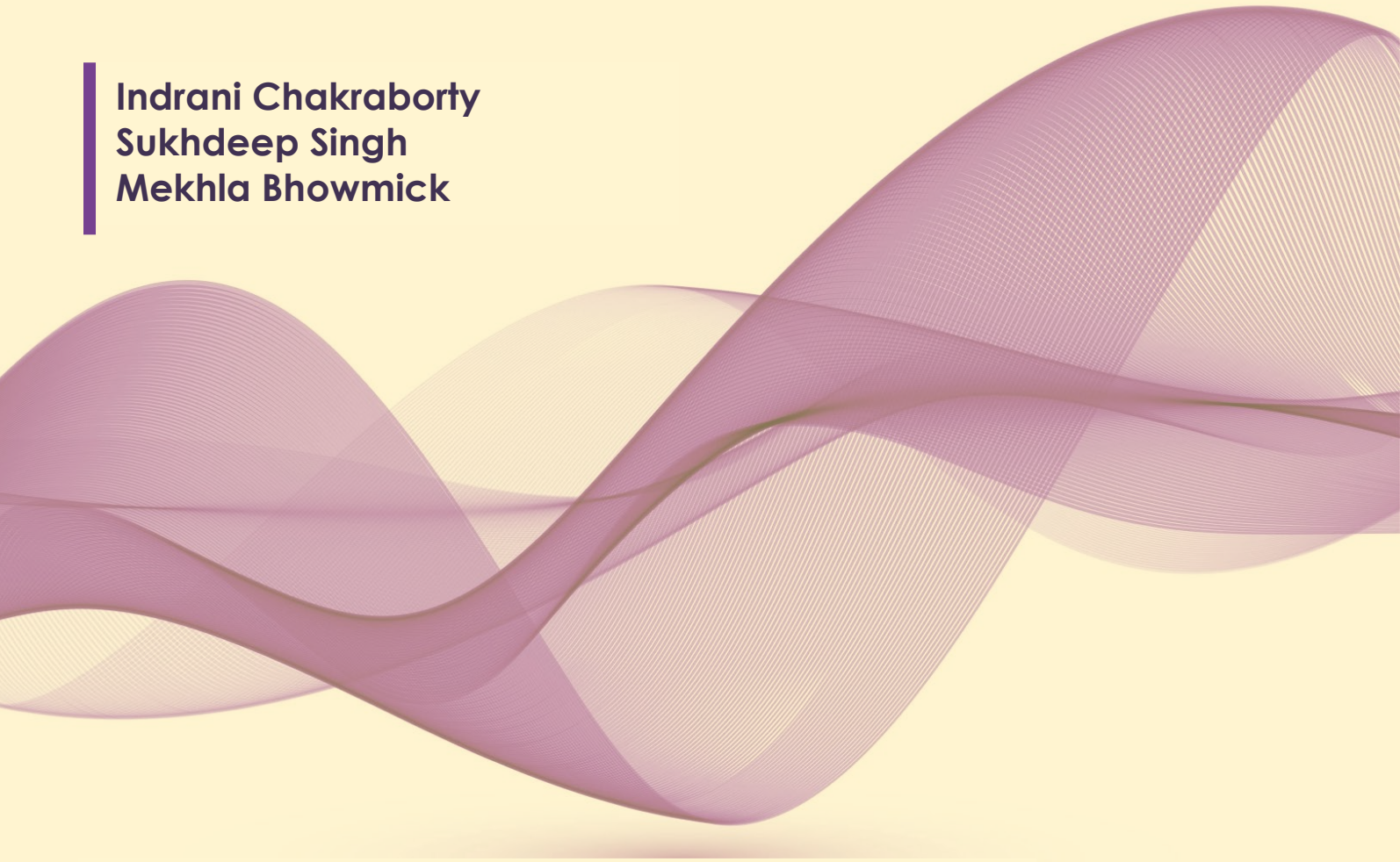
Economic Crises and Their Impact on Corporate Performance: Firm-level Evidence from Indian Manufacturing

Indrani Chakraborty
Sukhdeep Singh
Mekhla Bhowmick



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Indrani Chakraborty
HDFC Bank Chair Professor
Institute of Economic Growth, Delhi
e-mail: indrani.c61@gmail.com

Sukhdeep Singh
Assistant Professor
HDFC Bank Chair of Banking and Finance
Institute of Economic Growth, Delhi
e-mail: singh.sukhdeep999@gmail.com

Mekhla Bhowmick
PhD Scholar
Department of Economics, Calcutta University
e-mail: mekhlabhowmick9@gmail.com

Abstract: This study examines the firm-level impacts of two economic crises on Indian manufacturing, viz., the economic crisis generated following the Global Financial Crisis of 2007-08 and the economic crisis generated due to demonetization in November 2016, followed by the emergence of Covid-19 in March 2020. The impacts on the two alternative measures of firm performance, viz., Tobin's q and ROA are observed to be different. Moreover, the impacts are quite different in the two crisis periods, for both Tobin's q and ROA. We observe that capital intensity, competition, leverage, and firm size are highly significant determinants of firm survival and recovery. Capital-intensive firms experience less contraction during Crisis 1 for Tobin's q. Firms with high pre-crisis capital intensity experienced smaller drops in firm performance. However, we get the opposite result for Tobin's q during Crisis 2. But for ROA, again, capital intensity has a significantly negative effect during Crisis 1. More competition among firms helps to recover early. Thus, more competition helped more reallocation from less productive to more productive firms during Crisis 1 and Crisis 2 for Tobin's q. A similar result was observed for ROA during Crisis 1, too. Thus, both Crisis 1 and Crisis 2 resulted in "creative destruction" in India, as argued by Schumpeter (1942). Highly leveraged firms experience more contraction during a crisis, for Tobin's q, in both Crisis 1 and Crisis 2. A similar result was observed for ROA during Crisis 2 as well. Moreover, we observe that smaller firms are

more adaptable in times of Crisis 2 for Tobin's q. Thus, larger farms were hit harder by Crisis 2, and economic activity was reallocated toward more productive firms during Crisis 2. A similar result was observed for ROA for the period of Crisis 2. This finding highlights that Crisis 2 did not reallocate activity to large firms that have greater market power or political connections, which could be harmful to long-run economic growth (Di Mauro and Syverson, 2020). Ownership patterns of firms did not play any role in experiencing the effects of the crisis. Moreover, unlike earlier studies, export orientation and firm age played no role in this context in India. Thus, a unique, targeted public policy will not help firms' survival during an economic crisis.

Keywords: economic crisis, firm survival, firm performance, capital intensity, competition, manufacturing firms, India

JEL classification: C13; C20; G01; G30; L60

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1. Introduction

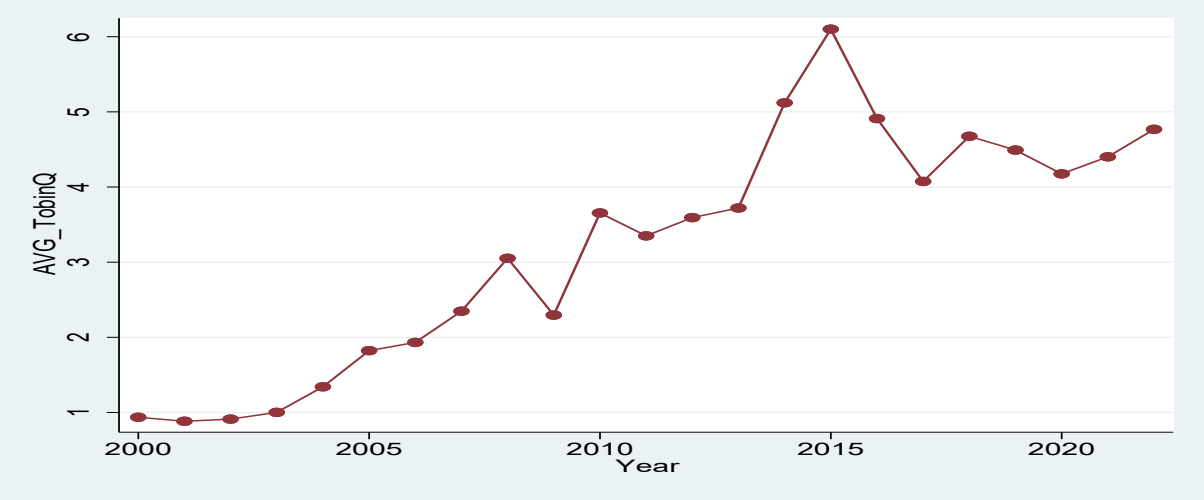
The Indian economy has suffered from several economic crises over the past few decades. Three such crises include the Global Financial Crisis (GFC) of 2007-08, the monetary shock of demonetization in November 2016, followed by the Covid-19 pandemic beginning in March 2020. The economic literature extensively investigates how these events generated significant macroeconomic disruptions. However, at the micro level, understanding remains limited. In this context, the question that arises is: What happens to firms during periods of such deep economic crises? The literature suggests that deep economic crises have a profound and uneven impact on firms in different sectors. Firms are heterogeneous in terms of history, size, ownership, market orientation, access to technology, and financial arrangements (Arrighetti et al., 2014; Roller and Sinclair-Desgagne, 1996). Their owners, too, have diverse objective functions and entrepreneurial capacities (Bhakar et al., 2024). It can be argued that the heterogeneity of firms shapes their resilience and adaptability during economic crises. However, detailed empirical evidence at the firm level, particularly in the Indian context, remains limited. This paper addresses this gap by examining how manufacturing firms in India responded to the crises that occurred in recent decades, with a focus on the determinants of firm performance and survival during downturns. For analytical purposes, we consider two distinct periods of crises: Crisis 1 (2007-2013), which represents the GFC, and Crisis 2 (2016–2021), which encompasses both the post-demonetization period and the Covid-19 pandemic.[1]

The macroeconomic backdrop of these crises has been extensively studied. The GFC, triggered by the subprime crisis in the United States in 2007–2008, marked a turning point for the Indian economy, as it experienced a sudden decline in its GDP growth rate. The GDP growth rate slowed to 6.7% in 2008–2009, down from an average of 8.9% during 2003–2008. Initially, the crisis led to a brief increase in capital inflows in 2008; however, this quickly reversed, resulting in a 63% decline in capital inflows and a widening of the current account deficit (Mohan, 2008). Fiscal and monetary interventions were implemented to stabilize the economy, and recovery started by 2010-11, with the GDP growth rate reaching 8.6%. While

[1] Both the post-demonetization period and the Covid-19 pandemic are included in Crisis 2, as the economy showed no clear recovery between the two events. This indicates a continuous phase of disruption without a stabilization period.

several studies argue that the Indian economy weathered the crisis with limited impact on overall growth and experienced a swift recovery (Kose and Prasad, 2010), others contend that although the service sector remained relatively resilient, the manufacturing sector plunged into a deep recession (Mukherjee, 2021). In line with this argument, our calculations in Fig. 1 indicate that the average value of Tobin's q, an indicator of firms' performance, declined sharply in 2008-09 and began to recover around 2013.

Figure 1: Trend in Average Tobin's q



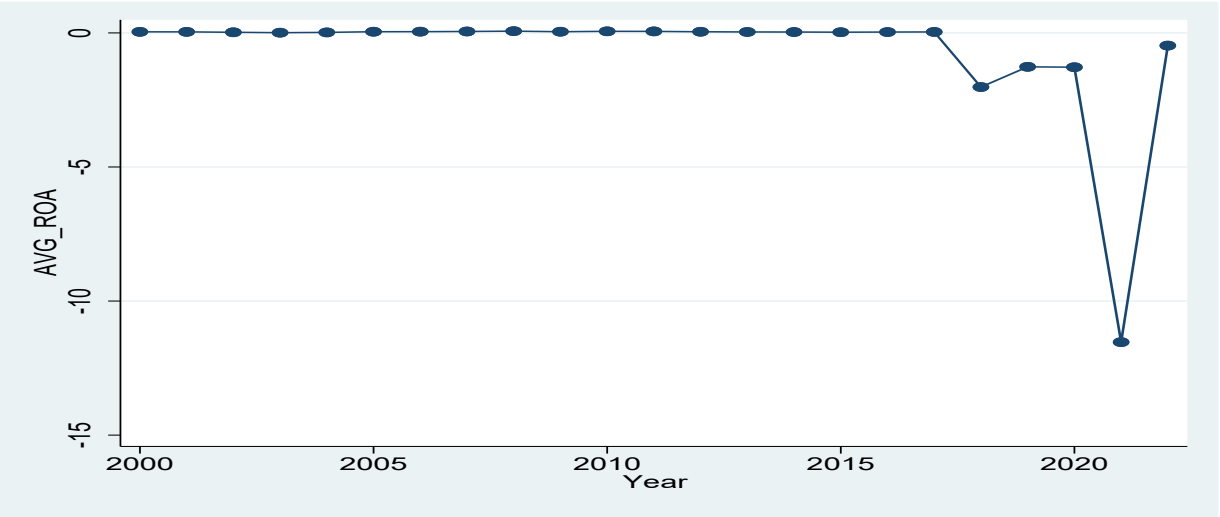
Source: Authors' own calculations using CMIE Prowess data

The second crisis originated due to the demonetization, announced on November 8, 2016, by the Government of India to fight corruption, which was followed by the emergence of Covid-19 in March 2020. Although the full stock of demonetized currency was returned to the Reserve Bank of India within a few months, the money supply shock caused a sharp disruption in economic activity in the cash-reliant Indian economy. A few studies suggested that the shock was temporary and the economy would recover quickly (Singh, 2018). However, as shown in Fig. 2 below, Return on Assets (ROA), which is another measure of the firm's performance, continued to decline well beyond the initial quarters. A similar decline and stagnation can be observed in the average Tobin's q in Fig. 1. The recovery was further delayed by the Covid-19 pandemic in 2020, which generated global demand and supply shocks (Demirguc-Kunt et al., 2021). These shocks generated widespread uncertainty among businesses due to the increasing risks of financial sector distress (Bloom et al., 2021; Buchheim et al., 2020; and World Bank, 2021). Many sectors, including manufacturing, experienced a contraction in output.

Theoretical and empirical literature suggests that firm-level responses to crises can vary substantially depending on internal characteristics and market conditions. For instance, while

smaller and younger firms are generally considered more vulnerable (Brucal et al., 2021; De Nicola et al., 2021), some studies argue that their flexibility can sometimes help them adapt quickly to the shock (Bartz and Winkler, 2016). Similarly, export-oriented and foreign-owned firms are often viewed as better positioned to weather economic shocks. Alternatively, due to their worldwide connectivity and dependence, such firms may be more severely affected by global shocks (Kolasa et al., 2010). The debt-equity ratio, or leverage, of the firms may also affect their performance. Vithessonthi and Tongurai (2015) argue that higher leverage had a negative impact on the firms' performance during the 2008 financial crisis.

Fig. 2: Trend in Average Returns on Assets (ROA)



Source: Authors' own calculations using CMIE Prowess data

One of the key questions that we explore by examining the role of product market competition is whether these crises triggered a process of creative destruction (Schumpeter, 1942; Caballero, 2008). According to this view, economic downturns can play a cleansing role by reallocating economic activity from less productive to more productive firms, thereby increasing productivity and economic growth in the long run (Caballero and Hammour, 1994). Alternatively, instead of shifting economic activity to the most productive firms, the crises may lead to reallocation in favour of the firms with greater market power or political connections, which could be detrimental to productivity growth (Di Mauro and Syverson, 2020). Although these shocks may lead to widespread reallocation and destruction (Bosio et al., 2020; De Nicola et al., 2021), it is unclear which pattern of creative destruction will emerge from the aforementioned type of economic crises.

This paper makes three significant contributions to the literature. First, it provides firm-level empirical evidence from India on how structural characteristics affect performance during

crises. Second, it assesses whether economic crises triggered a reallocation of resources consistent with the creative destruction hypothesis. Third, the paper contributes to the policy debate about the effectiveness of public policy in improving firm performance during economic crises. It is generally argued that economic activity is reallocated from less to more productive firms during a crisis (Foster et. al., 2016; Hallward-Driemeier and Rjikers, 2013; Eslava and others, 2010). However, we have been able to identify the role of specific firm characteristics that contributed to the survival of firms during economic crises in India. These findings will help inform the formulation of public policy during future economic downturns.

Our findings indicate that capital intensity, firm size, and leverage are important determinants of firm performance and recovery during economic crises. However, the results are dependent on the measure of firm performance and the Crisis period. We find that greater competition among firms helps them recover more quickly. Therefore, it may be argued that higher competition helped more reallocation from less productive to more productive firms during Crises. This implies that both Crisis 1 and Crisis 2 periods resulted in "creative destruction" in India, as argued by Schumpeter (1942).

We use an unbalanced pooled cross-section dataset of listed Indian manufacturing firms to test our hypotheses. For deeper insights, we employ two alternative measures of firm performance: Tobin's q and Return on Assets (ROA**)**. These two measures enable us to examine both the long-run and short-run dimensions of firm dynamics. Overall, the central objective of the study is to identify which firm characteristics, such as competition, leverage, capital intensity, and size, helped firms weather crisis shocks, and whether these shocks led to productive reallocation, often described as Schumpeterian "creative destruction."

The rest of the paper is organized as follows: Section 2 discusses the theoretical foundation and hypotheses. Section 3 presents the data, model specification, and variable definitions. Section 4 provides descriptive statistics, while Section 5 contains the empirical results, and Section 6 concludes.

2. Theoretical Foundation and Hypotheses

Drawing insights from the industrial organization literature, we focus on four important firm characteristics as the main determinants of firm survival during a crisis. These four firm characteristics are: market competition, firm size, age, and leverage. In what follows, we will discuss the theoretical arguments in support of our conjectures.

In industrial organization literature, market competition is an essential factor in determining a company's performance in a market. The higher the level of competition, the more companies are required to be productive. Competition increases efficiency and productivity growth, which in turn enhances firm performance. In this context, we have to mention the role of X-efficiency or superior management of resources, which may be higher for competitive industries (Leibenstein, 1966). According to Leibenstein (1966), there is a positive relationship between the intensity of competition and the efficient operation of the firm. A similar view was also expressed earlier by many economists, who argue that product market competition limits managerial shirking and, therefore, is an important determinant of firm performance (Alchian, 1950; Stigler, 1958). The argument is that if managers expropriate a large amount of resources in a competitive market, the firm will not be able to compete and will experience liquidation. This idea has been formalized later in the form of several models (Schimdt, 1997; Aghion et. al, 1999; Hart, 1983).

It has been a general belief among economists that market competition limits managerial shirking and, therefore, is an important determinant of firm performance (Alchian, 1950; Stigler, 1958). The argument is that if managers expropriate a large amount of resources in a competitive market, the firm will not be able to compete and will experience liquidation. This idea has been formalized later in the form of several models (Aghion et al., 1999; Hart, 1983; Schmidt, 1997).

Some of these theoretical studies suggest that managerial incentives are higher in a competitive market because competition serves as a disciplinary mechanism to reduce managerial slack. However, the conclusions of these studies differ substantially from one another. Hart (1983), for example, shows that greater competition reduces managerial slack if firms' costs are correlated, but it does not if firm costs are independent. However, Scharfstein (1988) suggests that Hart's model depends on the assumption that the manager is risk-averse and that income above a subsistence level has no value for the manager, whereas income below this level is completely undesirable. Scharfstein (1988) develops a model based on a different assumption, which states that the manager's marginal utility from income is strictly positive, and observes that Hart's results get reversed. His model indicates that managerial slack increases in response to increased competition. He argues that, in managerial firms, managers work hard when productivity is low, but managerial slack increases as productivity increases.

A similar ambiguous result between competition and managerial slack was reported by Hermalin (1992), too.

Another important study that has shown the ambiguous effect of competition on managerial incentives is Schmidt (1997). In this study, Schmidt (1997) derives the optimal incentive scheme for a manager as a function of the competitiveness of a firm. He argues that under increased competition, if a firm has high costs, it will be unprofitable and the probability of liquidation will increase. Hence, under increased competition, the manager would work harder for a cost reduction so that the possibility of liquidation would be avoided and his job would be retained. In this model, the manager is characterized as risk-neutral and wealth-constrained. In this model, the effect of competition on a manager's effort level is ambiguous.

In a recent study, Raith (2003) analyzes how the degree of competition among firms in an industry affects the incentives for their managers. He develops a model of an oligopolistic industry in which firms provide incentives to managers to reduce marginal costs. One important assumption in this model is that the market structure is endogenously determined by free entry and exit in the industry. The model captures the dynamics of competition from three dimensions: increasing product substitutability, increasing market size, and falling cost of entry. The paper argues that when the market structure is exogenous, two countervailing effects operate, viz., a business-stealing effect and a scale effect. According to this model, competition provides weaker incentives to the managers when market structure is exogenous, and hence these two effects work in opposite directions and cancel each other. However, when market structure is endogenous, as assumed in this model, the impact of competition on managerial incentives depends on the three dimensions of competition as stated earlier. In all these three situations, the prices of the product fall and the market becomes more competitive. Raith (2003) argues that with increased competition, due to increased product substitutability or a larger market, firms provide stronger incentives to their managers to reduce costs.

Another influential study is by Karuna (2007), who examines the effect of competition on managerial incentives, extending the notion of competition beyond the level of concentration, as addressed previously by Raith (2003). Using this multi-dimensional nature of competition, he shows that managerial incentives are positively related to product substitutability and market size and negatively related to entry costs. Thus, his findings support the hypothesis that firms provide stronger managerial incentives when industry competition is

greater. However, the relation between concentration and incentives turns out to be ambiguous in this study.

We, therefore, argue that competitive advantage has been a significant determinant of firm survival during a crisis. Following the above arguments, we, therefore, hypothesize that:

H1: *All else equal, as competition increases, the performance of firms will increase during a crisis.*

Next, we argue that larger firms perform better during a crisis because they may survive a crisis better, as they are more established and have more resources. These resources include both financial and organizational resources. They may also have strong political connections. On the other hand, smaller firms may be dexterous in adjusting their operations when faced with a crisis. Some studies observed (i) that average profitability declines slightly with size, (ii) that the standard deviation of profitability also declines, but relatively more sharply, with an increase in firm size, and (iii) that the persistence in the average profitability of firms was much higher than that observed for their growth rates (Whittington, 1971). However, in the Indian context, the market power of large firms is likely to dominate and ensure a positive relation to performance. Larger firms are likely to hold a greater market share, thereby increasing market concentration, and possess the resources to invest in technology, product differentiation, advertising, and more. These investments enhance their market power and efficiency, which positively influences firms' performance. Moreover, credit constraints will be less for these firms during a crisis. However, the impact of firm size on performance during the crisis is difficult to predict a priori. Inflexibility to changes in the business environment and dependence on the financial sector might also have made them less successful than small firms. Moreover, it is argued that smaller firms have greater scope to grow faster due to indivisibilities in favour of a smaller scale. Contrary to this, larger firms may be better equipped with the required resources for faster growth. Following this argument, we hypothesize that:

H2: *All else equal, as firm size increases, the performance of firms will increase during a crisis.*

Next, we examine the role of the firm's age in its performance. Older firms may use their experience and learning to enhance performance by diversifying into new lines of business, whereas for new firms, diversifying into different product lines may be counterproductive (Coad and Guenther, 2013). It is argued that with age, a firm acquires technical skill and managerial maturity. Firms with more extended production periods accumulate experience

(Coad, 2018), which is expected to influence their profitability during the crisis positively. There is an ambiguity about the relationship between age and firm performance. This is because industrial organization literature argues that older firms are better performer than newer ones due to their experience and the benefits of learning they enjoy. On the other hand, many economists argue that older firms are prone to inertia and thus are not flexible enough to adapt rapidly to a changing market environment (Bartz and Winkler, 2016). Thus, we hypothesize that:

H3: *All else equal, as age increases, the performance of firms will increase during a crisis.*

Finally, we focus on the role of financial leverage in controlling the effect of debt on a firm's capital structure and its performance (Anderson and Reeb 2003; Barontini and Caprio 2005). The pecking order theory suggests a negative impact of leverage on firm performance. On the other hand, the principal-agent theory asserts a positive relationship between debt and a firm's performance. However, debt can have a positive impact on performance if it is considered a proxy for tax shield. The larger the value of leverage, the higher the possibility that creditors may act as a monitoring agent for controlling shareholders, forcing them to hold a lower fraction of shares (Demsetz and Lehn, 1985; Demsetz and Villalonga, 2001). If leverage is high, it is expected that managers will focus more on using cash flows in the repayment of debt. While debt is a cheaper source of funds, it also increases the bankruptcy risk of businesses, so highly leveraged firms are likely to be associated with low profitability during a crisis. We, therefore, hypothesize that:

H4: *All else equal, as leverage increases, the performance of firms will decrease during a crisis.*

3. Data, Model Specification, and Variables

3.1. Data

We use annual data on Indian manufacturing firms listed in the Bombay Stock Exchange as available from the Centre for Monitoring Indian Economy's database PROWESS. This database has been widely used in reputable studies on Indian firms (e.g., Khanna and Palepu, 1999, 2000; Padmaja and Sasidharan, 2020; Mukherjee and Chanda, 2020). Our sample is an unbalanced pooled cross-section with different numbers of firms in the Crisis 1 and Crisis 2 periods. We have considered two crisis periods based on Fig. 1 and Fig. 2 - Crisis period 1:

2007-2013, and Crisis period 2: 2016-2021. From the above figures, we observe that following the Global Financial Crisis, the adverse effects on firm performance in India continued through 2007-2013. Similarly, following the demonetisation and Covid-19 crisis, the adverse effects on firm performance continued through 2016-2021. We have clubbed crises generated due to the demonetization and Covid-19 because our data is available only up to 2021.

3.2 Model Specification

For empirical analysis, the following model specification is considered:

$$\%\ Change\ in\ Firm\ Performance_{j,t} = \alpha + \beta X_{j,t} + hhi * lev + hhi * \exp + \varepsilon_{j,t} \quad (1)$$

where Xj t are the firm characteristics viz., firm size, age, leverage (lev), net cash flow (ncf)), export intensity (expint), capital intensity (capint), competition (hhi), sales growth (sales_g), percentage of Indian promoters (pm_ind) and percentage of foreign promoters(pm_f). As stated earlier, for firm size we have considered two alternative measures viz., log sales (ln_sales) and log assets (ln_asset) in alternative specifications. We have also included two interaction terms between competition and leverage (hhi*lev) and between competition and export intensity (hhi*exp). The interaction term hhi*lev has been used to examine whether the relationship between leverage and the level of changes in firm performance varied with competition. A similar interpretation holds good for the interaction term hhi*exp. All the above explanatory variables are taken as the average values for a pre-crisis period at the firm level. We have estimated eqn. (2) for the entire Crisis period 1 (2007-2013) for both the measures of firm performance, viz. Tobin's q and ROA. A similar exercise was carried out for Crisis period 2, too.

3.3 Variables

The dependent variable in our model is defined as the percentage change in the firm's performance from the pre-crisis period. The firm's performance is measured using two alternative measures, Tobin's q and ROA. The following formula is used to calculate the dependent variable using Tobin's q (TQ):

$$\%\ Change\ in\ Firm\ Performance = \frac{Tobin's\ q_{j,t} - Avg.Value\ of\ Tobin's\ q_{j,2005-06}}{Avg.\ Value\ of\ Tobin's\ q_{j,2005-06}} \text{x}100 \quad (2)$$

Where j denotes the firm, t = 2007, 2008,….2013, and is defined as the Crisis period 1, and the average value of $Tobin's\ q_{j,2005-06}$ represents the average value of Tobin's q across firms during the pre-crisis periods 2005-2006. For Crisis 2, the pre-crisis period is 2014-2015. A similar measure is estimated for the variable ROA and the two crisis periods, Crisis period 1 and Crisis period 2, respectively. The definition is based on the fact that Crisis 1 began in 2007 whereas recovery got underway in 2014. Again, Crisis 2 began in 2016, and the recovery started in 2022.

While Tobin's Q is a measure based on stock market prices, ROA is an accounting-based measure calculated using the firm's historical information. Accounting measures indicate short-term performance, whereas market measures indicate long-term performance. In that sense, Tobin's Q and ROA, both capture the dimensionality of time, and Tobin's Q also captures the interaction between stakeholders of firms since it measures investors' valuation of firms. Following Morck et al. (1988) and Khanna and Palepu (2000), we use the following formula for calculating Tobin's Q:

Tobin's Q = (market value of equity + book value of total liabilities) /book value of the assets; ROA is calculated as the ratio between net profit and total assets.

Four major explanatory variables have been considered, viz., competition (hhi), firm size, age, and leverage (lev). As control variables, we have considered net cash flow (ncf)), export intensity (expint), capital intensity (capint), and ownership concentration. For ownership concentration, we have considered two variables, viz., percentage of Indian promoters (pm_ind) and percentage of foreign promoters (pm_f). As firm size, we have considered two alternative measures, viz., log sales (ln_sales) and log assets (ln_asset). The descriptions of the explanatory/control variables included in our study are as follows:

3.2.1 Competition: We take the Herfindahl–Hirschman index (HHI) as a measure of competition. It is calculated by taking the sum of the squared market shares of all the firms in the industry. It takes into consideration the market shares of all the firms, thus overcoming the shortcomings of the k-firm concentration ratio. Since HHI is the sum of the squares of the market shares of the firms, the HHI gives more weightage to the larger firms than the smaller ones. HHI is 1 when there is only one firm in the industry, and it is closer to 0 when the number of firms increases in the industry.

Mathematically, HHI can be written as:

HHI= $\sum_{i=1}^{N}$ Square of market share of firm i in industry j in year t

3.2.2 Firm size: This is the natural logarithm of the firm's sales. Firm size is included to control for economies of scale (Anderson and Reeb, 2003; Giroud and Mueller, 2010; Chou et al., 2011). Large-sized firms can be expected to have greater market power and influence product and factor markets and thus positively affect performance (Shepherd, 1986) and enjoy economies of scale (Penrose, 1959). However, the effect of firm size on performance is ambiguous, as argued in Section 2 earlier.

3.2.3 Age: This is the natural logarithm of the number of years since the inception of the firm. There is an ambiguity about the relationship between age and firm performance, as discussed earlier.

3.2.4 Leverage: Leverage is used to control for the effect of debt in capital structure on a firm's performance (Anderson and Reeb, 2003; Barontini and Caprio, 2005). It is expected that highly leveraged firms are likely to be associated with low profitability during a crisis, as argued earlier.

3.2.5 *Net Cash Flow:* Cash flow is the amount of liquid money that comes in and goes out of a firm. Positive cash flow indicates that a firm has liquidity. This enables the firm to repay obligations, reinvest in business, return money to shareholders, pay expenses, provide a buffer against future financial crises, and invest in R&D. Firms with strong financial flexibility, rendered by steady cash flow, can take advantage of profitable investments as well as undertake risky investments in R&D, which in turn improves firm performance. Higher cash flow indicates higher liquidity and more investment opportunities for a firm. Evidence provided by Kaplan and Zingales (1997) showed that investment has a positive impact on firm performance. It is expected that a steady flow of cash will increase the probability of survival during the economic downturn.

3.2.6 Export Intensity: Export intensity is measured by the ratio of exports to sales of a particular firm in a particular year. Export-oriented firms are expected to perform better than domestically oriented ones during a crisis. It is expected that their competitiveness would increase during a crisis due to depreciation in exchange rates. Studies suggest that the learning

effects of exporting generally lead to increased effort in innovating and productivity improvements. Mishra (2010), Kandamuthan (2002), Bhattacharya and Bloch (2004), and Damijan et al. (2010) find that export orientation favourably affects a firm's innovative activity and profitability. It is expected that firms' penetration into international markets makes them more inclined to invest in R&D because they need to continuously adapt their products to update them and improve their performance.

3.2.7 *Capital Intensity:* Capital intensity is measured as the ratio of capital expenditure to sales of a firm in a particular year. Higher capital intensity is associated with a higher level of performance because higher capital intensity indicates the willingness and capabilities of the firms to undertake long-term and profitable investment projects. On the other hand, it was also argued that firms in labour-intensive industries would have been less affected than those in capital-intensive industries during a crisis (Narjoko and Hill, 2007).

3.2.8 Sales Growth: Sales growth captures the demand condition of a firm, and the fluctuation in sales growth can lead to variation in performance over time (Anderson and Reeb, 2003; Barontini and Caprio, 2005; Chou et al, 2011). Therefore, we calculate sales growth as a percentage change in sales for a particular year. If sales growth is higher, it could lead to higher profitability, but also attract new players to that market, which increases competition.

3.2.9 Ownership concentration: There are various ways of measuring ownership concentration. While Demsetz and Lehn (1985) consider the percentage of shares held by the firm's five largest shareholders as a measure of ownership concentration, Morck et al. (1988) and Cho (1998) calculate ownership concentration as the percentage of shares held by the management. Following Ganguli and Agrawal (2009), whose model is a modification of Demsetz and Villalonga's (2001) model, we measure ownership concentration as the percentage of equity shareholding held by the promoters. This proxy measure of ownership concentration is followed by several other studies in India and is ideally suited for the Indian scenario, which is characterized by concentrated ownership with the control in the hands of promoters. In the finance literature, various studies (Berle and Means, 1932; Claessens and Djankov, 1999; Mitton, 2002) think that ownership concentration has a positive influence on firm performance. On the other hand, Demsetz (1983) argues that ownership structure should be treated as endogenous. Demsetz and Villalonga (2001) find that there exists no systematic relationship between ownership structure and firm performance. They argue that ownership structure is an endogenous variable that is influenced by shareholders and stock market trading, and it is the

profit maximizing motive of the shareholders that influences the ownership structure. We hypothesize a positive relationship between foreign promoter ownership and firm performance, and that these firms will outperform domestic promoter-owned firms. It may also be conjectured that the expected better performance of foreign promoter-owned firms depends on the foreign equity share in these firms, although the published literature provides less clear guidance on this issue. Similarly, for the reasons discussed above, the relationship between Indian promoter-owned firms and firm performance is likely to be ambiguous. We have considered both the Percentage of Indian Promoters and the Percentage of Foreign Promoters. The definitions of all the variables are summarized in the appendix.

4. Descriptive Analysis

It appears from Fig.1 that Indian manufacturing was growing rapidly before the Crisis 1 and Crisis 2 periods. Tobin's q declined substantially in 2009, 2016, 2017 and 2020. (Fig.1) and ROA declined substantially in 2018 and 2021 (Fig.2). It is evident that crises began to affect manufacturing performance in 2009 during the Crisis 1 period and since 2016 during the Crisis 2 period. Fig. 1 also shows that recovery commenced in 2014 following Crisis 1 and since 2022 following Crisis 2. A comparison of Fig. 1 and Fig. 2 shows that the effect of Crisis 1 is more prominent in the trend of Tobin's q rather than that of ROA. This happens because the accounting measure (ROA) indicates short-term performance, whereas the market measure (TQ) indicates long-term performance. In that sense, Tobin's q and ROA, both capture the dimensionality of time, and Tobin's q also captures the interaction between stakeholders of firms since it measures investors' valuation of firms. By using both measures, we are able to present the strengths and weaknesses of each measure.

The descriptive analysis reveals that the impact of the crises varied across industries while considering the percentage change in Tobin's q and ROA (see Appendices B to E). Some industries recovered from 2011 onwards following Crisis 1. These industries include food products, beverages, textiles, wearing apparel, paper and products, basic metals, computers, electronic and optical products, etc., motor vehicles, and furniture. On the other hand, some other industries were affected only during 2007-2008 and recovered during the following period. This includes tobacco products, leather and related products, wood and products of wood, chemical and chemical products, rubber and plastic products, electrical equipment, and machinery and equipment. However, some other industries were more severely affected, for

which the decline in performance continued till 2013. These groups include the manufacture of other transport equipment and the manufacture of coke and refined petroleum products.

Based on the speed of recovery of industries due to the crisis, we have classified all the industries into three categories, viz., *industries quickly recovered*, *industries moderately recovered* and *industries worst affected*. Industries under these three categories during Crisis 1 and Crisis 2, based on performance measures like Tobin's Q and ROA, have been summarised in Appendix F and Appendix G to get a clearer picture of the effects of crises on the recovery of different manufacturing industries.

5. Empirical analysis

As stated earlier, our sample is an unbalanced pooled cross-section with different numbers of firms in the Crisis 1 and Crisis 2 periods. We have done OLS regressions for the eqn. (2) considering alternative specifications. We have four alternative specifications using the two alternative measures of firm size (ln_sales and ln_assets) and using the two interaction terms hhilev and hhiexp. Let us discuss the estimation results. Table 1 reports the estimation results for the measure Tobin's q for the pooled data for 2007-2013 for Crisis period 1. The results show that there is no significant difference between export-oriented firms and domestic-oriented firms as the variable expint is not significant in either of the models, implying that performance in these two industries is quite similar. It also suggests that export-oriented firms were no more likely to survive than domestically oriented firms. Capital intensity is positively significant in all the models, implying that capital-intensive industries are doing better than others following the Crisis period 1. The coefficient of the variable hhi is negatively significant in two models, suggesting that the negative effects of the crisis were less in more competitive firms. Thus, it supports hypothesis 1 (H1). However, the sign of this variable is not uniform across models. The variable firm size (ln_sales and ln_asset) shows positive and significant effects, implying that larger firms performed better than smaller ones during the Crisis period 1. In other words, larger firms experienced less contraction in their performance compared to small firms. It supports the findings of Chen and Lee (2023) and OECD (2017a, 2017b) during the Global Financial Crisis. However, it contradicts the findings of Forbes (2000) and Berry et. al. (2001). Thus, hypothesis 2 (H2) is supported by our findings. The variable leverage has a significantly negative effect on percentage change in performance, implying that if a firm has more debt, the contraction is less during the crisis period 1. Thus, highly leveraged firms are

likely to be less adversely affected. Hence, this finding does not support hypothesis 4 (H4). The variable age is negatively significant in two models, implying that older firms experience more contractions. Hence, hypothesis 3 (H3) has been rejected. Moreover, the contraction was higher during the Crisis period 1 for both the Indian promoters and foreign promoters. Thus, the ownership pattern of firms did not play any role. Moreover, the effects of the interaction terms hhilev and hhiexp are insignificant, which indicates that the effect of leverage and exports on the level of changes in Tobin's q does not depend on the level of competition. Thus, these relationships are the same across different levels of competition.

Table 1: Regression results for the percentage change in Tobin's q for Crisis 1 (2007-2013)

Dependent Variable (% change in Tobin's q)	**Entire Period 2007-2013 (1)**	**Entire Period 2007-2013 (2)**	**Entire Period 2007-2013 (3)**	**Entire Period 2007-2013 (4)**
expint_0506	-2.91 (1.881)	-1.271 (2.212)	-2.881 (1.835)	-1.283 (2.199)
capint_0506	0.601* (0.151)	0.693* (0.211)	0.599* (0.143)	0.682* (0.184)
hhi_0506	0.021 (0.016)	-0.713** (0.336)	0.019** (0.008)	-0.72** (0.336)
ln_sales_0506	47.777* (10.629)		47.744* (10.378)	
ln_asset_05-06		112.007* (28.488)		113.181* (28.34)
lev_0506	-408.563* (98.034)	-519.121* (149.196)	-407.278* (91.499)	-510.076* (122.838)
ncf_0506	-0.761 (0.56)	-0.543 (0.664)	-0.761 (0.547)	-0.546 (0.663)
age_0506	-250.57*** (142.425)	-185.344 (193.14)	-242.164*** (138.582)	-182.005 (192.118)
sales_g_0506	0.073 (0.105)	0.042 (0.124)	0.075 (0.102)	0.042 (0.124)
pm_ind_0506	-11.28* (1.402)	-12.351* ((1.697)	-11.217* (1.366)	-12.349* (1.695)
pm_f_0506	-8.603* (2.443)	-10.592* (2.936)	-8.537* (2.383)	-10.603* (2.932)
hhilev	-0.002 (0.027)	0.01 (0.08)		
hhiexi			0.001 (0.01)	0.003 (0.002)
Constant	787.42* (196.75)	712.979* (240.013)	773.523* (191.39)	706.025* (238.309)
R-squared	0.03	0.029	0.031	0.029
Number of obs.	3350	2396	3515	2402

Note: Standard errors are in parentheses and levels of significance are as follows: 1% as *, 5% as **, 10% as ***.

Table 2: Regression results for the percentage change in ROA for Crisis 1 (2007-2013)

Dependent Variable (% change in ROA)	Entire Period 2007-2013 (1)	Entire Period 2007-2013 (2)	Entire Period 2007-2013 (3)	Entire Period 2007-2013 (4)
expint_0506	-3.943* (0.984)	-3.689* (0.99)	-3.136* (1.151)	-3.149* (1.145)
capint_0506	-0.324* (0.079)	-0.197** (0.077)	-0.209*** (0.11)	-0.215** (0.095)
hhi_0506	-0.028* (0.009)	-0.022* (0.004)	0.271 (0.174)	0.271 (0.174)
ln_sales_0506	14.991* (5.561)	14.712* (5.6)		
ln_asset_0506			12.333 (15.218)	12.401 (15.214)
lev_0506	217.942* (51.419)	115.048* (49.485)	112.866 (77.346)	117.941*** (63.593)
ncf_0506	-0.501*** (0.293)	-0.49*** (0.295)	-0.472 (0.346)	-0.472 (0.346)
age_0506	195.072** (73.558)	221.988* (73.963)	118.568 (99.328)	117.807 (99.057)
sales_g_0506	0.006 (0.061)	0.015 (0.062)	0.013 (0.073)	0.013 (0.072)
pm_ind_0506	-1.042 (0.717)	-1.016 (0.722)	-1.146 (0.863)	-1.147 (0.864)
pm_f_0506	1.305 (1.27)	1.313 (1.279)	1.356 (1.515)	1.35 (1.515)
hhilev	-0.097* (0.014)		-0.056* (0.004)	
hhiexi		0.002 (0.003)		0.001 (0.002)
Constant	-246.89** (101.087)	-252.415** (101.792)	-280.553** (123.17)	-280.051** (123.122)
R-squared	0.035	0.022	0.014	0.014
Number of obs.	3328	3328	2374	2374

Note: Standard errors are in parentheses and levels of significance are as follows: 1% as *, 5% as **, 10% as ***.

Let us now consider the results for ROA during the Crisis period 1 (Table 2). The results show that export-oriented firms are likely to be the most adversely affected due to Crisis 1, as the variable expint is negatively significant in all the models. Hence, export-oriented firms have not been able to substitute domestic sales with foreign sales during the negative demand shock at home. Capital intensity is negatively significant in all the models, implying that capital-intensive industries contracted more than others following the Crisis period 1. Thus, the results of Tobin's q and ROA are quite different. The coefficient of the variable hhi is negatively significant in two models, suggesting that the negative effects of the crisis were less in more

competitive firms. Thus, H1 is supported by our findings. The variable firm size (ln_sales) shows a significantly positive effect, implying that larger firms perform better than smaller ones during the Crisis period 1. In other words, smaller firms experienced more contraction in their performance compared to larger firms. This finding is similar to the findings for Tobin's q. Hence, H2 is supported by our findings. The variable leverage has a significantly positive effect on percentage change in performance, implying that if a firm has more equity, the contraction is more during the Crisis period 1. It contradicts H4. The variable net cash flow (ncf) is negatively significant in some models, indicating that if the cash flow was higher during the pre-crisis period, the contraction was less during the crisis period. The variable age is positively significant, indicating that younger firms experienced more contraction. Therefore, this result is opposite to that in the case of Tobin's q. This finding supports H3. Moreover, there was no effect on contraction during the Crisis period 1 for both the Indian promoters and foreign promoters. Thus, the ownership pattern of firms did not play any role. Moreover, from the effect of the interaction term hhilev, it appears that as leverage increases, with increasing competition, contraction of performance increases. Therefore, effects on performance, measured by the two alternative measures viz., Tobin's q and ROA, are different for many variables.

Let us now discuss the results for the Crisis period 2 for Tobin's q and ROA. Table 3 reports the estimation results for the measure Tobin's q for the pooled data for 2016-2021 for Crisis period 2. The results show that there is no significant difference between export-oriented firms and domestic-oriented firms as the variable expint is not significant in either of the models, implying that performance in these two industries is quite similar. Hence, the effect of this variable is similar to that effect in Crisis period 1. Capital intensity is negatively significant in some models, implying that capital-intensive industries contracted more than others following the Crisis period 2. The coefficient of the variable hhi is negatively significant in all the models, suggesting that the negative effects of crisis were less in more competitive firms. The effect of hhi, therefore, is the same in Crisis periods 1 and 2. So we get support for H1. The variable firm size (ln_sales and ln_asset) shows a negative and significant effect, implying that smaller firms performed better than larger ones during the Crisis period 2. In other words, larger firms experienced more contraction in their performance compared to small firms, which is just the opposite of the effect of this variable in Crisis period 1. This finding thus does not support H2. The variable leverage has a significantly negative effect on percentage change in performance, implying that if a firm has more debt, the contraction is greater during the Crisis

period 2. Thus, highly leveraged firms are likely to be the most adversely affected. Thus, the effect of this variable is similar in the Crisis periods 1 and 2. This finding supports H4. The variable age is positively significant in some models, suggesting that contraction was higher for younger firms during Crisis period 2. This finding supports H3. Moreover, the contraction was higher during the Crisis period 2 for the Indian promoters, whereas for foreign promoters, there was no effect.

Table 3: Regression results for the percentage change in Tobin's q for Crisis 2 (2016 2021)

Dependent Variable (% change in Tobin's q)	**Entire Period 2016-2021 (1)**	**Entire Period 2016-2021 (2)**	**Entire Period 2016-2021 (3)**	**Entire Period 2016-2021 (4)**
expint_1415	0.002 (0.017)	0.002 (0.019)	0.008 (0.019)	0.008 (0.02)
capint_1415	-3.278* (1.223)	-3.257* (1.223)	-1.201 (1.325)	-1.167 (1.325)
hhi_1415	-0.103* (0.023)	-0.098* (0.023)	-0.253* (0.041)	-0.249* (0.04)
ln_sales_1415	-100.049* (15.915)	-100.384* (15.914)		
ln_asset_1415			-145.792* (33.356)	-146.979* (33.338
lev_1415	-59.522 (42.298)	-83.491** (35.264)	-94.354** (45.19)	-119.138* (37.788)
ncf_1415	0.252 (0.165)	0.235 (0.164)	0.278 (0.186)	0.258 (0.185)
age_1415	-18.374 (126.113)	-19.313 (126.125)	417.329** (211.452)	419.853** (211.464)
sales_g_1415	-0.142 (0.12)	-0.138 (0.12)	-0.146 (0.13)	-0.142 (0.129)
pm_ind_1415	-12.269* (1.872)	-12.127* (1.867)	-10.82* (2.253)	-10.628* (2.245)
pm_f_1415	-6.669 (5.213)	-6.278 (5.2)	-8.296 (5.867)	-7.815 (5.848)
hhilev	-0.007 (0.007)		-0.007 (0.007)	
hhiexi		0.0002 (0.02)		0.0003 (0.01)
Constant	1318.375* (222.102)	1304.568* (221.719)	1239.944* (365.632)	1224.644* (365.355)
R-squared	0.023	0.022	0.020	0.019
Number of obs.	4579	4579	3991	3991

Note: Standard errors are in parentheses and levels of significance are as follows: 1% as *, 5% as **, 10% as ***.

Table 4: Regression results for the percentage change in ROA for Crisis 2 (2016-2021)

Dependent Variable (% change in ROA)	Entire Period 2016-2021 (1)	Entire Period 2016-2021 (2)	Entire Period 2016-2021 (3)	Entire Period 2016-2021 (4)
expint_1415	0.004 (0.011)	0.003 (0.012)	0.006 (0.012)	0.006 (0.012)
capint_1415	-0.261 (0.718)	-0.251 (0.718)	0.438 (0.765)	0.453 (0.765)
hhi_1415	0.024*** (0.014)	0.027*** (0.014)	-0.03 (0.025)	-0.028 (0.025)
ln_sales_1415	-34.93* (9.852)	-35.137* (9.85)		
ln_asset_1415			-57.685*** (20.202)	-58.342*** (20.189)
lev_1415	-42.08 (26.225)	-57.303* (21.763)	-46.187*** (27.531)	-60.527* (22.839)
ncf_1415	0.541* (0.102)	0.531* (0.101)	0.503* (0.112)	0.492* (0.112)
age_1415	-195.08** (78.14)	-195.596** (78.146)	-74.984 (129.283)	-73.754 (129.275)
sales_g_1415	-0.034 (0.07)	-0.032 (0.07)	-0.018 (0.074)	-0.016 (0.074)
pm_ind_1415	-7.598* (1.14)	-7.526* (1.138)	-5.701* (1.355)	-5.605* (1.351)
pm_f_1415	-17.416* (3.234)	-17.192* (3.226)	-16.435* (3.567)	-16.18* (3.557)
hhilev	-0.004 (0.004)		-0.004 (0.005)	
hhiexi		0.006 (0.03)		0.003 (0.01)
Constant	568.124* (135.975)	560.443* (135.787)	565.661** (223.323)	558.069** (223.171)
R-squared	0.027	0.026	0.024	0.023
Number of obs.	4586	4586	3998	3998

Note: Standard errors are in parentheses and levels of significance are as follows: 1% as *, 5% as **, 10% as ***

Next, we will discuss the results for ROA during Crisis period 2 (Table 4). The coefficient of the variable hhi is positively significant in the two models, suggesting that the negative effects of crisis were less in less competitive firms. This effect was the opposite in Crisis period 1. This finding rejects H1. The variable firm size (ln_sales and ln_assets) shows negative significant effects implying that smaller firms performed better than larger ones during the Crisis period 2. In other words, larger firms experienced more contraction in their performance compared to small firms. This finding is opposite to that in Crisis period 1. This finding also

contradicts H2. The variable leverage has a significantly negative effect on percentage change in performance, implying that if a firm has more debt, the contraction is greater during the Crisis period 2. Thus, it supports H4. This finding is opposite to that in Crisis period 1. The variable net cash flow (ncf) is positively significant in all the models, indicating that if the cash flow was higher during the pre-crisis period, the contraction was less during the crisis period. This finding is opposite to that in Crisis period 1. The effect of the variable age was negatively significant in some models, suggesting that the adverse effects of contraction were more pronounced in the case of older firms during Crisis period 2. This effect was the opposite in Crisis period 1. This finding contradicts H3. Moreover, there was a negative effect on contraction during the Crisis period 2 for both the Indian and foreign promoters. Thus, the ownership pattern of firms did not play any role. Therefore, effects on performance, measured by ROA, are different for most of the variables during the Crisis periods 1 and 2.

We have done some robustness tests for the above results by dropping the outliers from the top and bottom 25 percentiles of observations from the entire sample. The findings from these estimations are reported in Appendices H to K. Dropping outliers, we observe that the same set of explanatory variables have significant effects on percentage change in Tobin's q in Crisis 1, except age and sales growth. Similarly, for the percentage change in ROA for Crisis 1, all the explanatory variables have the same effects except net cash flow. Again, for the percentage change in Tobin's q for Crisis 2, all the explanatory variables have similar effects except age. Finally, for the percentage change in ROA, all the explanatory variables have similar effects except firm size measured by ln_asset. Therefore, the results are observed to be mostly robust from these estimations.

6. Conclusion

This study has examined the firm-level impacts of two economic crises on Indian manufacturing, viz., the economic crisis generated following the Global Financial Crisis of 2007-08 and the economic crisis generated due to demonetization in November 2016, followed by the emergence of Covid-19 in March 2020. The impacts on the two alternative measures of firm performance viz., Tobin's q and ROA are observed to be different. Moreover, the impacts are quite different in the two crisis periods, for both Tobin's q and ROA. We observe that capital intensity, competition, leverage, and firm size are highly significant determinants of firm survival and recovery. Capital-intensive firms experience less contraction during Crisis 1 for Tobin's q. Firms with high pre-crisis capital intensity experienced smaller drops in firm

performance. However, we get the opposite result for Tobin's q during Crisis 2. But for ROA, again, capital intensity has a significantly negative effect during Crisis 1. More competition among firms helps to recover early. Thus, more competition helped more reallocation from less productive to more productive firms during Crisis 1 and Crisis 2 for Tobin's q. A similar result was observed for ROA during Crisis 1, too. Thus, both Crisis 1 and Crisis 2 resulted in "creative destruction" in India, as argued by Schumpeter (1942). Highly leveraged firms experience more contraction during a crisis, for Tobin's q, in both Crisis 1 and Crisis 2. A similar result was observed for ROA during Crisis 2, too. Moreover, we observe that smaller firms are more adaptable in times of Crisis 2 for Tobin's q. Thus, larger farms were hit harder by Crisis 2 and that economic activity was reallocated toward more productive firms during Crisis 2. A similar result was observed for ROA for the period of Crisis 2. This finding highlights that Crisis 2 did not reallocate activity to large firms that have greater market power or political connections, which could be harmful for long-run economic growth (Di Mauro and Syverson, 2020). Ownership patterns of firms did not play any role in experiencing the effects of the crisis. Moreover, unlike earlier studies, export orientation and firm age played no role in this context in India. We observe that our findings are also robust. Thus, a unique targeted public policy will not help for firm survival during an economic crisis. The characteristics of Crisis 1 and Crisis 2 are different; while Crisis 1 was a global phenomenon, Crisis 2 was a mixed phenomenon, partly domestic and partly global. Thus, the observed effects of different firm characteristics are observed to be different during the two crisis periods. Our findings also reveal that our hypotheses are supported in some periods of crisis but not always. Thus, no universal policy prescription can be made during any crisis. It will vary from one crisis to another. However, our analysis highlights that some firm characteristics, like competition, capital intensity, leverage, and firm size, play important roles during any crisis, and policymakers should focus on these firm characteristics while designing policies to combat an economic crisis.

Some discussion on the characteristics of Indian manufacturing will help to understand, in a better way, why these particular firm characteristics played an important role in firm survival during the crises. Studies show that India's manufacturing was more capital-intensive than many other countries, for example, China, for many years (Wei and Balasubrahmanyam, 2015). So, it is not surprising that capital-intensive firms survived the crises more quickly than labour-intensive ones. The high capital intensity in most manufacturing sectors was due to the pro-worker labour regulation, lower prices of capital goods due to trade liberalization, and a rise in

real wages relative to the real price of capital goods (Bhattacharjea, 2022; Hasan et. al., 2013; Krishna et. al., 2022; Sen and Das, 2015). One other consequence of the labour laws is the very low presence of middle-sized firms that employ relatively large volumes of labour - known as the 'missing middle' in India's manufacturing (Mazumdar and Sarkar, 2013). These middle firms are badly affected by labour laws and various other distortions in the economy. Large firms that employ more than 500 labourers are relatively more capital-intensive and use less labour. The small firms that employ 5 to 9 people are not affected by the labour laws in the same manner as the large firms, but they are less efficient in production, and they contribute a very small fraction to the total output. Two other factors that have held back labour-intensive manufacturing in India are costly power and poor transport infrastructure.

The experiences of South Korea, Taiwan, Brazil, and China reveal an increasing share of industry in GDP, as well as a general and rapid increase in exports of labour-intensive manufactures, due to the adoption of outward-oriented strategies in these countries. However, exports of unskilled-labour-intensive products such as apparel, footwear, toys, and numerous light manufacturers from India have increased to some extent in the recent past. But India's experience differs from that of China in several respects. First, while the share of agriculture in the GDP has declined in India, the share of manufacturing has not increased substantially. Second, unlike China, exports out of direct foreign investment (DFI) into India have not increased rapidly. Finally, India's exports are largely dominated by those products which are either capital-intensive or skilled-labour intensive. Exports of unskilled-labour-intensive products in response to the adoption of outward-oriented policies have not happened substantially in India. This is a cause of great concern because India's true comparative advantage lies in labour-intensive activities, but India's manufacturing sector has specialized in relatively capital and skill-intensive activities (Kocchar et al, 2006).

Another feature of Indian manufacturing is that the old firms account for a disproportionately large share of total firms and dominate the manufacturing landscape. From the distributions of firms by size for each of the age bins, it appears that amongst the young firms, the distribution is dominated by small firms. Moreover, an analysis of the distribution of old firms also shows that the distribution is dominated by small firms (Kapoor, 2018). The persistence of small old firms supported the fact that firms are not expanding and growing as they age. As Kapoor (2018) argued, this phenomenon is due to two things: first, firms are too constrained to grow, and second, they find it difficult to exit. Over the past three decades, entry barriers for new firms in an industry have been removed, but it is not easy to exit even if a firm

is making losses. However, our finding that small firms survived the crises relatively better than large firms and recovered quickly suggests that small firms are not always loss-making entities.

In this context, we also have to highlight that there is a discomforting productive dualism in Indian manufacturing: the productive and mostly large firms are essentially not creating any employment. In contrast, the manufacturing firms that are absorbing labour are primarily small and informal. Drawing lessons from China, Taiwan, South Korea, and Brazil, India should put more emphasis on labour-intensive industries, which will be export-oriented in nature (Panagariya, 2008). Given the expanding base of the population pyramid in India, this would be a prudent policy initiative for long-run growth. Finally, to achieve this goal of manufacturing growth, India requires a significant investment in skills and new technologies.

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Appendices

Appendix A: Summary table on description of the variables

Variable definition	Symbol used	Measurement of the variable
Tobin's q	TQ	Ratio of sum total of the market value of equity and the book value of debt to total assets
Return on assets	ROA	Ratio of net profit to total assets
Leverage	lev	Ratio of total borrowing to assets
Size of firm	size	Natural log of sales or assets
Age of the firm	age	Log of the number of years since the incorporation of the firm
Growth opportunities	sales_g	Percentage change in sales
Herfindahl-Hirschman index	hhi	$\sum_{i=1}^{N}$ Square of market share of firm i in industry
Market Share of firm i	share	Firm's net sales/ total sales in the industry
Export intensity	expint	% of exports relative to sales
Capital intensity	capint	Ratio of capital expenditures to sales
% share of Indian promoters	pm_ind	% of equity shares held by the Indian promoters
% share of foreign promoters	pm_f	% of equity share held by the foreign promoters
Net cash flow	ncf	Net cash flow from operating activities

Appendix B: Change in Tobin's q during the period of Crisis 1 by broad industry group (%)

Average Percentage Change TQ – Year-wise and Industry Group-wise - Crisis 1								
NIC_2	**Industry**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**
10	Manufacture of Food Products	-41.679	-23.778	-36.724	-25.062	13708.869	949.383	635.109
11	Manufacture of Beverages	-25.394	-18.214	-32.247	-35.127	12940.141	883.105	579.853
12	Manufacture of Tobacco Products	-12.957	-8.071	-7.665	30.004	672965.889	47177.060	29193.935
13	Manufacture of Textiles	-48.828	-43.235	-42.480	-18.209	21016.039	1502.907	937.895
14	Manufacture of wearing apparel	-45.253	-11.560	-36.788	-25.566	14294.790	970.330	708.037
15	Manufacture of leather and related products	-34.070	4.809	22.073	86.560	34124.490	2468.318	1416.924
16	Manufacture of wood and products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials	-38.021	-19.258	97.920	342.312	15217.540	6224.175	2826.606
17	Manufacture of paper and paper products	-70.214	-75.863	-77.315	-48.323	24661.966	1698.804	976.621
19	Manufacture of coke and refined petroleum products	-55.905	-68.942	-77.964	-66.971	-70.384	-75.139	-70.691
20	Manufacture of chemicals and chemical products	-60.615	-59.569	541.414	608.081	13998.820	884.226	614.372
21	Manufacture of pharmaceuticals, medicinal chemical and botanical products	-47.470	-36.933	770.986	895.332	13127.399	1329.809	714.089
22	Manufacture of rubber and plastics products	-32.643	-41.776	654.865	745.531	11924.094	741.700	499.214
23	Manufacture of other non-metallic mineral products	-37.163	-35.121	-36.484	7.366	26341.654	1833.020	1163.364
24	Manufacture of basic metals	-58.436	-61.316	-72.077	-53.091	20085.010	1365.447	864.879
25	Manufacture of fabricated metal products, except machinery and equipment	-57.733	-53.479	-66.410	-46.341	13080.226	911.771	565.872
26	Manufacture of computer, electronic and optical products	-62.845	-61.478	-50.891	-27.247	7239.627	575.199	438.591
27	Manufacture of electrical equipment	-35.018	-36.510	-12.057	43.367	16871.836	1451.804	1145.181
28	Manufacture of machinery and equipment n.e.c.	-41.299	-52.597	833.278	939.604	9124.354	508.010	328.921
29	Manufacture of motor vehicles, trailers and semi-trailers	-46.801	-45.285	-42.510	-50.143	7331.471	462.765	250.598
30	Manufacture of other transport equipment	-34.704	-32.554	-40.495	-69.410	-58.781	-58.615	-65.687
31	Manufacture of furniture	91.597	102.934	-59.498	-63.952	370.558	386.479	899.590
32	Other manufacturing	-24.181	-57.576	2846.407	3172.115	24806.113	1477.665	858.943
34	Diversified manufacturing	-19.829	-34.280	1860.020	2091.899	9920.776	504.771	283.717

Source: Authors' own calculations using CMIE Prowess data

Appendix C: Change in Tobin's q during the period of Crisis 2 by broad industry group (%)

Average Percentage Change TQ – Year-wise and Industry Group-wise - Crisis 2							
NIC_2	**Industry**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**
10	Manufacture of Food Products	7.821	-41.202	-44.147	-29.250	-61.906	-64.652
11	Manufacture of Beverages	-36.127	-58.031	-64.673	-60.922	-69.652	-69.526
12	Manufacture of Tobacco Products	14.979	-11.867	2.473	-31.184	-31.905	-39.844
13	Manufacture of Textiles	-16.327	-27.681	-18.418	-51.511	-55.866	-56.601
14	Manufacture of wearing apparel	-40.027	-70.026	-69.414	-66.518	-68.772	-68.327
15	Manufacture of leather and related products	-45.416	-60.724	-56.292	-28.733	-34.634	-41.679
16	Manufacture of wood and products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials	62.491	34.392	17.861	10.755	-4.342	-4.843
17	Manufacture of paper and paper products	-48.451	-66.173	-52.912	-47.950	-44.205	-58.061
19	Manufacture of coke and refined petroleum products	0.407	45.291	82.463	138.570	243.959	260.750
20	Manufacture of chemicals and chemical products	-58.090	-78.742	-79.030	-79.293	-80.929	-83.414
21	Manufacture of pharmaceuticals, medicinal chemical and botanical products	-54.920	-67.604	-71.939	-69.314	-70.268	-70.757
22	Manufacture of rubber and plastics products	-53.928	-68.880	-69.447	-66.802	-64.192	-61.984
23	Manufacture of other non-metallic mineral products	-18.342	-15.685	-9.103	-5.257	-12.778	-19.515
24	Manufacture of basic metals	-38.229	-58.183	-59.421	-57.925	-57.417	-63.274
25	Manufacture of fabricated metal products, except machinery and equipment	-42.544	-54.381	-46.627	-42.128	-36.643	-40.066
26	Manufacture of computer, electronic and optical products	-10.207	-36.871	-51.973	-63.706	-57.886	-66.594
27	Manufacture of electrical equipment	1.876	-27.575	-44.448	-47.999	-65.678	-71.389
28	Manufacture of machinery and equipment n.e.c.	-64.624	-75.894	-72.707	-71.887	-71.008	-68.653
29	Manufacture of motor vehicles, trailers and semi-trailers	-19.557	2.363	60.529	52.045	48.573	47.163
30	Manufacture of other transport equipment	-56.930	5.238	-9.091	-33.893	-7.691	-34.532
31	Manufacture of furniture	-97.922	-97.857	-97.752	-97.891	-97.842	-97.806
32	Other manufacturing	-69.173	-60.096	-30.962	-80.333	-78.923	-83.663
34	Diversified manufacturing	-79.965	-85.287	-87.756	-85.155	-86.026	-89.236

Source: Authors' own calculations using CMIE Prowess data

Appendix D: Change in ROA during the period of Crisis 1 by broad industry group (%)

Average percentage change of ROA - yearwise and industry groupwise - Crisis 1								
NIC_2	**Industry**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**
10	Manufacture of Food Products	9.477	-6.151	29.130	-61.493	-25.796	-68.844	-192.873
11	Manufacture of Beverages	-58.358	-36.225	81.108	-68.220	-51.082	-50.289	-77.526
12	Manufacture of Tobacco Products	-83.439	-43.083	-90.420	-55.712	-18.036	45.101	-67.143
13	Manufacture of Textiles	-54.103	-72.713	-109.055	-81.341	-79.387	-78.714	-98.939
14	Manufacture of wearing apparel	-63.545	-72.557	-74.834	-79.018	-58.911	-69.501	-86.837
15	Manufacture of leather and related products	-84.172	-54.021	-77.050	-69.702	-89.302	-72.051	-68.017
16	Manufacture of wood and products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials	0.311	85.592	49.931	-63.605	35.607	-292.000	59.887
17	Manufacture of paper and paper products	-69.226	-85.381	-95.991	-86.587	-81.178	-93.310	-89.978
19	Manufacture of coke and refined petroleum products	-88.121	-86.829	-88.926	-86.270	-86.193	-91.542	-92.251
20	Manufacture of chemicals and chemical products	-78.545	-86.650	-96.695	-111.420	-78.283	-88.546	-96.975
21	Manufacture of pharmaceuticals, medicinal chemical and botanical products	-65.994	-79.872	-86.311	-83.345	-56.204	-87.252	-93.223
22	Manufacture of rubber and plastics products	-66.307	-81.169	-52.143	-87.696	-50.876	-77.976	-73.328
23	Manufacture of other non-metallic mineral products	-74.981	-70.503	-76.084	-77.905	-55.877	-60.490	-85.779
24	Manufacture of basic metals	-42.987	-56.629	-83.465	-77.549	-62.176	-58.629	-89.987
25	Manufacture of fabricated metal products, except machinery and equipment	-63.734	-67.377	-76.749	-82.617	-67.233	-58.481	-88.219
26	Manufacture of computer, electronic and optical products	-83.345	-93.266	-97.062	-90.416	-82.276	-82.538	-102.690
27	Manufacture of electrical equipment	-19.399	-43.374	-109.870	-73.500	-56.626	-57.034	-59.528
28	Manufacture of machinery and equipment n.e.c.	-57.948	-63.283	-93.100	-70.470	-56.122	-85.991	-88.077
29	Manufacture of motor vehicles, trailers and semi-trailers	-72.410	-88.225	-111.549	-91.441	-78.058	-80.629	-89.551
30	Manufacture of other transport equipment	-44.556	-47.169	-58.268	-16.645	-47.462	0.606	-11.933
31	Manufacture of furniture	-144.200	-744.834	2740.829	2180.685	713.812	-64.953	-70.939
32	Other manufacturing	-351.837	-170.412	285.863	-739.527	-1089.739	-302.463	-293.718
34	Diversified manufacturing	-37.450	-49.044	-100.471	-60.174	-7.518	-70.567	-114.753

Source: Authors' own calculations using CMIE Prowess data

Appendix E: Change in ROA during the period of Crisis 2 by broad industry group (%)

Average percentage change of ROA - yearwise and industry groupwise - Crisis 2							
NIC_2	**Industry**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**
10	Manufacture of Food Products	266.390	62.943	46.631	-221.939	263.300	-98.704
11	Manufacture of Beverages	-102.780	-66.235	5.299	-3.010	-78.938	-26.916
12	Manufacture of Tobacco Products	-244.699	-374.917	-603.209	647.927	-99.237	-121.439
13	Manufacture of Textiles	-489.864	-292.837	-351.426	4.438	493.612	53.632
14	Manufacture of wearing apparel	-87.750	-99.914	-55.594	-56.074	-45.382	36.884
15	Manufacture of leather and related products	-33.160	-52.961	-6.343	6.996	-1.670	-107.054
16	Manufacture of wood and products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials	-65.740	-50.941	-300.809	-143.001	-23.913	51.991
17	Manufacture of paper and paper products	-96.322	30.065	43.916	153.092	97.029	-25.638
19	Manufacture of coke and refined petroleum products	-17.081	-12.601	-41.691	12.443	-23.501	-607.039
20	Manufacture of chemicals and chemical products	-181.097	-139.063	-5.554	224.757	-130.016	-248.070
21	Manufacture of pharmaceuticals, medicinal chemical and botanical products	-69.274	-91.176	-114.838	-38.076	-46.701	-138.513
22	Manufacture of rubber and plastics products	-75.902	-70.608	-50.178	45.907	-699.415	-81.510
23	Manufacture of other non-metallic mineral products	-176.732	-13.083	-454.449	549.934	270.190	285.223
24	Manufacture of basic metals	-131.031	-59.058	-19.900	159.552	-45.560	28.933
25	Manufacture of fabricated metal products, except machinery and equipment	-73.233	-10.386	6.682	1.354	-54.934	-87.312
26	Manufacture of computer, electronic and optical products	-117.994	-126.478	-84.707	-1.994	-168.465	-459.024
27	Manufacture of electrical equipment	-66.149	-21.628	-24.528	64.627	-75.640	-26.562
28	Manufacture of machinery and equipment n.e.c.	-111.968	-128.991	29.475	87.954	564.517	-325.941
29	Manufacture of motor vehicles, trailers and semi-trailers	-267.906	-830.152	211.611	159.095	-257.621	-1152.243
30	Manufacture of other transport equipment	-299.800	-333.741	-626.542	686.261	20.012	-15.203
31	Manufacture of furniture	-108.742	10.816	-4.729	-17.745	-339.665	-78.477
32	Other manufacturing	-2619.867	-1096.246	-2542.614	233.488	65.175	142.281
34	Diversified manufacturing	77.988	273.830	-264.937	-137.621	-362.247	-311.626

Source: Authors' own calculations using CMIE Prowess data

Appendix F: Summary of the findings from Tables 1-2

Crisis 1: 2007 - 2013			
	Industries quickly recovered	**Industries moderately affected**	**Industries worst affected**
Tobin's q	Manufacture of Tobacco Products	Manufacture of Food Products	Manufacture of coke and refined petroleum products
	Manufacture of leather and related products	Manufacture of Beverages	Manufacture of other transport equipment
	Manufacture of wood and products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials	Manufacture of Textiles	
	Manufacture of chemicals and chemical products	Manufacture of wearing apparel	
	Manufacture of pharmaceuticals, medicinal chemical and botanical products	Manufacture of paper and paper products	
	Manufacture of rubber and plastics products	Printing and reproduction of recorded media	
	Manufacture of electrical equipment	Manufacture of other non-metallic mineral products	
	Manufacture of machinery and equipment n.e.c.	Manufacture of basic metals	
	Other manufacturing	Manufacture of fabricated metal products, except machinery and equipment	
	Diversified manufacturing	Manufacture of computer, electronic and optical products	
		Manufacture of motor vehicles, trailers and semi-trailers	
		Manufacture of furniture	
ROA			Manufacture of Food Products
			Manufacture of Beverages
			Manufacture of Tobacco Products
			Manufacture of Textiles
			Manufacture of wearing apparel
			Manufacture of leather and related products
			Manufacture of wood and products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials

			Manufacture of paper and paper products
			Printing and reproduction of recorded media
			Manufacture of coke and refined petroleum products
			Manufacture of chemicals and chemical products
			Manufacture of pharmaceuticals, medicinal chemical and botanical products
			Manufacture of rubber and plastics products
			Manufacture of other non-metallic mineral products
			Manufacture of basic metals
			Manufacture of fabricated metal products, except machinery and equipment
			Manufacture of computer, electronic and optical products
			Manufacture of electrical equipment
			Manufacture of machinery and equipment n.e.c.
			Manufacture of motor vehicles, trailers and semi-trailers
			Manufacture of other transport equipment
			Manufacture of furniture
			Other manufacturing
			Diversified manufacturing

Source: Authors' own calculations using CMIE Prowess data

Appendix G: Summary of the findings from Tables 3-4

Crisis 2: 2016 - 2021			
	Industries quickly recovered	**Industries moderately affected**	**Industries worst affected**
Tobin's q	Manufacture of coke and refined petroleum products		Manufacture of Food Products
	Manufacture of motor vehicles, trailers and semi-trailers		Manufacture of Beverages
			Manufacture of Tobacco Products
			Manufacture of Textiles
			Manufacture of wearing apparel
			Manufacture of leather and related products
			Manufacture of wood and products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials
			Manufacture of paper and paper products
			Printing and reproduction of recorded media
			Manufacture of chemicals and chemical products
			Manufacture of pharmaceuticals, medicinal chemical and botanical products
			Manufacture of rubber and plastics products
			Manufacture of other non-metallic mineral products
			Manufacture of basic metals
			Manufacture of fabricated metal products, except machinery and equipment
			Manufacture of computer, electronic and optical products
			Manufacture of electrical equipment
			Manufacture of machinery and equipment n.e.c.
			Manufacture of other transport equipment
			Manufacture of furniture
			Other manufacturing
			Diversified manufacturing

ROA		Manufacture of Textiles	Manufacture of Food Products
		Manufacture of other non-metallic mineral products	Manufacture of Beverages
		Other manufacturing	Manufacture of Tobacco Products
			Manufacture of wearing apparel
			Manufacture of leather and related products
			Manufacture of wood and products of wood and cork, except furniture;
			Manufacture of articles of straw and plaiting materials
			Manufacture of paper and paper products
			Printing and reproduction of recorded media
			Manufacture of coke and refined petroleum products
			Manufacture of chemicals and chemical products
			Manufacture of pharmaceuticals, medicinal chemical and botanical products
			Manufacture of rubber and plastics products
			Manufacture of basic metals
			Manufacture of fabricated metal products, except machinery and equipment
			Manufacture of computer, electronic and optical products
			Manufacture of electrical equipment
			Manufacture of machinery and equipment n.e.c.
			Manufacture of motor vehicles, trailers and semi-trailers
			Manufacture of other transport equipment
			Manufacture of furniture
			Diversified manufacturing

Source: Authors' own calculations using CMIE Prowess data

Appendix H: Regression results for the percentage change in Tobin's q for Crisis 1 (2007-2013) by dropping outliers

Dependent Variable (% change in Tobin's q)	Entire Period 2007-2013 (1)	Entire Period 2007-2013 (2)	Entire Period 2007-2013 (3)	Entire Period 2007-2013 (4)
expint_0506	-4.11 (3.655)	-3.447 (3.77)	-2.641 (4.368)	-1.573 (4.518)
capint_0506	0.731* (0.253)	0.744* (0.246)	1.015* (0.36)	1.034* (0.321)
hhi_0506	0.026 (0.027)	0.027*** (0.014)	-1.049*** (0.608)	-1.075*** (0.608)
ln_sales_0506	51.581* (18.639)	53.007* (18.744)		
ln_asset_0506			200.173* (60.814)	209.756* (61.669)
lev_0506	-506.963* (167.656)	-514.917* (160.558)	-770.144* (256.523)	-783.502* (220.428)
ncf_0506	-1.255 (0.948)	-1.286 (0.949)	-1.571 (1.176)	-1.651 (1.178)
age_0506	-367.864 (275.776)	-372.814 (275.387)	-338.377 (413.925)	-356.518 (413.265)
sales_g_0506	-0.402** (0.19)	-0.407** (0.19)	-0.552** (0.234)	-0.568** (0.234)
pm_ind_0506	-14.261* (2.39)	-14.342* (2.392)	-16.165* (2.937)	-16.374* (2.945)
pm_f_0506	-10.035** (4.345)	-10.114** (4.345)	-12.08** (5.234)	-12.265** (5.235)
hhilev	0.001 (0.044)		0.012 (0.12)	
hhiexi		-0.001 (0.002)		-0.002 (0.002)
Constant	1094.162* (378.978)	1102.586* (379.032)	859.82*** (463.708)	863.11*** (463.303)
R-squared	0.037	0.037	0.041	0.042
Number of obs.	1318	1318	916	916

Note: Standard errors are in parentheses and levels of significance are as follows: 1% as *, 5% as **, 10% as ***.

Appendix I: Regression results for the percentage change in ROA for Crisis 1 (2007-2013) by dropping outliers

Dependent Variable (% change in ROA)	Entire Period 2007-2013 (1)	Entire Period 2007-2013 (2)	Entire Period 2007-2013 (3)	Entire Period 2007-2013 (4)
expint_0506	-4.761* (1.798)	-4.7** (1.867)	-4.002*** (2.142)	-4.385** (2.217)
capint_0506	-0.23*** (0.124)	-0.11 (0.122)	-0.141 (0.176)	-0.193 (0.157)
hhi_0506	0.025*** (0.013)	-0.02* (0.007)	0.109 (0.298)	0.123 (0.299)
ln_sales_0506	19.373** (9.208)	19.054** (9.317)		
ln_asset_0506			-1.937 (29.782)	-4.263 (30.208)
lev_0506	158.714*** (82.38)	62.999 (79.364)	69.798 (125.497)	110.744 (107.796)
ncf_0506	-0.184 (0.468)	-0.134 (0.472)	0.16 (0.579)	0.168 (0.579)
age_0506	329.753* (134.982)	359.887* (135.634)	300.116 (201.72)	297.736 (201.493)
sales_g_0506	0.014 (0.098)	0.024 (0.098)	0.033 (0.119)	0.033 (0.12)
pm_ind_0506	-0.816 (1.159)	-0.83 (1.167)	-0.632 (1.418)	-0.573 (1.422)
pm_f_0506	-1.311 (2.135)	-1.363 (2.149)	-1.604 (2.562)	-1.541 (2.564)
hhilev	-0.087* (0.022)		0.03 (0.059)	
hhiexi		0.003 (0.001)		0007 (0.001)
Constant	-411.168** (184.548)	-424.1** (185.718)	-348.594 (225.245)	-345.795 (225.173)
R-squared	0.039	0.027	0.014	0.014
Number of obs.	1318	1318	916	916

Note: Standard errors are in parentheses and levels of significance are as follows: 1% as *, 5% as **, 10% as ***.

Appendix J: Regression results for the percentage change in Tobin's q for Crisis 2 (2016-2021) by dropping outliers

Dependent Variable (% change in Tobin's q)	Entire Period 2016-2021 (1)	Entire Period 2016-2021 (2)	Entire Period 2016-2021 (3)	Entire Period 2016-2021 (4)
expint_1415	0.003 (0.024)	0.003 (0.026)	0.02 (0.025)	0.02 (0.028)
capint_1415	-3.853** (1.719)	-3.827** (1.719)	0.091 (1.973)	0.143 (1.971)
hhi_1415	-0.104*** (0.033)	-0.101*** (0.032)	-0.353*** (0.06)	-0.351*** (0.06)
ln_sales_1415	-113.155*** (23.075)	-113.68*** (23.061)		
ln_asset_1415			-242.45*** (52.63)	-243.99*** (52.57)
lev_1415	-59.121 (62.185)	-80.82 (50.95)	-83.626 (66.615)	-105.86*** (54.962)
ncf_1415	0.342 (0.255)	0.324 (0.253)	0.246 (0.289)	0.225 (0.287)
age_1415	-75.612 (184.102)	-78.169 (184.073)	476.388 (301.53)	472.315 (301.485)
sales_g_1415	-0.253 (0.324)	-0.25 (0.324)	-0.412 (0.347)	-0.409 (0.347)
pm_ind_1415	-12.902* (2.682)	-12.809* (2.678)	-9.597* (3.288)	-9.458* (3.28)
pm_f_1415	-5.938 (8.277)	-5.523 (8.25)	-2.51 (9.542)	-1.992 (9.502)
hhilev	-0.007 (0.011)		-0.007 (0.011)	
hhiexi		-0.01 (0.031)		-0.026 (0.031)
Constant	1475.263* (314.601)	1468.509* (314.438)	1763.827* (521.877)	1764.585* (521.935)
R-squared	0.036	0.035	0.038	0.038
Number of obs.	1762	1762	1534	1534

Note: Standard errors are in parentheses and levels of significance are as follows: 1% as *, 5% as **, 10% as ***.

Appendix K: Regression results for the percentage change in ROA for Crisis 2 (2016-2021) by dropping outliers

Dependent Variable (% change in ROA)	Entire Period 2016-2021 (1)	Entire Period 2016-2021 (2)	Entire Period 2016-2021 (3)	Entire Period 2016-2021 (4)
expint_1415	0.008 (0.016)	0.006 (0.018)	0.011 (0.017)	0.008 (0.019)
capint_1415	-0.499 (1.167)	-0.536 (1.167)	0.099 (1.332)	0.025 (1.332)
hhi_1415	0.039*** (0.022)	0.033 (0.022)	0.009 (0.04)	0.005 (0.04)
ln_sales_1415	-36.567** (15.691)	-35.668** (15.685)		
ln_asset_1415			-30.669 (35.486)	-28.286 (35.455)
lev_1415	-83.021*** (42.357)	-49.677 (34.688)	-95.298** (44.816)	-62.566*** (36.868)
ncf_1415	0.586* (0.173)	0.613* (0.172)	0.624* (0.195)	0.653* (0.194)
age_1415	-324.914* (125.332)	-320.718** (125.359)	-332.581 (203.192)	-326.187 (203.236)
sales_g_1415	0.099 (0.22)	0.094 (0.22)	0.068 (0.234)	0.064 (0.234)
pm_ind_1415	-9.33* (1.803)	-9.457* (1.802)	-8.7* (2.21)	-8.885* (2.207)
pm_f_1415	-16.325* (5.649)	-16.95* (5.634)	-18.472* (6.432)	-19.21* (6.409)
hhilev	0.01 (0.007)		0.01 (0.008)	
hhiexi		-0.003 (0.022)		0.001 (0.022)
Constant	745.669* (210.592)	754.184* (210.608)	797.144** (350.131)	793.255** (350.299)
R-squared	0.034	0.033	0.030	0.029
Number of obs.	1761	1761	1533	1533

Note: Standard errors are in parentheses and levels of significance are as follows: 1% as *, 5% as **, 10% as ***.

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INSTITUTE OF ECONOMIC GROWTH

University Enclave, University of Delhi
(North Campus) Delhi 110007, India
Tel: 27667288/365/424
Email: system@iegindia.org