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The economic cost of mandatory CSR regulation: Evidence from India

Nemiraja Jadiyappa [1]

[1]Associate professor, Finance, Accounting and Control Area, Indian Institute of Management Kozhikode, IIMK Campus PO, Kunnamangalam, Kozhikode, Kerala 673 570, India; Email - nemiraja@iimk.ac.in, Phone Number - 0495 2809446

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Abstract:

This study examines the economic cost of forced ethical behavior of corporate firms using the mandatory CSR regulation implemented in India in 2013 as the quasi-natural experiment setting and using the Difference in Differences (DiD) approach. Using firm investment, output growth, and asset efficiency as proxies of economic costs, we show that mandatory CSR regulation had a negative impact on these economic measures at the firm-level. The results are robust for alternate specifications and data selection procedures. Overall, our results imply that forced CSR activities through mandatory CSR regulation may have negative externalities on firm investment, productivity and growth. Policymakers should consider these unintended economic welfare costs carefully before enforcing CSR regulations.

Introduction

There is a growing trend among governments worldwide to enact and implement corporate social responsibility (CSR) regulations aimed at undoing certain negative externalities caused by firms on societies (Gatti et al., 2019). Do such regulations alleviate negative externalities or create fresh externalities in societies where they have been implemented, is a critical question. CSR regulations are formulated and implemented on the basis of CSR studies conducted in the voluntary framework, most of which report a positive impact on different indicators of social welfare[1]. However, the philosophy, scope, and scale of CSR activities induced by mandatory regulations[2] are different from that of voluntary CSR activities. Moreover, the theoretical and contextual assumptions of mandatory or forced CSR activities are different from those of the voluntary CSR behavior. For example, in voluntary CSR, the focus of the firm is 'social responsibility'; however, in mandated CSR, the focus is on confirming to the regulation. In a way, CSR regulations force firms that may not inherently believe in the philosophy of being socially responsible, to engage in activities that are meant for social well-being. If capital and product markets can distinguish between voluntary and mandatory CSR activities (and we believe they do in the long run), the mandated or forced CSR activities may have negative unintended consequences that earlier studies have overlooked. Therefore, it is important to examine the negative externalities, if any, of forced CSR activities of corporate firms[3]. We use the 2% mandatory CSR regulation implemented in India in 2013 as a quasi-natural setting to examine the same.

Economic literature uses various measures of welfare at the aggregate level. Broadly, all measures either represent input, output, or productivity at the aggregate level (Daniels, 1996; Jorgenson, 2018; Ravallion, 2003). Following prior work, we use three welfare measures that represent the level of input (gross investments in assets), the efficiency of input (asset turnover rate), and, the output growth (annual sales growth rate) at the firm level. All three measures are

[1] In addition to enhancing firm performance ((Margolis et al., 2009)), research highlights several positive roles of CSR, including improving trustworthiness (Flammer, 2018), seeking legitimacy and a societal license to operate (Griffin & Youm, 2018; Reber et al., 2022), strengthening relations with stakeholders (Flammer, 2015), and promoting employee engagement in voluntary pro-social behaviors (Tian & Robertson, 2019)..

[2] In this study, mandatory regulations refer to all those regulations that require firms to spend their resources directly on CSR activities

[3] We do not imply that the net benefit of the mandated CSR activities is negative from the social welfare perspective. It is our insight that they may have both positive and negative implications from the social-welfare perspective. The net impact depends on the relative strengths of positive and negative impacts. The previous literature has examined the positive aspects. This paper examines the negative externalities.

positively associated with overall welfare. Next, we use the selective application of the 2% mandatory regulation in India to construct treatment and control samples[4].

The economic and strategy literature suggest that firms engage in value generating activities and will not expend resources on activities that do not add value[5]. Theoretically, the voluntary CSR activities have altruistic and strategic values. However, if CSR activities are mandated, these values could be lost. For example, the very basic foundation of altruism is its free-will, and mandatory regulations would take away this important aspect. Moreover, from the strategic perspective, CSR activities provide differentiation benefits to firms when they are implemented voluntarily by a small subset of firms (Bae et al., 2021; Luo & Bhattacharya, 2009). The value of differentiation erodes when mandatory regulations compel many firms to invest in CSR activities. Albuquerque et al. (2019) developed a theoretical CSR model predicting this result, i.e., that CSR activities would lose their differentiating power when most firms in an economy adopt CSR.

Therefore, the mandatory nature of the regulation makes it compulsory for firms to spend on CSR activities even when such activities yield no benefits, thereby converting them into cost centres. In this context, it is our insight that CSR investments compete with other value-yielding investments for a share of the resources and time of the management. There are multiple direct and indirect costs associated with this shift in management's priority towards mandated CSR. The direct costs are the investments that firms are required to invest in CSR activities under the regulation. This may not be significant as firms are required to spend only 2% of their profit. However, the indirect costs could be more important. For example, the management may have to divert significant time and resources towards implementing the mandatory provisions, thereby impacting other investments of the firm negatively. Moreover, regulatory action due to non-compliance, could attract unwanted attention from the media, thereby creating a negative image in the society. In the presence of such compliance costs, the management is likely to give more importance to the implementation of CSR regulations. Therefore, reduced investment, both in quantitative and qualitative terms, especially in critical fields like innovations and marketing promotions, may have serious implications for the growth and productivity of firms.

[4] The same approach has been used in the literature previously by Roy et al. (2022) and Jadiyappa et al. (2023)
[5] Consistent with this hypothesis, Rajgopal & Tantri (2023) show that voluntary CSR firms that were into CSR activities even before the 2% CSR regulation implemented in India started spending less on CSR activities relative to their own spending in the pre-regulation period.

Our study makes important contributions to CSR literature from three aspects. Firstly, we examine the consequence of forced ethical behavior of corporate firms. Most studies in the extant literature, especially in economics, view ethical behavior as voluntary.We extend the definition of CSR activities to include corporate behaviour mandated by CSR regulations. Such an extension is important because, as discussed previously, the theoretical assumptions of voluntary and mandatory behaviour are entirely different and thus, may have different implications. Consequences of voluntary ethical behavior on corporate performance and valuation is well-understood. However, there is very little research done on forced ethical behavior and its consequences. Secondly, we are the first ones to examine the direct impact of CSR on firm level investment and growth directly. Any impact on a firm's investment, productivity and growth rate will have serious welfare effects, i.e., employment and income, at the aggregate level, as mandatory CSR regulations have affected majority of the firms in India[6]. Hitherto, studies have examined the impact indirectly. For example, Manchiraju & Rajgopal (2017) have reported that the Indian CSR regulation had a negative impact on firm value. Our study provides a possible economic explanation and a channel for such a negative impact. Lastly, but most importantly, we examine the negative externalities of CSR regulation by evaluating its impact on firm growth, efficiency and investments and show that such a regulation may have negative consequences for firms. These findings will help policymakers in gauging the welfare costs of implementing mandated CSR regulations.

2. Voluntary Vs. Mandatory regulations: Conceptual framework

There are two theoretical strands that try to explain why firms take up CSR activities voluntarily. The first strand argues that CSR activities represent the altruistic motives of the owners (Baron, 2010; Crifo & Forget, 2015). However, the second strand, i.e., the strategic view, is more important from the economic perspective. The strategic aspect of CSR assumes that corporate firms believe that CSR activities are a means to achieve their strategic goals and, therefore, are used by them "voluntarily" in their business activities (Albuquerque et al., 2019; Luo & Bhattacharya, 2009). It is in this *"voluntary sense"* that the traditional literature on CSR activities examines the impact of CSR on various firm-level outcomes, especially performance or value-related parameters (Dahlsrud, 2008; Gatti et al., 2019). There are three essential assumptions in this framework. First, firms go beyond the law and integrate society's environmental and social concerns into their business strategy and operations (Crifo & Forget,

[6] About 68% of the firms listed on the National Stock Exchange of India in 2023 are covered under the CSR regulation(Basu, 2024)

2015; Reinhardt & Stavins, 2010). Usually, these activities are built into the core internal business activities like employee-friendly policies, investments in environmentally friendly technologies, and community-oriented products (Porter & Kramer, 2006). Firms could choose and implement activities that could maximize the social benefits from CSR and reduce corporate costs to derive maximum advantage for a firm (Sheehy, 2014). Second, the costs incurred on such CSR activities are treated as strategic investments and not expenses that compromise firm profitability (Benabou & Tirole, 2010) . In other words, CSR activities are not treated as costs that have to be minimized but are investments that generate value for both firms and society. Lastly, not all firms believe in this strategic aspect of CSR.The selective use of CSR by a few firms helps stakeholders to distinguish CSR firms from other non-CSR firms(Albuquerque et al., 2019; Bae et al., 2021). Therefore, this *voluntary* aspect, i.e., in Mcwilliams & Siegel's (2001) words, '*beyond that which is required by law*,' is essential for firms to achieve their strategic objectives. Achievement of their strategic objectives through CSR activities would then lead to an increase in their market value (Albuquerque et al., 2019) and competitiveness (Vilanova et al., 2009). It is in this sense that the traditional literature has defined CSR. For example, the most widely cited definition of CSR is by the European Commission. In its green paper (2011) on CSR, the European Commission defines CSR as a "*concept whereby companies integrate social and environmental concerns in their business operations and in their interactions with their stakeholders on a voluntary basis*[7]. "

While a few corporate firms view CSR from a strategic perspective, many governments worldwide view CSR activities as a tool for self-regulation or, as firms' responsibilities toward society (Gatti et al., 2019; Waagstein, 2011). Negative externalities of firms' operations in the immediate community and in the larger global climate have made governments across the globe think about the social and environmental role of corporate firms (Adeyeye, 2011) . Since a large proportion of corporate firms have failed to respond to these concerns on their own, a regulatory approach to make them socially and environmentally responsible has gained traction worldwide (Cominetti & Seele, 2016). Many countries have implemented mandatory CSR regulations in line with this approach. Under the mandatory framework, firms that may not have subscribed to the strategic role of CSR otherwise, would now be bound to undertake CSR activities.

[7] European Commission. (2011). Corporate social responsibility: A new definition, a new agenda for action. *MEMO/11/730*.

2.1 The nature of CSR regulations across the world

There are different types of CSR regulations across the world . They can be broadly classified into two categories. The first category is industry-specific regulations that are implicit in nature. Regulations related to emissions in automobiles, employee working conditions, and energy consumption in production processes that are industry-specific fall into this category. Though not a part of the CSR ambit directly, these regulations carry the same philosophy- reducing the negative externalities of business operations on external environment and society. There are many CSR-related studies on industry specific regulations, and their consequences. (For more information, please refer to Lyon and Maxwell, 2008; Crifo and Forget, 2015)

The second category pertains to explicit CSR regulations and can be further subdivided into two forms. The first form of regulation is concerned with information disclosure. These regulations require firms to disclose their CSR-related activities to the public. These regulations do not impact a firm's choice or scale of CSR activities but only the information content of their disclosure. The inherent assumption is that such information disclosure creates social or market pressure on socially less-performing firms, thereby possibly leading to voluntary action. CSR disclosure regulations do not affect any of the implicit assumptions of the voluntary framework discussed in the introduction section and align with the traditional voluntary view of CSR. These regulations come closest to what Adeyeye (2011) calls soft laws on CSR and have been implemented in Denmark (2008), France (2010), Brazil (2012), and other countries. Economic and financial researchers have extensively examined the consequences of such soft law regulations on various firm-level outcomes, firm performance, and valuation. However, the results and conclusions are mixed (Brooks & Oikonomou, 2018; Pham & Tran, 2020; Wang et al., 2016).

The second form of explicit regulations follow the hard law approach and requires mandatory CSR spending. Such regulations were implemented in Indonesia (2007)[8] and India (2015). Hard regulations influence, first, firms' decisions to take up CSR activities and, second, firms' choice and scale of CSR activities. They force firms, that inherently do not subscribe to CSR philosophy, to take up specific CSR activities (Cominetti & Seele, 2016). The specified CSR activities may be entirely external to the firms' operations. For example, the Indian mandatory CSR regulation requires firms to choose CSR activities from among those listed in a

[8] Unlike Indian regulation, Indonesian mandatory CSR spending regulation was applied to select industries which were using natural resources in their business

supplementary schedule to the regulation[9]. Such hard regulations violate all the three important implicit assumptions of CSR literature discussed above. First, CSR activities outlined in the mandate may not align with a firm's core business activities. Second, CSR activities do not provide firms with a distinct identity in society since all firms that meet the specified criteria are required to undertake CSR activities mandatorily. Hence, firms cannot generate competitive advantage based on differentiation on account of CSR activities. Lastly, firms do not consider CSR costs as strategic investments but as external costs imposed on them by regulatory bodies. Therefore, hard law CSR regulations, which violate the essential assumptions of the voluntary framework discussed previously, could have a different influence on various outcomes related to firm value than that reported in the extant literature.

Many countries are changing their earlier soft law approach on CSR to a hard law regulation that is legally binding within national jurisdiction (Gatti et al., 2019). CSR activities are voluntary in the context of soft regulation. However, they are mandatory under hard regulation. Very few studies have examined the consequences of hard CSR regulations. Moreover, the results are not very conclusive. For example, Manchiraju & Rajgopal (2017) report that Indian mandatory CSR regulation has a negative impact on shareholder's wealth in the short run; however, Jadiyappa et al. (2021) report a positive impact of the same regulation on long-term wealth. This raises questions about the costs and benefits of mandatory regulations. Since many countries across the globe are contemplating hard CSR regulations, it is important to understand their impact on business and performance at the micro and macro level.

2.2 Mandatory CSR regulation in India

The Indian government has implemented multiple legal approaches to encourage corporate social responsibility (CSR) among firms. The primary goal is to utilize CSR activities as a tool for national development, and addressing social and environmental objectives. As Gatti et al. (2019) note, "Given the severity of environmental and social issues in India and the government's inability to address them single-handedly, corporate CSR policies are viewed as

[9] Section 135 of The Companies Act, in India outlines the criteria for identifying firms governed by the regulation, the governance mechanism and mandates CSR expenditure in specific areas mentioned in the accompanying schedule VII. Schedule VII specifies ten areas where CSR funds can be channelized. These include eradicating hunger, poverty and malnutrition, providing sanitation, promoting education and gender equality, ensuring environmental sustainability, protecting national heritage, promoting rural sports and benefits for armed forces veterans and contributions to PrimeMinister's national relief fund.

developmental tools." With this in mind, regulators have experimented with different strategies to drive positive CSR behavior among corporate entities.

3. Hypotheses development

Friedman (1970) argues that the primary social responsibility of firms is to generate profits for their owners and, thus, considers spending on CSR activities that are not a part of their core business as detrimental to shareholders' interests. Contrasting this view, later studies in the strategy literature showed that firms could use CSR activities as a differentiating factor and gain competitive advantage in the product markets (Bouslah et al., 2018; Oikonomou et al., 2012). In the voluntary approach, a few firms voluntarily adopt the CSR philosophy and use it to differentiate themselves from other firms in a given market with the intention of gaining competitive advantage and propelling economic growth.

However, Albuquerque et al. (2019) developed a CSR model that predicted an upper boundary of competitive advantage that firms can achieve through CSR activities. The limit of the boundary is determined by the proportion of firms adopting CSR activities in a given market. Their model predicts that the overall benefit of CSR turns negative when a large proportion of firms adopt CSR activities. In the regulation-induced CSR philosophy, all firms within the set criteria must undertake CSR activities. Large-scale adoption of CSR activities may make CSR a non-viable source of differentiation in the product market. Thus, CSR activities may cease to be a source of differentiation (Rajgopal & Tantri, 2023)). Instead, CSR activities may represent additional disguised tax. Harjoto & Laksmana (2018) also support this view and conclude that CSR activities increase the overall total cost, especially the fixed costs. Moreover, Rajgopal & Tantri, 2023) conclude that firms spending on CSR voluntarily reduced such expenditure when CSR became mandatory in India. This insight suggests that mandatory regulation that forces large-scale adoption of CSR activities, may yield no competitive advantage to firms and, may increase total costs.

In a competitive market, CSR projects would compete with other non-CSR projects for a share of capital and other resources. CSR projects are likely to loose due to increase in total costs with no corresponding benefits. However, if CSR is made mandatory, scarce resources would be allotted to such projects resulting in inefficient utilization of capital. Thus the impact of mandatory CSR could lead to a decline in asset efficiency and firm growth, and could be detrimental for economic and social welfare.

"Using the Difference in Differences (DiD) approach, we conduct three empirical tests to examine this insight. We examine the impact of mandatory regulation on investment rates, asset efficiency and firm growth by testing the following hypotheses.

H1: Mandatory CSR regulation had (has???) a negative impact on firm investments

H2: Mandatory CSR regulation had a negative impact on asset efficiency

H3: Mandatory CSR regulation had a negative impact on sales growth rate"

4 Data and methodology

4.2 Data

"All the required data to conduct our analysis is taken from the prowess database, a widely used database among researchers. We start with all firms listed on the Bombay Stock Exchange (BSE) and exclude all financial firms and firms with negative net worth and a leverage ratio of greater than one. We also exclude all observations with missing values for any of the variables used in our study[10]. Since our empirical strategy involves comparing changes in the dependent variable across pre and post-periods, we require that our sample be consistent across pre and post-regulation periods. Therefore, only firms that have complete information for all the years of the study period, i.e., 2012 through 2019, are considered for the analysis. By following this procedure, we have 6,184 firm-year observations belonging to 773 unique firms for our final analysis. Of these, 4,176 observations of 1,137 unique firms fall into the mandatory group. The years from 2012-2015 are pre-regulation; the rest belong to the post-regulation period. The summary statistics of all the variables, winsorized at 1% at both ends, used in our study are presented in Table 1."

Table 1: Summary statistics

Variables	Full sample(6,184)		Treatment firms (4,176)		Control firms (2,008)	
	Mean	SD	Mean	SD	Mean	SD
SGR	0.120	0.525	0.118	0.351	0.124	0.769
Inv_Ratio	0.078	0.253	0.095	0.257	0.042	0.242
ATR	0.945	0.616	1.007	0.600	0.817	0.628
Size	7.784	2.108	8.790	1.479	5.693	1.630
ROA	0.085	0.074	0.108	0.068	0.038	0.061
Leverage	0.226	0.148	0.223	0.147	0.233	0.150
Tangibility	0.314	0.189	0.324	0.180	0.292	0.203
RD_Ratio	0.004	0.010	0.005	0.011	0.001	0.007
MB	2.518	3.184	3.009	3.311	1.496	2.622

[10] We replace missing R&D values by zeros

Log_Age	3.460	0.497	3.513	0.519	3.350	0.429

From summary statistics, we observe that treatment firms are bigger (size), perform better (ROA), have a greater valuation in capital markets (MB), have a greater proportion of tangible assets, and invest more in R&D activities (RD_Ratio). However, these groups do not differ significantly regarding the use of debt (Leverage) and their age. These differences are the results of the selective application of the CSR regulation, i.e., this regulation is applied to bigger and better-performing firms and thus are as expected. There is a possibility that this observed firm-level heterogeneity in constructing the treatment and control groups may bias our results. We have tried accounting for this possibility using the propensity score matched samples; however, unobservable and hence unaccounted selection bias may still affect our analysis. Therefore, our results need to be interpreted with this caveate.

Our welfare measures of sales and investments, grew at an average rate of 12.0% and 7.8% per annum respectively the sample period. The average growth investment in treatment firms is about 9.5% of their gross assets, whereas in control firms, it is about 4.5%. The treatment firms are more efficient in using their assets as their asset turnover rate (ATR = 1.0) is significantly greater than that of control firms (ATR = 0.8).

4.3 Model specification:

As mentioned previously, we use the DiD approach to extract the marginal impact of CSR regulation on various welfare measures. The base model for estimation is provided in Eq. (1)

$$"Y_{it} = \alpha_i + \beta_1 Reg\_Dum_t + \beta_2 Man\_Dum_i + \beta_3 Man\_Dum_i * Reg\_Dum_t + \beta_4 Size_{it} + \beta_5 ROA_{it} + \beta_6 Leverage_{it} + \beta_7 Tangibility_{it} + \beta_8 RD\_Ratio_{it} + \beta_9 MB_{it} + \beta_{10} Log\_Age_{it} + \epsilon_{it}" \quad (1)$$

Empirically, extracting the impact of CSR on welfare measures has three challenges. First, year-specific macroeconomic factors like GDP growth rate and changes in expected inflation do affect all the dependent variables used in our study. Therefore, we control for these year-specific events by adding year dummies to our model. Second, the dependent variables are also affected by firm-specific time-invariant factors like organizational culture and governance. To control for this we use the fixed effects estimator. Lastly, our dependent variables are also affected by industry factors. To account for this, we adjust all dependent variables for industry differences by taking a deviation from yearly industry means.

5. Results and discussion

We examine the impact of CSR regulation on firm investments, asset efficiency and firm growth to test our hypotheses. .

Investments in assets serve two primary purposes: replacing obsolete assets and increasing the asset base to enable firms to undertake new projects. The former ensures the maintenance of existing output levels, while the latter facilitates output expansion. Therefore, CSR regulations that affect investments in assets are likely to impact gross output. As discussed in previous sections, we hypothesize that mandatory CSR investments compete with business investments, potentially leading to a negative effect on gross asset investments. Table 3 presents the results of this analysis.

"In column 1, the coefficient of Reg_Dum is negative, i.e., -0.048, and statistically significant at the 1% level, indicating an overall decrease in investments in the post-regulation period. The coefficient on the interaction variable, i.e., M*an_Dum*Reg_Dum*, is negative (-0.039) and statistically significant again at the 1% level. This implies that the decrease in investments is much larger for mandatory firms. The CSR investments made by mandatory firms in the post-regulation period are close to 2.7% in terms of total profits. This may have contributed a major part to the differential decrease in investments in mandatory firms."

Finance literature argues that firm level investments differ across industries. Such differences may bias the coefficient estimates and hence should be controlled. Thus, we control for the industry differences in investments by using the industry adjusted investment ratio *(Ind_Adj_IR)* as the dependent variable[11] in Model II. "Next, in Model III, we control for time invariant firm fixed effects along with industry differences and year fixed effects. The coefficient *Reg_Dum* in the Model II is positive, i.e., 0.036, opposite to what we observed in Model I with unadjusted *Inv_Ratio*. However, the variable of interest is the coefficient of the interaction term *Man_Dum*Reg_Dum*. The sign, magnitude, and statistical significance of the differential coefficient of the interaction term do not change across the three models in Table 3. This negative interaction coefficient in Model II and model III is consistent with H1 and the results presented in the first coumn. Collectively, these results imply that CSR regulation had a negative impact on the investment ratio of affected firms."

[11] First we calculate industry mean investment ratio for each industry each year and then we substract this industry mean from the actual investment ratio of sample firms. We use the NIC (National industry classification) codes for classifying industries.

Table 3: CSR regulation and firm investments in assets

VARIABLES	Model I	Model II	Model III
	Inv_Ratio	Ind_Adj_IR	Ind_Adj_IR
	(1)	(2)	(3)
Reg_Dum	-0.048***	0.036***	0.057***
	(-3.527)	(2.819)	(2.707)
Man_Dum*Reg_Dum	-0.039***	-0.038***	-0.039***
	(-2.846)	(-3.028)	(-3.071)
Size	0.044***	0.036***	0.035***
	(5.163)	(4.401)	(4.341)
ROA	0.075	0.048	0.056
	(0.787)	(0.544)	(0.632)
Lev	0.206***	0.229***	0.236***
	(4.033)	(4.856)	(4.945)
Tangibility	0.683***	0.603***	0.607***
	(10.696)	(10.807)	(10.843)
RD_Ratio	-0.985	-0.624	-0.572
	(-0.948)	(-0.647)	(-0.586)
MB	0.000	-0.000	-0.000
	(0.202)	(-0.050)	(-0.182)
Log_Age	0.127**	0.020	-0.039
	(2.342)	(0.403)	(-0.611)
Constant	-0.934***	-0.597***	-0.401*
	(-4.785)	(-3.400)	(-1.846)
Observations	6,184	6,184	6,184
R-squared	0.074	0.053	0.054
Number of firms	773	773	773
Firm FE	Yes	Yes	Yes
Year FE	No	No	Yes

Next, we examine the impact of CSR regulation on productivity of assets using the Asset Turnover Ratio (ATR) as the proxy. Inadequate investments in assets may bring down the overall productivity of assets. For example, less investments in key technologies may impact the efficiency of other invested assets. Further, less time towards key business decisions due to the mandatory nature of CSR regulation may also affect asset usage, resulting in a negative impact on asset turnover. The results are presented in Table 4.

Table 4: CSR regulation and asset efficiency (ATR)

VARIABLES	Model I	Model II	Model III
	ATR	Ind_Adj_ATR	Ind_Adj_ATR
Reg_Dum	-0.018	0.054***	0.032
	(-1.021)	(3.280)	(1.161)
Man_Dum*Reg_Dum	-0.121***	-0.107***	-0.106***
	(-5.751)	(-5.452)	(-5.417)
Size	0.219***	0.194***	0.195***
	(10.130)	(9.866)	(9.798)
ROA	1.018***	0.706***	0.697***
	(8.766)	(7.014)	(6.867)
Lev	-0.210***	-0.226***	-0.234***

	(-3.383)	(-3.725)	(-3.796)
Tangibility	0.001	0.023	0.022
	(0.013)	(0.318)	(0.290)
RD_Ratio	0.748	1.308	1.307
	(0.801)	(1.405)	(1.401)
MB	0.004*	0.005***	0.006***
	(1.930)	(2.703)	(2.704)
Log_Age	-0.180***	-0.134**	-0.072
	(-2.847)	(-2.517)	(-0.989)
Constant	-0.142	-1.072***	-1.276***
	(-0.635)	(-5.657)	(-4.754)
Observations	6,184	6,184	6,184
R-squared	0.300	0.244	0.245
Number of firms	773	773	773
Firm FE	Yes	Yes	Yes
Year FE	No	No	Yes

"Lastly, we examine the the impact of mandatory CSR regulation on sales growth rate of firms. It is our basic insight that CSR regulation decreases the supply of goods and services of mandatory firms by affecting the level and efficiency of their investments negatively. In the absence of increased demand for goods and services of such firms, as the mandatory nature of the regulation decreases its differentiating power, this should result in a lower growth rate in their output in the post-regulation period relative to the pre-regulation period. The results presented in Table 5 are consistent with this hypothesis."

Table 5: Regression analysis

VARIABLES	Model I	Model II	Model III
	SGR	Ind_Adj_SGR	Ind_Adj_SGR
	(1)	(2)	(3)
Reg_Dum	0.078**	0.054	0.031
	(2.166)	(1.596)	(0.753)
Man_Dum*Reg_Dum	-0.133***	-0.091***	-0.091***
	(-3.590)	(-2.651)	(-2.642)
Size	0.322***	0.261***	0.262***
	(10.057)	(9.889)	(9.807)
ROA	0.588***	0.389**	0.383**
	(2.779)	(2.073)	(2.007)
Lev	0.165	0.110	0.106
	(1.136)	(0.837)	(0.798)
Tangibility	-0.043	-0.022	-0.023
	(-0.228)	(-0.124)	(-0.133)
RD_Ratio	-2.757	-2.260	-2.276
	(-1.642)	(-1.425)	(-1.436)
MB	-0.001	-0.001	-0.001
	(-0.335)	(-0.400)	(-0.391)
Log_Age	-0.429***	-0.166	-0.118
	(-3.806)	(-1.645)	(-1.080)
Constant	-0.963**	-1.494***	-1.653***
	(-2.381)	(-4.035)	(-3.748)

Observations	6,184	6,184	6,184
R-squared	0.091	0.068	0.068
Number of firms	773	773	773
Firm FE	Yes	Yes	Yes
Year FE	No	No	Yes

"The coefficient of *Reg_Dum*, which indicates the differential growth rate in the post-regulation period, is positive, i.e., 0.078, and is statistically significant at the 1% level in Model I. However, when adjusted for industry growth rate in Model II and III, the results are positive but insignificant. The differential impact on mandatory firms, however, is negative in all models, implying a significant decrease in the sales growth rate of mandatory firms in the post-regulation period. This result supports hypothesis H3."

5.1 Robustness tests

5.1.1 Propensity score matching

The results observed above may have been driven by selection bias. It is expected that the classification of firms into treatment and control groups should be random except for CSR treatment. However, the CSR regulation in India is applied selectively based mainly on firm size. In this context, therefore, random assignment of firms into treatment and control groups is not possible. However, the selection bias arising due to firm-level observable covariates heterogeneity could be addressed using the propensity score matching approach. In this two-step approach, the propensity scores for each observation in the pre-regulation period are generated by logit regressing *Man_Dum* on *ROA, Leverage Tangibility, RD_Ratio, the market-to-book ratio of equity*, and *log_Age*. Then, in the second stage, we select one closest observation in terms of propensity score from the control group for every observation in the treatment group[12]. Thus, the constructed treatment and control group are balanced with respect to all firm-level covariates included in the first stage. It is to be noted that matching is done using the pre-regulation sample. For our further analysis, we select all the firms that had at least one matched observation in the pre-regulation period. The balancing statistics are provided in Table 6.

Table 6: Balancing statistics of propensity score matching

Variable	Matched	Treated	Control	%bias	% Reduction in Bias	t-value
ROA	U	0.109	0.043	104.5		26.38***

[12] We use the nearest neighbour with a caliper value of 0.001

	M	0.061	0.062	-1	99	-0.23
Lev	U	0.245	0.235	6.5		1.69*
	M	0.241	0.252	-7	-8.1	-1.36
Tangibility	U	0.332	0.301	16.4		4.35***
	M	0.315	0.326	-6	63.5	-1.09
RD_Ratio	U	0.004	0.002	31.1		7.78***
	M	0.002	0.002	4.5	85.5	0.94
MB	U	2.522	1.235	47.9		12***
	M	1.427	1.473	-1.7	96.5	-0.38
Log_Age	U	3.446	3.275	34		8.57***
	M	3.299	3.338	-7.8	77	-1.41

The result of regression analysis performed on the propensity score matched sample is presented in Table 7. The results are qualitatively very similar to the results of the unmatched sample. Though the magnitude of the coefficient of the interaction variable, i.e., *Man_Dum*Reg_Dum*, is very different for the PSM sample, the direction of the impact remains the same. Therefore, we may conclude that the results are not affected by the firm-level observable heterogeneity between the treatment and control samples.

Table 7: propensity score matching analyses

VARIABLES	Model I	Model II	Model III
	Ind_Adj_SGR	Ind_Adj_IR	Ind_Adj_ATR
Reg_Dum	0.012	0.044*	0.036
	(0.266)	(1.831)	(1.199)
Man_Dum*Reg_Dum	-0.062*	-0.043***	-0.084***
	(-1.902)	(-3.112)	(-3.919)
Size	0.242***	0.038***	0.204***
	(8.681)	(4.055)	(8.884)
ROA	0.360	0.043	0.536***
	(1.506)	(0.400)	(4.839)
Lev	0.057	0.216***	-0.273***
	(0.356)	(3.975)	(-3.986)
Tangibility	-0.093	0.565***	-0.045
	(-0.482)	(8.702)	(-0.508)
RD_Ratio	-3.329	0.174	-0.384
	(-1.346)	(0.162)	(-0.306)
MB	0.000	0.001	0.007**
	(0.112)	(0.603)	(2.480)
Log_Age	-0.100	-0.015	-0.088
	(-0.765)	(-0.193)	(-1.115)
Constant	-1.463***	-0.479*	-1.213***
	(-2.979)	(-1.889)	(-4.210)
Observations	4,640	4,640	4,640
R-squared	0.063	0.049	0.267
Number of firms	580	580	580
Firm FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes

5.1.2 Placebo test

"In the second robustness test, we examine whether the observed impact could be attributed to the CSR regulation or is driven by some unobservable time-varying heterogeneity between treatment and control firms. This test aims to achieve this objective by examining the differential change in the dependent variables between treatment and control groups across a false or fake regulation year. In this study, we assume 2013 to be the fake CSR regulation year and consider three years prior to this year as the pre-regulation year, i.e., 2010 to 2012, and 2013-2015 is the post-regulation period. We re-run the analysis presented in Tables 3, 4, and 5 (only models with year and firm fixed effects are used). The results presented in Table 8 show that none of the interaction variables are statistically significant. This result could be interpreted in two ways. First, the structural break in the dependent variables observed in the main tables is not due to any pre-existing, time-varying, unobservable, and omitted variable that varies systematically across treatment and control groups. Therefore, the observed change in dependent variables could be attributed to the CSR regulation. Second, this result could also be considered as a valid test of the parallel trend assumption between treatment and control firms in the pre-regulation period."

Table 8: The Placebo test

VARIABLES	Model I	Model II	Model III
	Ind_Adj_SGR	Ind_Adj_IR	Ind_Adj_ATR
Placebo_Dum	-0.029	0.026	0.075
	(-0.618)	(1.069)	(0.088)
Placebo_Dum*Man_Dum	-0.015	0.006	-1.851*
	(-0.419)	(0.372)	(-1.696)
Size	0.392***	0.021*	3.026***
	(9.138)	(1.899)	(3.001)
ROA	0.843***	0.190*	2.226
	(2.921)	(1.783)	(1.022)
Lev	0.273**	0.346***	-0.281
	(2.028)	(4.845)	(-0.197)
Tangibility	-0.093	0.918***	-8.947***
	(-0.658)	(10.082)	(-7.280)
RD_Ratio	-3.246	-0.298	-10.999
	(-1.600)	(-0.236)	(-1.105)
MB	-0.006	-0.003	0.085
	(-1.322)	(-1.202)	(1.184)
Log_Age	-0.552***	-0.060	-1.836
	(-2.911)	(-0.592)	(-0.685)
Constant	-1.225*	-0.376	-13.339
	(-1.834)	(-1.077)	(-0.909)
Observations	5,004	5,004	5,004

R-squared	0.125	0.078	0.052
Number of firms	834	834	834
Firm FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes

5.2 Discussion

Various studies have examined the channels through which such a positive impact on firm value is established (Pham & Tran, 2020; Roy et al., 2022). The critical question is whether such a positive impact sustains when we relax some of the important assumptions of the voluntary framework. Zhong & Gao (2017) argued that mandatory CSR disclosures on the one hand, reduced over-investment caused due to moral hazard issues; and on the other, compelled firms to internalize social costs and force resource reallocation, thereby leading to reduced investments in their core business. Regulation induced CSR in India, not just mandates disclosures but also specifies the scale, scope and limits the geographical area of CSR investments, thereby changing the allocation of resources. In line with the findings of Zhong & Gao (2017), we argue that Click or tap here to enter text.when CSR activities are mandated, firms lose control over their investment decisions, and therefore regulation-induced mandatory CSR activities may not produce results similar to voluntary CSR activities. Our results confirm that removal of the voluntary aspect of CSR alter the implications of CSR as a strategic investment and results in inefficient use of capital. Therefore, our results are consistent with the results of limited research available in the context of mandatory CSR activities, especially with three studies done in the Indian context. First, Manchiraju & Rajgopal (2017)) hypothesize that the cost of compliance with CSR regulation would outweigh the benefits. "Based on this insight, they show that Indian firms affected by the mandatory CSR regulation experienced a decrease in their valuation when the regulation was announced. Second, Rajgopal & Tantri (2023)) show that the Indian firms that were into voluntary CSR even before the regulation decreased their CSR expenditure in the post-regulation period. This reduction in CSR activities is attributed to the perceived lack of benefits of CSR activities in the post-regulation period. Lastly, in an unpublished manuscript, Jadiyappa et al. (2024), based on the insight that the cost of compliance increases the operating leverage of the affected firms, as CSR activities represent fixed costs in the post-regulation period, and show a positive impact of mandatory CSR regulation on the systematic risk exposure of the affected firms." Our results are consistent with these studies, and further, we explore and provide one possible economic channel through which such impacts are established.

Additionally, these results are also consistent with some of the theoretical CSR models developed in the literature. Lyon & Maxwell (2008, 2011) and Lutz et al. (2000) models show that CSR regulations may decrease the overall welfare in some states. This is based on the insight that the value of CSR activities in reducing negative externalities on the external society, especially on the environment, may decrease in the regulation-induced CSR activities. Under a mandatory regulation, firms just have to meet the minimum threshold which is set by the regulation. It is possible that such a threshold may be lower than what firms would have set for themselves under external pressures from customers and NGOs. This is especially true for firms with greater negative externalities. Therefore, such regulations have higher welfare costs.

From the economics perspective, Albuquerque et al. (2019) model predicts the same result. Subscribing to the view that CSR is used by firms as a strategic differentiation factor, it predicts that CSR activities will lose their differentiation value once the majority of the firms adopt CSR. Thus, CSR activities are considered as cost centers. Under such circumstances, CSR activities would compete with other investments for scarce resources. Our results are consistent with these theoretical predictions.

There is a thought in the literature that these mandatory CSR activities address some of the developmental issues in emerging countries. Our findings indicate that though CSR activities address some of the societal needs by mandating corporate firms to take up developmental projects in the education, environment, and social sectors, these benefits come at a cost. In other words, such policies have negative economic externalities that policymakers should consider. Further research is needed to assess the overall net benefit of CSR at the societal level and may in turn, require evaluating the impact of the regulation on various social and economic variables. Since CSR may impact numerous social and economic variables, measuring its net benefit could be a complex exercise that is nearly impossible.

Gatignon & Bode (2023) in their study on CSR strategies of Indian firms under legal mandate find that most firms tend to focus on a narrow set of designated CSR activities concerning education and healthcare. Moreover, since the statute requires the CSR activities to be concentrated in geographical areas where the firm is located and has operations, most CSR investments are limited to specific areas that have become centres of economic and social activity. The authors raise questions about the larger social welfare aspects of CSR given that the focus is on limited social causes and is restricted to denser centres of activity. Our findings complement their work by proving the negative consequences of mandated CSR on firm

growth, investment and efficiency. As firms attempt to appeal to the most influential stakeholder – the regulator, mandated CSR, on the one hand fails to reallocate resources to the socio-economically disadvantages sections for wider social causes (Gatignon and Bode, 2023), and, on the other, does not allow firms to achieve comparative efficiency. Thus mandated CSR, contrary to having a positive impact, generates negative societal welfare cost. These findings have extensive policy implications and may require revisting the 'hard law' approach adopted by countries like India and Indonesia.

Another important question in this context is if explicit CSR regulations help in addressing negative externalities on society better than industry-specific implicit CSR regulations. For example, would industry specific regulations for defining emission norms and improving employee work conditions be more productive than mandatory CSR regulations that force firms to take up CSR activities external to their business operations?

6. Conclusions

This study examines the impact of mandatory CSR regulation on firm investment, efficiency and growth and finds a negative impact on all. This negative impact on growth, productivity and investments may explain the observed negative relationship between CSR and firm value in a few studies. Moreover, the unintended negative consequence may have policy implication. These findings highlight that mandatory regulations entail certain costs that policymakers need to consider carefully. If the net economic benefit of mandatory regulation is negative, then such a regulation may not be able to achieve its intended objectives of achieving developmental goals. However, before reaching any definitive conclusion about the usefulness of mandatory CSR regulations, more research is needed to evaluate the net benefit or cost of CSR regulation, and requires evaluating its impact on other positive externalities like employment generation, decrease in environmental pollution and improvement in the socio-economic status of direct beneficiaries.

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Tables

Table 1: Summary Statistics

Variable	Definition
SGR	Sales Growth Rate: Yearly change in sales [$(Sales_t - Sales_{t-1})/Sales_{t-1}$]
Inv_Ratio	Investment Ratio: Yearly change in Gross Fixed assets [$(Gross\ assets_t - Gross\ assets_{t-1})/ Gross\ assets_{t-1}$]
ATR	Sales/Total assets
Size	Log(Sales)
ROA	EBIT/Total assets
Lev	Total debt/Total assets
Tangibility	Net fixed assets/Total assets
RD_Ratio	R&D expenses/Total assets
MB	Market to book value of equity
Log_Age	log(Year-incorporation year)

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Indian Institute of Management Kozhikode
IIMK Campus P. O.,
Kozhikode, Kerala, India,
PIN - 673 570
Phone: +91-495-2809237/ 238
Email: research@iimk.ac.in
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