



Stock Market Reaction to Regulatory Action on Anticompetitive Practices in India

Jayasankar Ramanathan¹

Abstract

This study examines the impact of regulatory action against anti-competitive practices on the stock market by using the event study method. Orders released by the Competition Commission of India are analysed. The mean cumulative abnormal return for the respondent firms is negative and statistically significant for orders taking up complaints for investigation, not statistically significant for orders dismissing complaints, and positive and statistically significant for orders upholding complaints. These results imply that the regulatory body is a credible information provider of the lawful nature of firms. The regulatory body should enhance investor awareness of its role as the enforcer of lawful competition and reduce environmental distortions that may alter the complementary deterrent effect of its orders. Studies of the impact of regulatory action against anti-competitive practices on investors are scarce, especially in emerging economies, and this study attempts to fill this void.

Keywords: stock market, event study, information asymmetry, anticompetitive practices, regulatory action

1. Introduction

Anti-competitive practices correspond to “a wide range of business practices in which a firm or group of firms may engage in order to restrict

¹Associate Professor of Marketing
IFMR Graduate School of Business, Krea University,
Andhra Pradesh, India; jayasankar.ramanathan@krea.edu.in

inter-firm competition to maintain or increase their relative market position and profits without necessarily providing goods and services at a lower cost or of higher quality” (Khemani & Shapiro, 1993, p. 12). Some examples include tie-in agreements, exclusive supply agreements, exclusive distribution agreements, refusal to deal, resale price maintenance, and predatory pricing. Across the globe and across industries, firms are tempted to engage in such anti-competitive practices to dominate rivals, usurp markets, and boost their earnings. Firms that act on these impulses run the risk of facing regulatory action from competent bodies and losing the trust of investors. News reports of anticompetitive practices frequently mention stock slips (e.g., Mirchandani, 2020).

In this study, the impact of regulatory action on anti-competitive practices on a stock market in India is investigated. More specifically, the effect of orders of the Competition Commission of India (CCI) on the stock market is assessed. CCI was established by the Government of India in 2003 (CCI, 2021a). The duty of the Commission is “to eliminate practices having adverse effect on competition, promote and sustain competition, protect the interests of consumers and ensure freedom of trade in the markets of India” (CCI, 2021a). The Commission is the enforcer of the Competition Act, which was passed by the Parliament of India in 2002 and subsequently amended in 2007 and 2009 (CCI, 2021b). The Commission has signed memoranda of understanding with similar organisations outside India, such as the Federal Trade Commission and the Department of Justice in the US and the European Commission (CCI, 2021c). For regulatory institutions, information on the impact of their orders on stock markets is valuable, since such information can confirm or reject a complementary deterrent effect (Carberry et al., 2018; Günster & van Dijk, 2016; Xu et al., 2012; Tanimura & Okamoto, 2013). Most previous studies on the relationship between regulatory action on anti-competitive practices and stock market reactions have been carried out in advanced economies such as the United States (US), Australia, and Europe, and there is a paucity of research in emerging economies such as India. CCI has been in existence for lesser number of years than its counterparts in other countries, and hence, studying the impact of CCI’s orders on the stock market is required to confirm or reject whether CCI’s orders produce

a complementary deterrent effect and for fine-tuning of regulatory norms. Hence, this study merits pursuit.

The rest of the paper is organised as follows. After reviewing past studies, research questions are identified. The theoretical background is then explicated and the hypotheses are specified. Following the presentation of the research method, the results are reported and discussed. Finally, contributions to the literature, implications for practice, limitations, and suggestions for future research are offered.

2. Literature Review

Different countries have their respective regulatory bodies for curbing anti-competitive practices. Published studies from different countries on the relationship between regulatory action on anti-competitive practices and stock market reactions are identified and reviewed¹.

Garbade et al. (1982) found that filings of antitrust suits by the Department of Justice or the Federal Trade Commission in the US were associated with statistically significant negative abnormal returns on the stock prices of defendant firms. The average cumulative abnormal return was -5.87% in the period (0,+4). Gilligan (1986) found that filings of resale price maintenance complaints by the Department of Justice or the Federal Trade Commission in the US, or by private individuals and corporations, were associated with statistically significant negative abnormal returns on the stock prices of defendant firms. The average abnormal return was -1.40% on the day of the event. Bosch and Eckhard (1991) found that the announcement of price fixing indictments by the Department of Justice in the US was associated with statistically significant negative abnormal returns on the stock prices of indicted firms. The average abnormal return was -0.33% on the day before the announcement and -0.75% on the day of the announcement. The average cumulative abnormal return was -1.08% in the period (-1,0). Bizjak and Coles (1995) found that private antitrust litigation filings in the US were associated with statistically significant negative abnormal returns on the stock prices of defendant firms. The average cumulative abnormal return was -0.60% in the period (0,+1). Bittlingmayer and Hazlett (2000) found that pro-antitrust enforcement

announcements involving Microsoft in the US were associated with statistically significant negative abnormal returns on Microsoft's stock price. The average cumulative abnormal return was -1.20% in the period (-1,+1). In a study of a series of antitrust cases by the Department of Justice, known as Paramount litigation, in which the defendants were movie studios, De Vany and McMillan (2004) found that one of the major events in the litigation (the Supreme Court's decision in 1948) was associated with statistically significant negative abnormal returns on the studios' stock prices. The average cumulative abnormal return ranged from -4.32% to -11.58% during the period (0,+1).

Feinberg and Round (2005) reported mixed results on the effect of price-fixing cases by the Australian Competition and Consumer Commission (ACCC) on the stock market in Australia. The institution of proceedings against companies by the ACCC did not result in statistically significant abnormal returns on the stock prices of the companies. However, the initial complaint or the start of the investigation by the ACCC resulted in statistically significant negative abnormal returns. The average abnormal return was -1.4% on the day of the event.

Günster and van Dijk (2016) reported some statistically significant findings concerning the impact of the European Commission's judgments of antitrust cases on stock markets in Europe. For dawn raids conducted by the Commission, the average abnormal return of defendant firms was -0.97% for the event day. The average cumulative abnormal return was -2.66% for the period (-5,+5). For final decisions issued by the Commission, the average cumulative abnormal return was -1.85% in the period (-25,+3).

This review of previous studies reveals gaps relevant for this study. First, although one might expect, in general, a negative empirical association between antitrust cases and stock market reactions, the sign and magnitude of the association seem to vary across different stages of the complaint investigation process, such as complaint registration and decree pronouncement (e.g., Feinberg & Round, 2005). Understanding such differences can inform regulatory institutions on their stage-wise impact on stock markets, and hence, merits pursuit. For regulatory

institutions, information on the impact of their orders on stock markets is valuable, since such information can confirm or reject a complementary deterrent effect (Carberry et al., 2018; Günster & van Dijk, 2016; Xu et al., 2012; Tanimura & Okamoto, 2013).

Second, although the regulatory institutions and the complaint investigation processes seem to vary across countries, most previous studies on the relationship between regulatory action on anticompetitive practices and stock market reactions have been carried out in advanced economies such as the US, Australia, and Europe. There is a paucity of research in emerging economies such as India. Regulatory bodies like CCI in emerging economies are much younger than their counterparts in advanced economies, and hence, their efficacy needs to be ascertained rather than assumed. There are published studies about CCI but no study could be found that specifically examined the stock market reactions of CCI's orders. Evaluating the impact of the regulatory body's orders on stock markets can not only inform the body but also provide an important reference for regulatory institutions in economies outside India.

To attempt to fill the discussed gaps, the following research questions (RQs) are addressed in this study:

RQ1: What is the association between the regulatory body's orders taking up complaints for investigation and the abnormal returns on the stock prices of the firms listed as respondents in the complaints?

RQ2: What is the association between the regulatory body's orders dismissing complaints and the abnormal returns on the stock prices of the firms listed as respondents in the complaints?

RQ3: What is the association between the regulatory body's orders upholding complaints and the abnormal returns on the stock prices of the firms listed as respondents in the complaints?

3. Theory and Hypotheses

The lawful nature of firms is an unobservable underlying quality about which investors lack information. This information is important to

investors, since any unlawful quality of firms negatively affects the growth and profitability of firms (see Bosch & Eckard, 1991; Garbade et al., 1982). Firms themselves are unlikely to issue information about their unlawful quality to investors, since issuing such information would be unfavourable compared to keeping silent. Under such circumstances, orders from a third party such as the regulatory body serve as credible information to reduce information asymmetry between investors and firms. Whereas firms are motivated by payoffs to issue information, the regulatory body is mandated by law to issue orders. The regulatory body issues three types of orders: those pronouncing that a complaint is taken up for investigation, those pronouncing that a complaint is dismissed, and those pronouncing that a complaint is upheld. The effects of these types of orders on stock prices are hypothesised as follows.

An order by the regulatory body pronouncing that a complaint about a firm is taken up for investigation acts as an indication to investors that the underlying unobservable quality of the firm is *prima facie* unlawful. When the quality of the firm is arguably unlawful, doubts are cast on the growth and profitability of the firm. Such doubts arise because of the following possibilities for the firm (Bosch & Eckard, 1991; Garbade et al., 1982): loss of future profits due to the regulatory body's imposition of modifications of the firm's prevailing practices; costs of defending the complaint; costs of retaining (or losing) customers and suppliers; payment of fines; costs of suits for damages from parties other than the complainant and associated settlements; reduction of the firm's operating efficiency due to removal of key management personnel and loss of employee morale; and suspicion in the minds of stakeholders of additional unlawful activities by the firm not related to the complaint. When doubts are cast on the growth and profitability of the firm, investors want to dissociate from the company and react to the information by selling the firm's stock. Under such circumstances, negative abnormal returns are predicted.

H1: The regulatory body's orders pronouncing that complaints are taken up for investigation yield negative abnormal returns for the firms listed as respondents in the complaints.

An order by the regulatory body pronouncing that a complaint about a firm is dismissed acts as an indication to investors that the underlying unobservable quality of the firm is lawful. When the quality of the firm is lawful, the potential for growth and profitability of the firm is enhanced. The potential for enhancement arises because of the reinforcement of the firm's trustworthiness in the eyes of its various stakeholders, including (existing and potential) customers and suppliers (Bosch & Eckard, 1991). When the potential for growth and profitability of the firm is enhanced, investors want to associate with the company and react by either retaining or buying the firm's stock. Under such circumstances, non-negative abnormal returns are predicted.

H2: The regulatory body's orders pronouncing that complaints are dismissed yield non-negative abnormal returns for the firms listed as respondents in the complaints.

An order by the regulatory body pronouncing that a complaint about a firm is upheld acts as an indication to investors that the underlying unobservable quality of the firm is surely unlawful. When the quality of the firm is undoubtedly unlawful, the growth and profitability of the firm are adversely affected. The reasons for the adverse impact include the following consequences for the firm (Bosch & Eckard, 1991; Garbade et al., 1982): loss of future profits due to the regulatory body's imposition of modifications of the firm's prevailing practices; costs of defending the complaint; costs of retaining (or losing) customers and suppliers; payment of fines; costs of suits for damages from parties other than the complainant and associated settlements; reduction of the firm's operating efficiency due to removal of key management personnel and loss of employee morale; and suspicion in the minds of stakeholders of additional unlawful activities by the firm not related to the complaint. The magnitude of the impact is dependent on the order of the regulatory body. When the growth and profitability of the firm are adversely affected, investors want to dissociate from the company and react to the information by resorting to panic-selling of the firm's stock. Under such circumstances, negative abnormal returns are predicted.

H3: The regulatory body's orders pronouncing that complaints are upheld yield negative abnormal returns for the firms listed as respondents in the complaints.

4. Data and Methods

The source of regulatory action against anti-competitive practices, i.e., the regulatory body, considered in this study is CCI. The Competition Act of India prohibits anti-competitive practices that can adversely affect competition, such as those involving tie-in agreements, exclusive supply agreements, exclusive distribution agreements, refusal to deal, resale price maintenance, and predatory pricing (Section 3 and Section 4 of the Competition Act). Complaints filed with CCI with respect to violations of the Competition Act elicit, broadly, three types of orders from CCI. One class of orders pronounces that the complaint is taken up

Table 1. Distribution of Orders

| Year | Number of orders | Number of orders taking up complaints for investigation [Sections 26(1) & 26(7)] | Number of orders dismissing complaints [Sections 26(2) & 26(6)] | Number of orders upholding complaints [Section 27] |
|----------------------|------------------|--|---|--|
| 2010 | 46 | 0 | 46 | 0 |
| 2011 | 84 | 0 | 73 | 11 |
| 2012 | 75 | 0 | 59 | 16 |
| 2013 | 83 | 12 | 59 | 12 |
| 2014 | 118 | 15 | 85 | 18 |
| 2015 | 116 | 8 | 89 | 19 |
| 2016 | 80 | 13 | 64 | 3 |
| 2017 | 82 | 12 | 55 | 15 |
| 2018 | 32 | 6 | 17 | 9 |
| Cumulative 2010–2018 | 716 | 66 | 547 | 103 |

for investigation (Section 26(1) and Section 26(7) of the Competition Act). *Prima facie* violations are captured in this class of orders. Another class of orders pronounces that the complaint is dismissed (without investigation: Section 26(2); after investigation: Section 26(6)) and includes acquittals of alleged anti-competitive practices. The third class of orders pronounces that the complaint is upheld (Section 27) and thus, captures violations. In this study, the impact on the stock market of each of the above three classes of orders is investigated.

A list of orders issued by CCI between February 2010 and June 2018 was compiled from the information available on the CCI website (CCI, 2021d, 2021e, 2021f, 2021g, 2021h). No order was found to have been issued prior to 2010.² Table 1 presents the distribution of all orders released by CCI.

Table 2. Distribution of Companies

| Year | Number of companies | Number of companies identified from orders taking up complaints for investigation | Number of companies identified from orders dismissing complaints | Number of companies identified from orders upholding complaints |
|----------------------|---------------------|---|--|---|
| 2010 | 11 | 0 | 11 | 0 |
| 2011 | 20 | 0 | 20 | 1 |
| 2012 | 24 | 0 | 11 | 14 |
| 2013 | 25 | 3 | 21 | 4 |
| 2014 | 41 | 3 | 30 | 9 |
| 2015 | 45 | 1 | 28 | 23 |
| 2016 | 30 | 5 | 15 | 11 |
| 2017 | 22 | 2 | 10 | 11 |
| 2018 | 15 | 3 | 6 | 6 |
| Cumulative 2010–2018 | 138 | 10 | 104 | 51 |

Count of companies excludes duplicates.

The information in the table is based on a simple count of orders given under the respective sections of the Competition Act on the CCI website as of June 30, 2018.

A total of 716 orders were identified for the study. As shown in Table 1, the number of orders varies by year and is highest in 2014 and lowest in 2018.³ The number of orders is highest in the dismissed category, followed by the upheld category, and is lowest in the taken up for investigation category. The number of orders is lowest in the taken up for investigation category because the list of orders available under this category on the website of CCI includes only those complaints that have not already been dismissed or upheld.

Of the 716 orders identified for the study, 525 were omitted because the companies in those orders were not listed with the Bombay Stock Exchange (BSE). Thus, the total number of orders used for data analysis was 191, including 44 orders upholding complaints, 24 orders taking

Table 3. Distribution of Events

| Year | Number of events | Number of events based on orders taking up complaints for investigation | Number of events based on orders dismissing complaints | Number of events based on orders upholding complaints |
|----------------------|------------------|---|--|---|
| 2010 | 11 | 0 | 11 | 0 |
| 2011 | 29 | 0 | 26 | 3 |
| 2012 | 39 | 0 | 18 | 21 |
| 2013 | 34 | 5 | 23 | 6 |
| 2014 | 46 | 4 | 32 | 10 |
| 2015 | 53 | 1 | 29 | 23 |
| 2016 | 35 | 8 | 16 | 11 |
| 2017 | 26 | 3 | 10 | 13 |
| 2018 | 15 | 3 | 6 | 6 |
| Cumulative 2010–2018 | 288 | 24 | 171 | 93 |

up complaints for investigation, and 123 orders dismissing complaints. The classification is based on the verification of orders listed under the respective sections on the website of CCI.

Table 2 presents the distribution of companies across the types of orders released by CCI. The companies listed as respondents were identified from the orders. A total of 138 companies were included in the data analysis, of which 10 were identified from orders taking up complaints for investigation, 104 from orders dismissing complaints, and 51 from orders upholding complaints (the total number of companies is less than the sum of those identified from orders taking up, dismissing, or upholding complaints, because some companies are named in more than one type of order).

Table 3 presents the distribution of events across the types of orders released by CCI. An event refers to the pronouncement of an order about a company. The date listed in the order was considered the date of the event. A total of 288 events were included in the data analysis, of which 24 were identified from orders taking up complaints for investigation, 171 from orders dismissing complaints, and 93 from orders upholding complaints.

The stock market considered was the BSE. Adjusted closing prices of stocks and the market index were obtained from the Prowess database maintained by the Centre for Monitoring Indian Economy (CMIE, 2021). Adjusted closing prices of stocks were used to limit the influence of confounding events. The data analysis was performed using Event Study Metrics (version 1.07) (Event Study Metrics, 2014). The market model was selected (Armitage, 1995; Park, 2004; Song & Han, 2017). The event day was referred to as day 0 or (0,0). An estimation window of (-220,-21), i.e., 200 days (Armitage, 1995; Park, 2004) and an event window of (-20,+20), i.e., 41 days (Bosch & Eckard, 1991; Günster & van Dijk, 2016) were considered. To understand how investors reacted to the orders, the abnormal returns on the stock prices of the respondent firms were obtained.⁴ The average abnormal return (AAR) and the cumulative average abnormal return (CAAR) were also obtained for each day in the event window, and the

trends of the AAR and CAAR were analysed within the event window. To test the statistical significance of the hypotheses, the AAR on day 0 and the mean value of the cumulative abnormal return (CAR) for multiple sub-windows including (-20,+20), (-15,+15), (-10,+10), (-5,+5), (-2,+2), and (-1,+1) were considered, and t-tests were performed (Boehmer et al., 1991; Brown & Warner, 1980). The outcomes of non-parametric tests are also reported for interested readers.

5. Results and Discussions

Figures 1 and 2 depict the trends of the AAR and CAAR for respondent firms in the regulatory body's orders taking up complaints for investigation. Figure 1 shows that the AAR is positive for 19 days and negative for 22 days in the event window. The AAR is negative on the event day. The AAR is negative on the day preceding the event day as well as on the day succeeding the event day. Figure 2 shows that the CAAR is positive in the window (-20,-18), then falls and remains negative throughout the window (-17,+20).

Table 4. Mean CAR of the Respondent Firms in Orders Taking Up Complaints for Investigation During Different Event Windows

| Event window | Mean CAR (%) | Positive: negative | Parametric tests | | Non-parametric tests | |
|--------------|--------------|--------------------|------------------|----------|----------------------|---------|
| | | | CS t-test | SCS test | CR test | GS test |
| (-20, +20) | -5.45 | 9:15 | -1.40 | -1.79*** | -1.11 | -0.91 |
| (-15, +15) | -2.43 | 11:13 | -0.85 | -1.22 | -0.07 | -0.09 |
| (-10, +10) | -0.46 | 8:16 | -0.19 | -0.72 | 0.40 | -1.32 |
| (-5, +5) | -1.20 | 12:12 | -0.68 | -0.86 | -0.51 | 0.32 |
| (-2, +2) | -1.99 | 8:16 | -1.77*** | -1.12 | -1.25 | -1.32 |
| (-1, +1) | -1.26 | 12:12 | -1.05 | -0.70 | -0.80 | 0.32 |
| (0, 0) | -0.26 | 9:15 | -0.47 | -0.33 | -0.51 | -0.91 |

* $p < 0.01$; ** $p < 0.05$; *** $p < 0.1$. The tests are two-tailed. CS t-test, cross-sectional t-test (Brown & Warner, 1980); SCS test, standardised cross-sectional t-test (Boehmer et al., 1991); CR test, Corrado rank test (Corrado, 1989); GS test, generalised sign test (Cowan, 1992).

Figure 1. AAR of the respondent firms in orders taking up complaints for investigation over the event window (-20,+20).

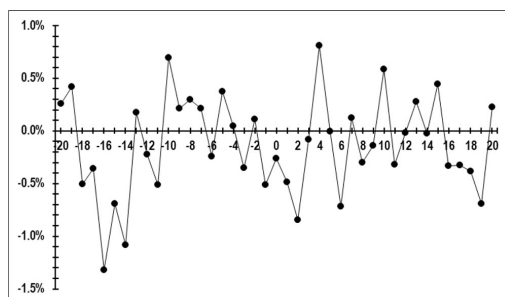


Figure 2. CAAR of the respondent firms in orders taking up complaints for investigation over the event window (-20,+20).

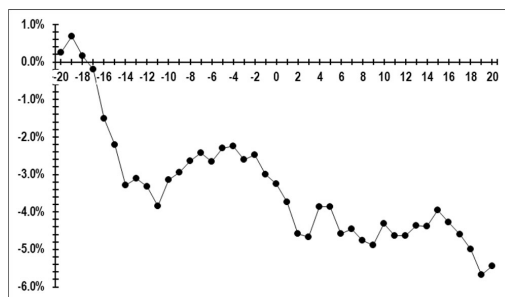


Figure 3. AAR of the respondent firms in orders dismissing complaints over the event window (-20,+20).

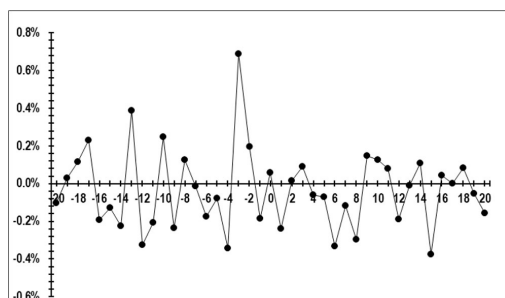


Table 4 reports the mean CAR across various windows for the regulatory body's orders taking up complaints for investigation, along with the outcomes of tests of significance. The AAR is -0.26% on the event

Figure 4. CAAR of the respondent firms in orders dismissing complaints over the event window (-20,+20).

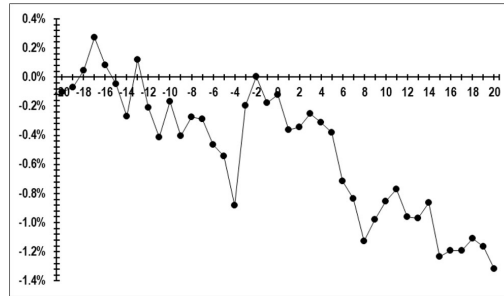


Table 5. Mean CAR of the Respondent Firms in Orders Dismissing Complaints During Different Event Windows

| Event window | Mean CAR (%) | Positive: negative | Parametric tests | | Non-parametric tests | |
|--------------|--------------|--------------------|------------------|----------|----------------------|---------|
| | | | CS t-test | SCS test | CR test | GS test |
| (-20, +20) | -1.32 | 69:94 | -1.01 | -0.51 | 0.59 | -1.53 |
| (-15, +15) | -1.32 | 75:88 | -1.26 | -0.67 | 0.44 | -0.59 |
| (-10, +10) | -0.44 | 77:86 | -0.53 | -0.20 | 0.34 | -0.27 |
| (-5, +5) | 0.08 | 80:83 | 0.15 | 0.21 | 0.63 | 0.20 |
| (-2, +2) | -0.15 | 80:83 | -0.43 | -0.54 | 0.10 | 0.20 |
| (-1, +1) | -0.37 | 73:90 | -1.31 | -1.31 | -0.75 | -0.90 |
| (0, 0) | 0.06 | 85:78 | 0.41 | 0.47 | 0.92 | 0.98 |

* $p < 0.01$; ** $p < 0.05$; *** $p < 0.1$. The tests are two-tailed. CS t-test, cross-sectional t-test (Brown & Warner, 1980); SCS test, standardised cross-sectional t-test (Boehmer et al., 1991); CR test, Corrado rank test (Corrado, 1989); GS test, generalised sign test (Cowan, 1992).

Figure 5. AAR of the respondent firms in orders upholding complaints over the event window (-20,+20).

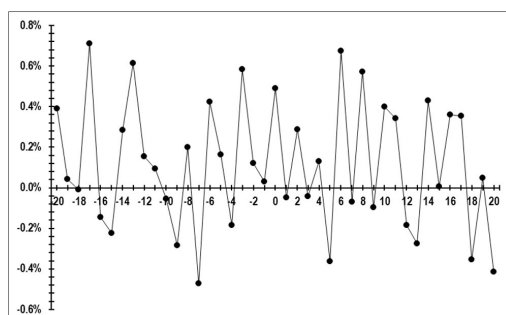


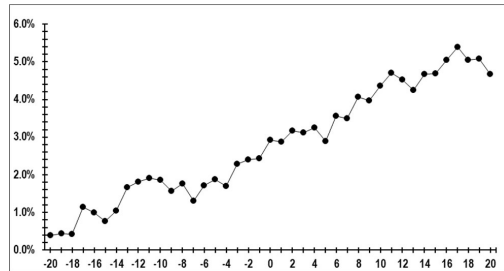
Table 6. Mean CAR of the Respondent Firms in Orders Upholding Complaints During Different Event Windows

| Event window | Mean CAR (%) | Positive: negative | Parametric tests | | Non-parametric tests | |
|--------------|--------------|--------------------|------------------|----------|----------------------|---------|
| | | | CS t-test | SCS test | CR test | GS test |
| (-20, +20) | 4.67 | 52:35 | 2.60* | 2.43** | 1.18 | 2.46** |
| (-15, +15) | 3.69 | 50:37 | 2.31** | 2.28** | 0.90 | 2.03** |
| (-10, +10) | 2.46 | 49:38 | 1.87*** | 2.07** | 0.55 | 1.81*** |
| (-5, +5) | 1.17 | 52:35 | 1.46 | 1.79*** | 0.85 | 2.46** |
| (-2, +2) | 0.88 | 46:41 | 1.52 | 1.67*** | 0.77 | 1.17 |
| (-1, +1) | 0.47 | 48:39 | 1.11 | 1.22 | 0.65 | 1.60 |
| (0, 0) | 0.49 | 44:43 | 1.97** | 2.00** | 1.22 | 0.74 |

* $p < 0.01$; ** $p < 0.05$; *** $p < 0.1$. The tests are two-tailed. CS t-test, cross-sectional t-test (Brown & Warner, 1980); SCS test, standardised cross-sectional t-test (Boehmer et al., 1991); CR test, Corrado rank test (Corrado, 1989); GS test, generalised sign test (Cowan, 1992).

day and not statistically significant ($t_{\text{Brown \& Warner}} = -0.47$; $p > 0.1$ for the two-tailed test). The mean CAR is negative in all windows. The mean CAAR is -1.99% for the window (-2,+2) and statistically significant ($t_{\text{Brown \& Warner}} = -1.77$; $p < 0.1$ for the twotailed test⁵). The mean CAR is -5.45% for

Figure 6. CAAR of the respondent firms in orders upholding complaints over the event window (-20,+20).



the window (-20,+20) and statistically significant ($t_{\text{Boehmer}} = -1.79$; $t_{\text{ADJ-BMP}} = -1.66$; $p < 0.1$ for both of these two-tailed tests⁶). Hypothesis 1 is therefore supported. The regulatory body's orders pronouncing that complaints have been taken up for investigation yield negative abnormal returns for the firms listed as respondents in the complaints.

Figures 3 and 4 depict the trends of AAR and CAAR for the respondent firms in the regulatory body's orders dismissing complaints. Figure 3 shows that the AAR is positive for 18 days and negative for 23 days in the event window. The AAR is positive on the event day but negative on the day preceding the event day and the day succeeding the event day. Figure 4 shows that the CAAR is negative in the window (-20,-19), positive in the window (-18,-16), negative in the window (-15,-14), positive in the window (-13,-13), negative in the window (-12,-3), and positive in the window (-2,-2), and remains negative throughout the window (-1,+20).

Table 5 reports the mean CAR across various windows for the regulatory body's orders dismissing complaints, along with the outcomes of tests of significance. The AAR is +0.06% on the event day and not statistically significant ($t_{\text{Brown \& Warner}} = +0.41$; $p > 0.1$ for the two-tailed test). The mean CAR is negative in most of the windows but is not statistically significant in any of the windows. Hypothesis 2 is therefore supported. The regulatory body's orders pronouncing that complaints have been dismissed yield non-negative abnormal returns for the firms listed as respondents in the complaints.

Figures 5 and 6 depict the trends of the AAR and CAAR for the respondent firms in the regulatory body's orders upholding complaints. Figure 5 shows that the AAR is positive for 25 days and negative for 16 days in the event window. The AAR is positive on the event day and the day preceding the pronouncement day but negative on the day succeeding the event day. Figure 6 shows that the CAAR is positive and rising throughout the window (-20,+20).

Table 6 reports the mean CAR across various windows for the regulatory body's orders upholding complaints, along with the outcomes of tests of significance. The AAR is +0.49% on the event day and statistically significant ($t_{\text{Brown \& Warner}} = +1.97$; $p < 0.05$ for the two-tailed test⁷). The mean CAR is positive in all windows and also statistically significant in most of the windows. The mean CAR is +0.88% for the window (-2,+2) and statistically significant ($t_{\text{Boehmer}} = +1.67$; $p < 0.1$ for the two-tailed test⁸). The mean CAR is +4.67% for the window (-20,+20) and statistically significant ($t_{\text{Boehmer}} = +2.43$; $t_{\text{ADJ-BMP}} = +1.68$; $p < 0.1$ for both of these two-tailed tests⁹). Hypothesis 3 is therefore not supported. The regulatory body's orders pronouncing that complaints have been upheld do not yield negative abnormal returns for the firms listed as respondents in the complaints.

Hypothesis 1 predicted that the regulatory body's orders pronouncing that complaints are taken up for investigation yield negative abnormal returns for the firms listed as respondents in the complaints. As predicted, the abnormal returns were found to be negative and statistically significant. This finding lends support to the notion that orders by the regulatory body serve as credible information that reduce information asymmetry between investors and the respondent firms.

Hypothesis 2 predicted that the regulatory body's orders pronouncing that complaints are dismissed yield non-negative abnormal returns for the firms listed as respondents in the complaints. The abnormal returns were found to be negative and not statistically significant. The negative sign of the abnormal returns was unexpected. Two types of orders of dismissal were used in the analysis: those dismissed without being taken up for investigation and those dismissed after being taken up for investigation. In the former category, the time interval between receipt of the complaint

and the order of dismissal ranged from a minimum of 37 to a maximum of 1014 days, with an average of 224 days. In the latter category, the time gap between acceptance of the complaint for investigation and the order of dismissal ranged from a minimum of 169 days to a maximum of 1100 days, with an average of 489 days. The negative sign of the abnormal returns can be explained by the possibility of a change in stock ownership during this time interval and the prevailing investor expectation of spotless lawful quality from firms. Even if an order dismisses a complaint, investors who own the company's stock at the time of the event may be shocked to learn that such a complaint was filed against the company or investigated. This negative violation of investors' expectations may lead them to dissociate from the company (Burgoon & Hale, 1988; Burgoon & LePoiré, 1993; Ouyang et al., 2017). Thus, it appears that even orders of dismissal by the regulatory body may be perceived as serious negative information by some investors.

Hypothesis 3 predicted that the regulatory body's orders pronouncing that complaints are upheld yield negative abnormal returns for the firms listed as respondents in the complaints. The abnormal returns were, however, positive and statistically significant. Although this result was surprising, discussions with investors suggested that a potential explanation for this counterintuitive finding is the possibility of stock price manipulation around the time of the event. When orders implicating firms are released by the regulatory body, promoters of the firms may attempt to manipulate the situation by buying or arranging to buy stocks (thereby inflating demand) to jack up the price (Ramachandran, 2019). To assess the validity of this explanation, insider trading data were obtained from the Prowess database (CMIE, 2021). For each of the 93 events used in the study, the number of shares bought and the number of shares sold at BSE were scrutinised in the event window (-20,+20). For 17 events, the number of shares bought was greater than the number of shares sold, and for 14 events, the number of shares sold was greater than the number of shares bought. The number of shares bought or sold was not reported for the remaining 62 events. In response to the above findings on insider trading, one of the previously contacted investors noted that, among the entire volume of transactions in the stock market at the

time of such events, the share of transactions using insider accounts is quite negligible compared with the share of transactions using shadow accounts (Ramachandran, 2020). While providing conclusive evidence to corroborate the use of such manipulative practices by respondent firms is beyond the ambit of this study, the potential explanation of stock price manipulation is quite plausible and yields a vital implication concerning the control of environmental distortions that can influence the effect of credible information.

6. Concluding Remarks

Studies focusing on the impact of regulatory action against firms' anti-competitive practices on investors are scarce, especially in emerging economies, and this study attempts to fill that void. The regulatory body examined in this study, CCI, deals with violations, including those arising as a result of unlawful practices in the distribution of products and services and unlawful pricing practices. This study investigates the impact of the regulatory body's orders on the stock market and whether the orders create a deterrent effect in terms of destroying the market capitalisation of respondent firms in the emerging economy of India. This study predicts the outcomes of orders and reports novel findings that have critical implications for the regulatory body and possibly similar organisations worldwide that are involved in promoting and protecting lawful competition in society. In contrast to the findings of previous studies in advanced economies, this study finds a counterintuitive phenomenon in which regulatory action against anti-competitive practices positively impacts the stock market. By theorising and testing the impact of regulatory action against anti-competitive practices in India on the stock market, this study contributes to the global conversation on the relationship between antitrust cases and stock market reactions. Turning to the study's findings, investors react negatively to the regulatory body's orders pronouncing that complaints are taken up for investigation, as the abnormal returns on the respondent firms' stock prices are negative and statistically significant. By contrast, investors do not react to orders pronouncing that complaints are dismissed, as the abnormal returns on the respondent firms' stock

prices are negative and not statistically significant. However, investors react positively to orders pronouncing that complaints are upheld, as the abnormal returns on the respondent firms' stock prices are positive and statistically significant. It is likely that this counterintuitive result simply demonstrates that the effect of information is thwarted by environmental distortions.

In terms of practical implications, the findings of this study attest to the potential role of the regulatory body as a credible information provider of the lawful nature of firms. The orders of the regulatory body are found to impact the stock market, and hence, the regulatory body should recognise its role as an effective information provider. In this regard, the regulatory body must take steps to enhance investor awareness of its role as the enforcer of lawful competition and reduce the scope of environmental distortions that may alter the complementary deterrent effect of its orders. A critical implication of this study is that, whenever orders upholding complaints are released, the competition watchdog should notify the financial market watchdog and request the latter to be vigilant of any possible manipulation of stock price by the promoters of the respondent firms. In India, the financial market watchdog is the Securities and Exchange Board of India (SEBI), the regulator for stock markets in the country, whose function is "to protect the interests of investors in securities and to promote the development of, and to regulate the securities market and for matters connected therewith or incidental thereto" (SEBI, 2021). Market regulators such as CCI and SEBI cannot work in isolation, and there should be a moral connection between them. By notifying SEBI at the time of release of its orders, CCI will naturally support SEBI in fulfilling its duty and remaining vigilant (for example, investigating unusually large share purchase transactions or reporting suspected cases to the income tax authority).¹⁰ To promote such cooperation and reap the associated long-term benefits to society, further improvements in communication between the different regulatory bodies are necessary. Although the generalisability of such implications is limited, this study nonetheless provides a reference for regulatory institutions in economies outside India.

The scope of this study is limited to the research questions listed under section 2. Future research can build on this study in various ways. First, the generalisability of the results across time can be examined by testing the hypotheses of this study after a gap of several years. If the regulatory body is successful in controlling environmental distortions, then orders upholding complaints should produce negative abnormal returns for the firms listed as respondents in the complaints. Second, the roles of the various classes of anti-competitive practices found in the Competition Act (such as tie-in agreements, exclusive supply agreements, exclusive distribution agreements, refusal to deal, resale price maintenance, and predatory pricing) in influencing abnormal returns on stock prices can be investigated. The data used in the present study are not amenable to such an investigation because many individual orders cite multiple classes of violations. As more data become available over time, such an investigation may become feasible. Third, the roles of factors specific to firms, industries, and so on in predicting the variation of the abnormal returns on stock prices can be identified and investigated. Such examinations would be meaningful in the context of orders upholding complaints that initially produce negative abnormal returns for the firms listed as respondents in the complaints. As such, this pursuit is beyond the scope of the present work and can be undertaken in a future study. Fourth, regulatory actions on anti-competitive practices, and hence, the stock market's reaction to the same can be influenced by multiple regulators, viz., CCI, SEBI, and sectoral regulators such as the Telecom Regulatory Authority of India, Insurance Regulatory and Development Authority, etc. Hence, there may be sectoral variations in the stock market's reactions, depending on the inter-linkages of the norms of different regulators. This aspect could be pursued in a future study. Lastly, the investigation of the association between regulatory action against anti-competitive practices and stock markets can be extended to emerging economies other than India.

7. Acknowledgments

Mr. M.V. Rajasekhar (Academic Associate at the Indian Institute of Management at Visakhapatnam) is thanked for his excellent research

assistance. The anonymous reviewers are thanked for their insightful comments.

Endnotes

¹In the following review of published studies, the day of the event is denoted by $t=0$, the days preceding the event are denoted by $t<0$, and the days succeeding the events are denoted by $t>0$.

²This observation is based on the availability of information in the website of CCI. Reasons for the unavailability of information for the period prior to 2010 are not privy to the author.

³Reasons for the peak in the number of orders during 2014–15 are not privy to the author. The peak could simply reflect that some complaints take more time than others for being investigated and orders issued. Alternatively, it is possible that some events, shocks, or interventions might have given rise to the peak.

⁴Abnormal returns were estimated using simple returns. However, no major differences were observed in the results when the abnormal returns were estimated using logarithmic returns.

⁵The two-tailed p-value is twice the one-tailed p-value. So, the result is statistically significant with $p<0.05$ for the one-tailed test.

⁶ $t_{\text{ADJ-BMP}}$ refers to Kolari and Pynnonen's (2010) adjusted version of Boehmer et al.'s (1991) standardised cross-sectional test statistic. The two-tailed p-value is twice the one-tailed p-value. So, the result is statistically significant with $p<0.05$ for the one-tailed test.

⁷The two-tailed p-value is twice the one-tailed p-value. So, the result is statistically significant with $p<0.05$ for the one-tailed test.

⁸The two-tailed p-value is twice the one-tailed p-value. So, the result is statistically significant with $p<0.05$ for the one-tailed test.

⁹The two-tailed p-value is twice the one-tailed p-value. So, the result is statistically significant with $p<0.05$ for the one-tailed test.

¹⁰When we look at published studies from other countries, we do not find the competition watchdog's regulatory orders (orders that uphold complaints) to yield positive abnormal returns on the stock prices of the implicated firms. However, we find a counterintuitive result in India. Such situations might have arisen and been addressed in some countries but that information is not privy to the author.

References

- Armitage, S. (1995). Event study methods and evidence on their performance against Microsoft created value in the computer industry? *Journal of Financial Economics*, 55(3), 329–359.
- Binder, J. (1998). The event study methodology since 1969. *Review of Quantitative Finance and Accounting*, 11(2), 111–137.
- Bittlingmayer, G., & Hazlett, T. W. (2000). DOS Kapital: Has antitrust action.
- Bizjak, J. M., & Coles, J. L. (1995). The effect of private antitrust litigation on the stock-market valuation of the firm. *The American Economic Review*, 85(3), 436–461.
- Boehmer, E., Musumeci, J., & Poulsen, A. B. (1991). Event-study methodology under conditions of event-induced variance. *Journal of Financial Economics*, 30(2), 253–272.
- Bosch, J. C., & Eckard, E. W., Jr. (1991). The profitability of price fixing: Evidence from stock market reaction to federal indictments. *The Review of Economics and Statistics*, 73(2), 309–317.
- Brown, S. J., & Warner, J. B. (1980). Measuring security price performance. *Journal of Financial Economics*, 8(3), 205–258.
- Burgoon, J. K., & Hale, J. L. (1988). Nonverbal expectancy violations: Model elaboration and application to immediacy behaviors. *Communications Monographs*, 55(1), 58–79.

- Burgoon, J. K., & Le Poire, B. A. (1993). Effects of communication expectancies, actual communication, and expectancy disconfirmation on evaluations of communicators and their communication behavior. *Human Communication Research*, 20(1), 67–96.
- Carberry, E. J., Engelen, P. J., & Van Essen, M. (2018). Which firms get punished for unethical behavior? Explaining variation in stock market reactions to corporate misconduct. *Business Ethics Quarterly*, 28(2), 119–151.
- CCI. (2021a). *About CCI*. <https://www.cci.gov.in/about-cci>
- CCI. (2021b). *Competition Act*. <https://www.cci.gov.in/competition-act>
- CCI. (2021c). *International Cooperation*. <https://www.cci.gov.in/node/1761>
- CCI. (2021d). *Antitrust-Section 26(1)*. <http://cci.gov.in/orders-commission/98>
- CCI. (2021e). *Antitrust-Section 26(2)*. <https://www.cci.gov.in/orders-commission/99>
- CCI. (2021f). *Antitrust-Section 26(6)*. <https://www.cci.gov.in/orders-commission/100>
- CCI. (2021g). *Antitrust-Section 26(7)*. <https://www.cci.gov.in/orders-commission/101>
- CCI. (2021h). *Antitrust-Section 27*. <http://cci.gov.in/orders-commission/102>
- CMIE. (2021). *ProwessIQ*. <https://prowessiq.cmie.com/>
- Corrado, C. J. (1989). A nonparametric test for abnormal security price performance in event studies. *Journal of Financial Economics*, 23(2), 385–395.
- Cowan, A. R. (1992). Nonparametric event study tests. *Review of Quantitative Finance and Accounting*, 2(4), 353–371.

- De Vany, A., & McMillan, H. (2004). Was the antitrust action that broke up the movie studios good for the movies? Evidence from the stock market. *American Law and Economics Review*, 6(1), 135–153.
- Event Study Metrics. (2014). *User Manual*. Bornheim: Event Study Metrics UG.
- Feinberg, R. M., & Round, D. K. (2005). Share-price responses to antitrust enforcement in Australia: Do investors care about price-fixing cases? *Competition and Consumer Law Journal*, 13(1), 23–39.
- Garbade, K. D., Silber, W. L., & White, L. J. (1982). Market reaction to the filing of antitrust suits: An aggregate and cross-sectional analysis. *The Review of Economics and Statistics*, 64(4), 686–691.
- Gilligan, T. W. (1986). The competitive effects of resale price maintenance. *The RAND Journal of Economics*, 17(4), 544–556.
- Günster, A., & van Dijk, M. (2016). The impact of European antitrust policy: Evidence from the stock market. *International Review of Law and Economics*, 46(June), 20–33.
- Khemani, R. S., & Shapiro, D. M. (1993). *Glossary of industrial organisation economics and competition law*. OECD. <http://www.oecd.org/regreform/sectors/2376087.pdf>
- Kolari, J. W., & Pynnönen, S. (2010). Event study testing with cross-sectional correlation of abnormal returns. *The Review of Financial Studies*, 23(11), 3996–4025.
- Mirchandani, N. (2020, December 10). *Cement stocks fall as CCI probe alleged anti-competitive behaviour*. Bloomberg Quint. <https://www.bloomberquint.com/business/cement-stocks-fall-as-cci-probes-alleged-anti-competitive-behaviour>
- Ouyang, Z., Wei, J., & Zhao, D. (2017). Stock market's reaction to self-disclosure of work safety accidents: an empirical study in China. *Quality & Quantity*, 51(4), 1611–1626.
- Park, N. K. (2004). A guide to using event study methods in multi-country settings. *Strategic Management Journal*, 25(7), 655–668.

Ramachandran, L. (2019, March 25). *Personal communication with author.*

Ramachandran, L. (2020, November 1). *Personal communication with author.*

SEBI. (2021). *About.* <https://www.sebi.gov.in/about-sebi.html>

Song, C., & Han, S. H. (2017). Stock market reaction to corporate crime: Evidence from South Korea. *Journal of Business* 143(2), 323–351.

Tanimura, J. K., & Okamoto, M. G. (2013). Reputational penalties: Evidence from corporate scandals. *Asian Economic Journal*, 27(1), 39–57.

Xu, X. D., Zeng, S. X., & Tam, C. M. (2012). Stock market's reaction to disclosure of environmental violations: Evidence from China. *Journal of Business Ethics*, 107(2), 227–237.