).

Intangible assets and star firms

In modern economies, intangible assets have become a critical driver of firm performance and competitive advantage. This shift towards intangible investments is particularly evident in star firms, which are characterized by their rapid growth, innovation, and market dominance. This paper explores the theoretical underpinnings and empirical literature on the relationship between intangible investments and the success of star firms. The resource-based view (RBV) of the firm posits that intangible assets are a source of sustainable competitive advantage due to their rarity, non-substitutability, and inimitability (Barney, 1991)

Logstics Regression

	Top 10 percent firms		**Top 5 percent firms**		**Top 1 percent firms**	
	Coefficient	Std. err.	Coefficient	Std. err.	Coefficient	Std. err.
R&D Intensity	4463.584***	334.0728	3090.166***	289.6965	808.1258***	129.7375
Intangible Intensity	615.4374***	68.00202	153.0165***	38.36736	164.3489***	26.20484
Advertisement Intensity	3589.455***	218.0694	2373.21***	151.2952	793.1224***	110.5603
Marketing Intensity	1589.403***	127.2809	1166.852***	97.37539	662.6434***	64.01586
Age	0.0211378***	0.001929	0.0182552***	0.002244	0.0226945***	0.003978
Constant	-4.01328	0.503819	-3.64024	0.51945	-4.96045	1.161017
Industry	Yes		Yes		Yes	
Year	Yes		Yes		Yes	
Number of Observations	6328		6,328		5,379	
LR chi2	3360.43***		2933.44***		862.39***	
Pseudo R2	0.4172		0.4621		0.4264	

Discussion

SL. NO.	Variables	Relationships	References	Methodology	Explanation
1	R&D intensity	+ & -	Ettlie, J. E. (1998) Gardiner & Hajek 2023	The study on 600 durable goods firms in 20 countries including Denmark, Norway and so on. European Union countries over the period 2000 to 2018	The results show that research and development expenditure have a direct and significant relationship (R-squared=34%) in rising market share of the firms. The study reveals that bidirectional and favorable effect between R&D and inequality for old EU countries
2	Advertisement Intensity	+	Das, Chappell, & Shughartii, (1993) Kapur & Suma (2007)	Data from Robert Morris Associates Annual Statement Studies for the years 1978-88 were collected. The dataset used consists of annual observations on 163 four-digit SIC manufacturing industries. Indian manufacturing industry	Advertising affects market share and power through various means. Primarily, it impedes the entry of new companies because new firms face higher scale of average cost which provides advantages to established firms. In addition, it helps to establish brand loyalty in consumers' minds which convinces them to pay higher prices. However, the study finds that advertising generally has a positive effect on competition and tends to reduce market power in the long run. Advertisement intensity positively influence the market concentration
3	Marketing Intensity	+	Dzisi & Ofosu (2014)	363 SMEs were included from a population of 900 applying stratified	Marketing strategies adopted by the SMEs lead to a change in market share by 19.4%.

			Malesev & Cherry (2021)	random sampling in Ghana.	Digital and social media marketing strategies assist the SMEs to sustain and grow market share in the construction sector. market.
4	Intangible Asset Intensity	+	Arrighetti, Landini & Lasagni (2014)	9th wave of Capitalia's Survey on Manufacturing Firms from 2001 to 2003.	Larger intangible-intensive industries are more concentrated. It means larger intangible-intensive firms are associated with higher market shares. They also find that the propensity to invest in intangible rise with firm's size, intangible assets base and human capital.
5	Markup	+			
6	HHI	+			

Conclusion

Scholars and policy makers have been continuously debating on the rising inequality as it seems a prominent matter of concern in the changing dynamics of the global economy. However, the discussion revolves around mere wealth and income inequality although variation in the distribution of factor input and factor payment across institutions, industries, and sectors are also subject of concern. despite it is one of the pronounced parts of inequality subject matters and indication of unbalanced development

Past literature denotes that firm inequality is connected to economic inequality (Adam Cobb, 2016) as the variation in profit share and labor share of firms translates into remuneration differences of workers, owners, and executives. So, assessing firm inequality guides the policymakers to identify the drivers of economic disparities and to address unevenness.

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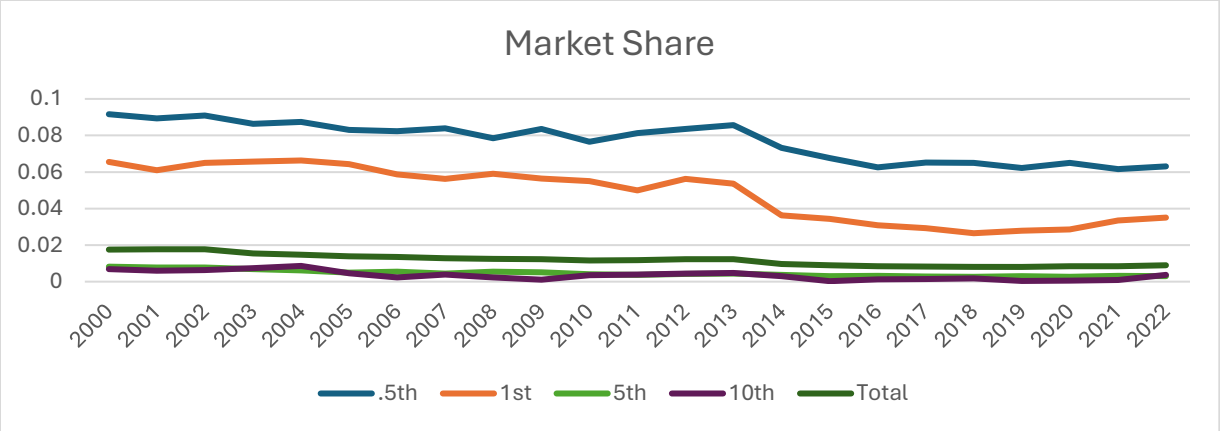
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Appendix

Market share is an important indicator for a company since it helps to evaluate their competitive position and analyze performance over time. It is frequently used in strategic planning and marketing activities to evaluate the strategy as well as the size of the company. It is the portion of market value of a particular firm within the industry. For this study this study, market share is considered as prime variables.

Figure-2. Market Share of Firms



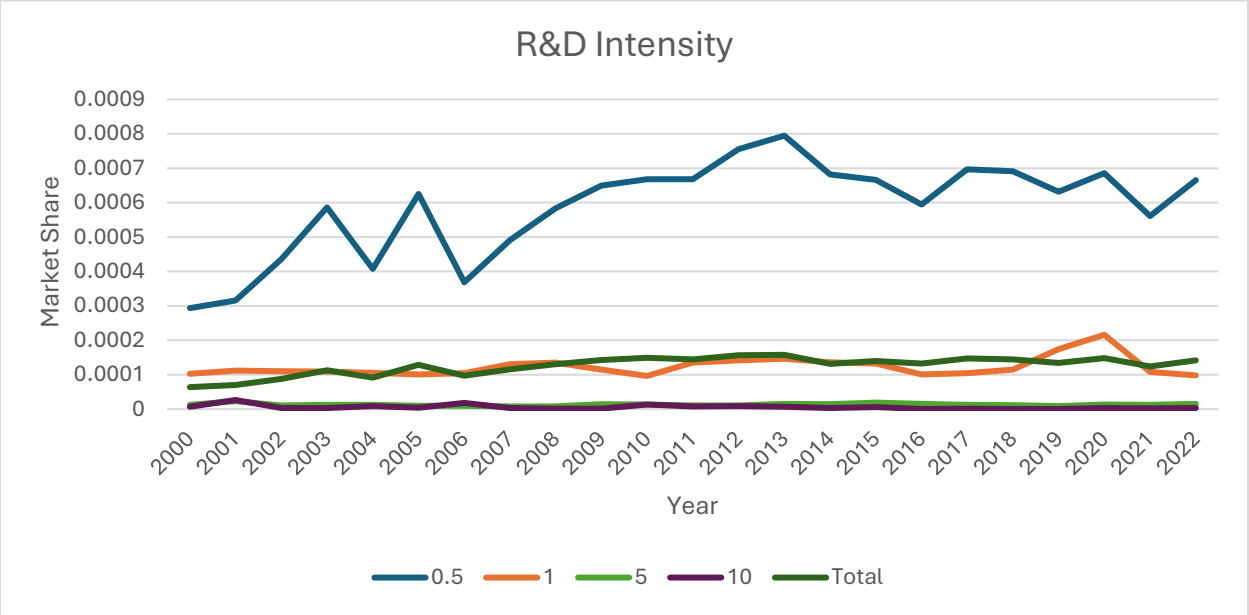
Source: Authors' compilation from CMIE data

Note: R&D intensity is computed as given in table 1. The percentile is calculated based on market share.

As the table depicts, the market share of the firm has declined over the period of time. And the market share of the top deciles is higher. Additionally, the gap between the top 5 percentile firm and top 10 percentile (top decile) firm is rising (shown in Figure-2).

The demand for research and development (R&D) has been augmented with the changing in industry dynamics, such as alterations in production methods, market competitiveness, and innovation paradigms (Lee & Wu, 2016; Le, Walters & Kroll, 2006). Previous research has identified larger firms having more market share experience lower marginal costs for additional R&D expenditure. So R&D spending of top firms are higher relative to small firms. Very often a non-linear relationship between firm share and R&D intensity is discovered for instance the study of Tyagi, Nauriyal, & Gulati (2018) on the Indian pharmaceutical sector. We have observed a constant patten of R&D intensity trends with higher intensity found in top firms in Indian manufacturing sector (shown a Figure-3).

Figure-3. R&D Intensity

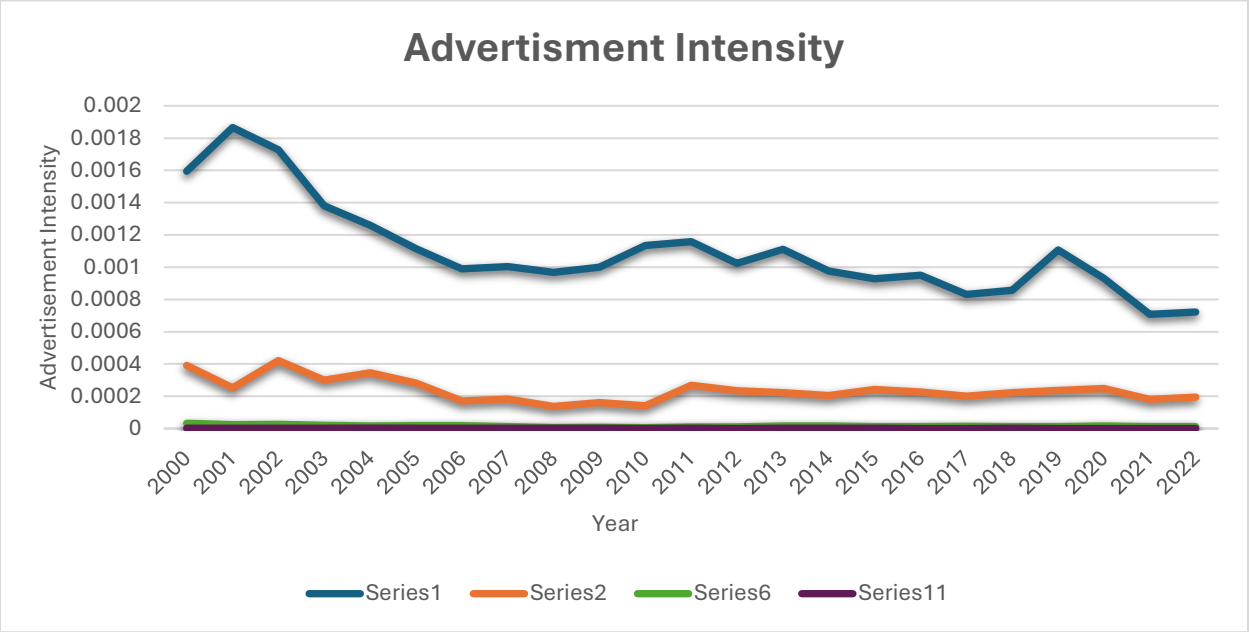


Source: Authors' compilation from CMIE data

Note: R&D intensity is computed as given in table 1. The percentile is calculated based on market share.

Besides, now a days companies are emphasizing advertising and marketing activities to boost market share. So, bigger firms often possess larger resources and allocate larger budgets for advertising to gain brand value and market reach. In the present world, a noticeable shift towards digital advertising and marketing has been observed (Virgile et al., 2016). Evidently our results also depicts that the firm having larger share in that market have relatively grater advertisement and marketing expenditure (presented in Figure-4 & 5)

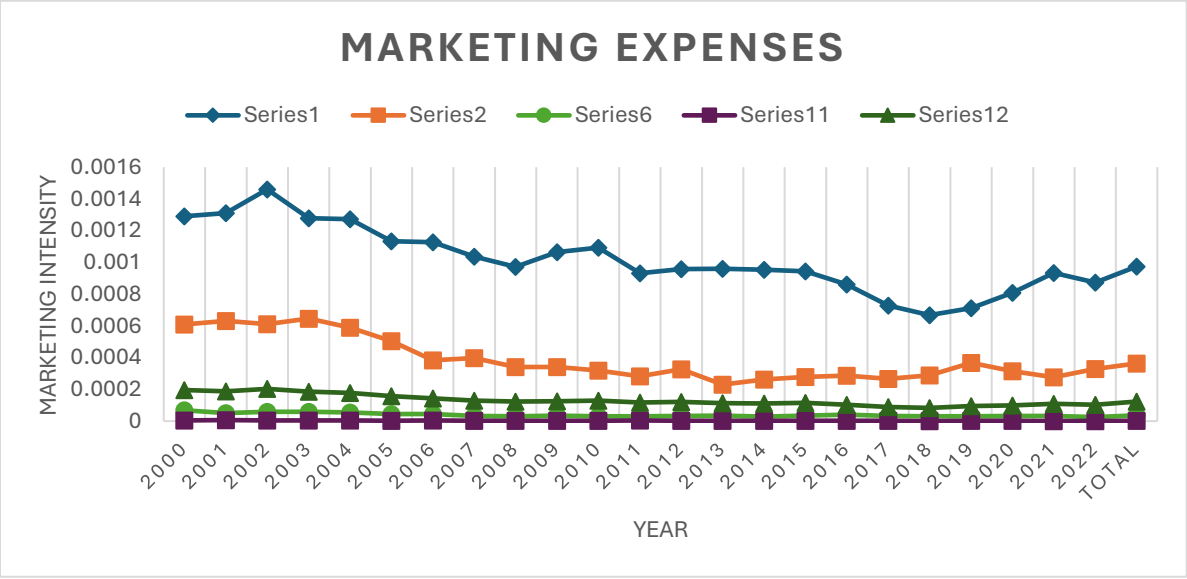
Figure-4. Advertisement Intensity



Source: Authors' compilation from CMIE data

Note: R&D intensity is computed as given in table 1. The percentile is calculated based on market share.

Figure-5. Marketing Intensity

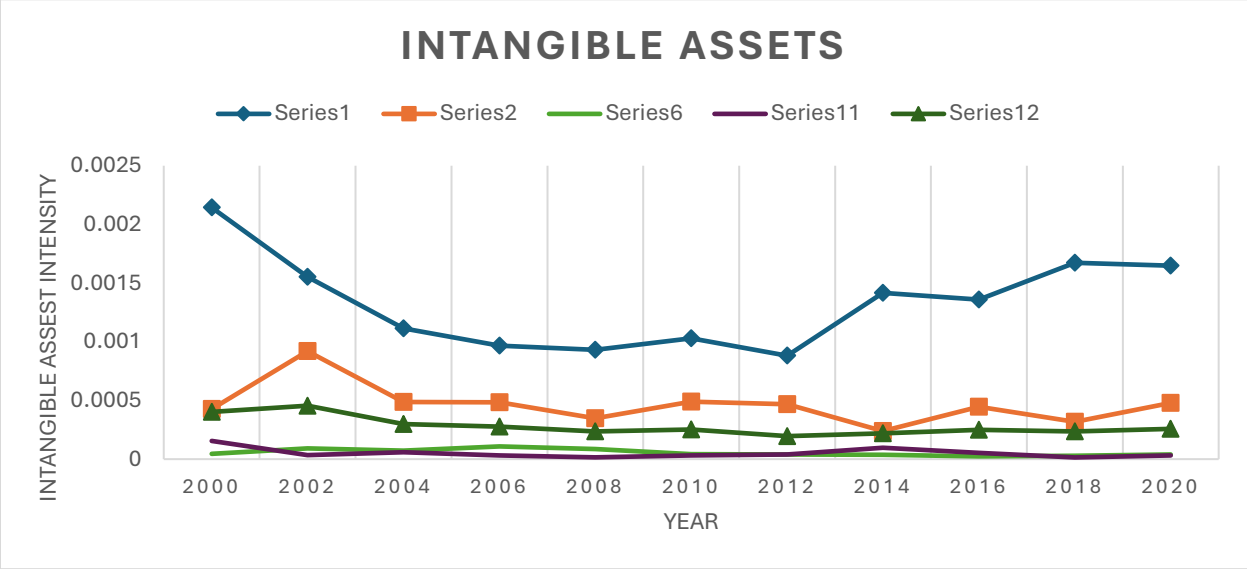


Source: Authors' compilation from CMIE data

Note: R&D intensity is computed as given in table 1. The percentile is calculated based on market share.

In addition, the investment of intangible assets is rising over the period of time. Due to technological advancement the intangible assets like patents, trademarks, copyrights, and brand reputation of firm are rapidly growing to gain market share and power. Because such assets help the company to gain a competitive advantage and generate significant revenue. The study of Crouzet and Eberly (2018) denoted that the market shares of firms are positively related with intangible assets what we found in case of our data as well (illustrated in Figure-6).

Figure-6. Intangible Assets Intensity



Source: Authors' compilation from CMIE data

Note: R&D intensity is computed as given in table 1. The percentile is calculated based on market share.

Descriptive Statistics of market share inequality, R&D intensity, marketing intensity, advertising intensity and other intangible assets intensity are represented in Table-5 which illustrates the range of the indicators with mean and standard deviation. Before estimating the panel model, we examine multicollinearity test employing Variance Inflation Factor (VIF) test (Choi, et al., 2016). The VIF results are between 1.1 to 1.31 and mean score is 1.17 (illustrated Table-1) which shows absence of severe multicollinearity among the explanatory variables.

	industry code			Top 10 percent firms			Top 6 percent firms			Top 1 pe
	Nic Code at 3 digit	product name		0	1	Total	0	1	Total	0
1	112	Rice	Food Industry	2672	287	2959	2822	137	2959	2941
2	128	Chillies		363	36	399	383	16	399	399
4	141	Milk		712	73	785	750	35	785	785
17	102	Fish, crustaceans & molluscus		245	24	269	257	12	269	269
18	103	Fruit concentrate		36	4	40	38	2	40	40
19	104	Edible oils		2585	275	2860	2727	133	2860	2842
20	105	Dairy products		282	28	310	296	14	310	310
21	106	Roasted cereals, snacks & namkins		763	76	839	803	36	839	839
22	107	Sugar		6138	671	6809	6480	329	6809	6753
23	108	Poultry feed		468	47	515	494	21	515	515
24	110	Ethyl alcohol (strength less than 80%) - (potable alcohol)		2510	270	2780	2652	128	2780	2765
27	131	Cotton yarn		8814	969	9783	9305	478	9783	9697
28	139	Other textiles		1780	189	1969	1880	89	1969	1959
29	141	Apparels (Readymade garment)		1754	186	1940	1851	89	1940	1931
32	152	Shoe uppers		233	24	257	245	12	257	257
34	162	Wood & wood products		527	54	581	557	24	581	581
35	170	Paper		3751	405	4156	3959	197	4156	4126

40	192	Lube oils & lubricants		1096	111	1207	1154	53	1207	1207
42	201	Alcohols & their derivatives		5939	650	6589	6269	320	6589	6534
43	202	Paints & varnishes		6337	692	7029	6687	342	7029	6973
45	210	Empty capsules		7595	833	8428	8016	412	8428	8355
46	221	Other rubber products		2062	217	2279	2176	103	2279	2270
47	222	Tubes, pipes & hoses of polyethylene		6501	709	7210	6862	348	7210	7150
49	231	Bottles		412	41	453	435	18	453	453
50	239	Products of cement, concrete, etc.		3619	391	4010	3818	192	4010	3979
52	241	Alloy & stainless steel		8725	956	9681	9209	472	9681	9596
53	242	Lead, unwrought		2084	219	2303	2200	103	2303	2294
54	243	Aluminium castings		3166	339	3505	3343	162	3505	3481
55	251	Medium structurals (Scaffolding, shuttering, etc.)		1140	117	1257	1203	54	1257	1257
57	259	Filing cabinets, etc.		3661	397	4058	3866	192	4058	4030
58	261	Electronics		1789	188	1977	1889	88	1977	1968
60	263	Other communication equipment		37	4	41	39	2	41	41
62	265	Control instrumentation & industrial electronics		1398	144	1542	1478	64	1542	1535

63	266	Medical equipment		336	34	370	354	16	370	370
65	271	Generators, transformers & switchgears		2306	247	2553	2434	119	2553	2542
67	273	Fibre optic cables		1648	172	1820	1740	80	1820	1813
69	275	Electric appliances		411	42	453	435	18	453	453
70	279	Other security electronic equipment		1332	137	1469	1404	65	1469	1462
71	281	Ball or roller bearings		5134	561	5695	5420	275	5695	5651
72	282	Machine tools		4682	508	5190	4941	249	5190	5149
74	292	Auto pressure die castings		2071	217	2288	2186	102	2288	2279
75	293	Axle shafts		5376	588	5964	5673	291	5964	5916
82	321	Jewellery of gold		1968	207	2175	2077	98	2175	2166
Total	#N/A	#N/A		114458	12339	126797	120807	5990	126797	125933