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Leniency of the Competition Commission of India*

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Abstract

We try to overcome the research gap in the competition law and economics literature by assessing the lesser penalty policy under the Indian Competition Act (2002) and evaluating the magnitude of monetary penalties sanctioned in cartel cases by the Competition Commission of India (CCI). The research focuses on firm-level cartel data and acknowledges the distinction between firms, associations, and individuals involved in cartel activities. The competition act has given the CCI broad discretion in sanctioning penalties in cartel cases, which may have a detrimental effect on the lesser penalty regime, which would affect the competition policy's deterrence effect. The analysis suggests that the profit metric leads to a higher magnitude of fines or a lower level of relative savings (RSF). Upon comparing the RSF of associations and firms, the former attracts harsher sanctions, as most associations are multiple offenders (MO) and the CCI has recognized associations as a medium for collusive activities by firms and individuals. We suggest that the cartel penalty regime should be amended to ensure the predictability of severe monetary sanctions that would enhance the deterrence and punishment effect of such penalties and raise competition in the Indian market.

Keywords: Antitrust, Cartels, Leniency, Competition policy
JEL classification codes: C14, C41, K21, K42, L41

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1 Introduction

Just like individuals, corporations are considered as a separate entity that could commit crime and cause harm in the society in the form of increased prices for products, constrained supplies to manipulate the prices and unfair trading agreements. Cartels are a form of corporate misconduct wherein two or more firms or associations come together to form an agreement, usually based on price-fixing or quantity-fixing. These affect the consumer welfare directly and prevents the growth of competition in the economy. The modern-day cartels are implicit in nature and therefore very hard to detect. The stability of a cartel is dependent on several factors such as the gains from collusion, nature of the product they are selling and number of firms in the market, etc. but, it also depends on the scrutiny/performance of the cartel enforcement institution.

Anti-competitive policies in the EU [1] and the US [2] have been well established since the 1900s. Whereas, the Indian competition policy was drafted under the Competition Act 2002 and the Competition Commission of India was commissioned in 2009. According to research, there is a positive correlation between experience and the functioning of competition law enforcement (Armoogum (2016)). Therefore, Indian competition commission is relatively young when compared to the US and the EU competition authorities.

This paper fills in the research gap in the Indian competition law and economics literature by examining the cartel penalty regime. Authors such as (Swamy (2015)) and (Bhattacharjea and De (2021)) use descriptive analysis to give insights on the same. Instead, we focus on empirically evaluating monetary penalties imposed on cartelists while determining various factors that affect such sanctions, and assessing the leniency policy using a case-by-case analysis as there are only 10 cases of leniency in the cartel data set. This paper contributes to the empirical literature on cartel fines ((Connor and Lande (2006)), (Veljanovski (2011)), (Veljanovski (2006)), (Allain M.L., Boyer M., Kotchoni R. and Ponssard J.P. (2011)), (Connor (2013)) and, (Combe and Monnier (2011)); and on leniency programs (Bigoni et al. (2008)), (Spagnolo (2008)), (Borrell and Jimènez G. (2008)), (Brenner (2009)), (Harrington (2008)), (Zhou (2015)), (Marvão (2015)), (Marvão and Spagnolo (2015)) and (Singh (2020)). Our contribution is threefold: first, we empirically examine the factors that impact the monetary cartel sanctions, for different types of entities (firms, associations and individuals); second, we analyze the large gap between the fines imposed and their legal limit; third, we investigate the impact of the leniency policy for the detection of cartels in India.

Unlike in the EU competition law, whereas there is a base penalty i.e., 30 percent of the amount of value of sales depending on the gravity of the offense is charged and a proper structured penalty regime is followed; there is no such base penalty in the Indian competition law and too much discretion is given to the CCI in this area. Theoretically the Indian competition law is quite rigorous[3] as the maximum penalty for cartel offenses is either 10 percent of the turnover for each cartel year or 3 times the net profit for each cartel year, whichever is higher and there is no restriction to the number of cartel years to take into consideration, for e.g. in the Suo-moto case 02/2013[4], the monetary sanction was imposed by taking 8 cartel years into consideration; but yet in many other cases due to lack to availability of the actual duration of the cartel, the CCI mimicked the civil penalty regime, in which the monetary sanctions are based on the average turnover of the preceding three years. The authors suggest that the cartel penalty regime should follow a structured guideline to ensure predictability of severe monetary sanctions. This would enhance the deterrence as well as the punishment effect of the sanctions and raise the level of competition in the Indian market.

The analysis is done using a novel data set which consists of firm-level data on convicted cartel cases and accounts for the distinction between firms, associations and individuals involved in cartel activities. The data

[1] EU competition policy was envisaged by the Treaty of Rome in 1957, which established the creation of a system safeguarding free competition in the common market as one of its goals.

[2] Congress passed the first antitrust law, the Sherman Act, in 1890 as a "comprehensive charter of economic liberty aimed at preserving free and unfettered competition as the rule of trade."

[3] As mentioned in the OECD report

[4] https://www.cci.gov.in/sites/default/files/Suo%20-%20Moto%20Case%20No.%2002%20of%202013.pdf

includes a total of 256 firms, 320 individuals and 61 associations convicted for collusion under section 3 of the Competition Act 2002. These relate to 57 cartels convicted from 2011 until 2021[5]. The actual number of cartels prosecuted by the CCI in this time-period is 74 as identified by the authors, but the CCI didn't impose monetary sanctions on 17 cartels because their turnover was highly in-significant and most of the firms in the cartel agreement belonged to a MSME (Micro, Small and Medium enterprises) category; and as the Indian govt. has been implementing policies to inhibit growth in these small scale firms, hence a monetary sanction would have led to a financial strain on their growth. Therefore, these cartelists were asked to cease and desist such collusive agreements and never to indulge in any such activity in the future[6].

The empirical methodology examines a dependent variable which we label as relative savings from fines (RSF), and is calculated as one minus the ratio between the fine paid and its maximum. We are using a fixed-effects regression model to control for the macroeconomic variations throughout the years and within the different industrial sectors. The CCI considers aggravating and mitigating factors in setting monetary sanctions, and the legislature has granted the authority with a wide discretion in this area.

Multiple offenders tend to save more according to the analysis, which is in-line with the current research in the field of competition economics as seen in (Marvão (2021)), which focuses on the strategic use of leniency to avoid cartel fines and harm cartel partners (who receive a potentially large cartel fine). The results also indicate that the profit metric is more stringent than the turnover metric which could be due to the fact that the CCI in most of the cases is mimicking a civil penalty, i.e., based on the average annual turnover of the cartelists rather than the turnover for each cartel year. This is in-line with the findings of a recent research paper of (Bhattacharjea and De (2021)) wherein, the authors have suggested that the CCI should use the profit metric more often as it has a stronger deterrent effect than the turnover metric due to its magnitude of the sanctions.

Due to lack of data for leniency policy cases, we use the available data to bring forth a descriptive analysis and search for any patterns. The results show that the foreign firms/individuals are more likely to blow the whistle on the cartel than domestic firms/individuals. This could be because these foreign individuals belong to jurisdictions which have a well-established competition authority; whereas in the case of India, the CCI is relatively new when compared with the western competition authorities. Another interesting result was that the multiple offenders, unlike in the EU and the US competition law, can be granted full immunity as seen in the dry-cell battery cartels where, Panasonic India received immunity in all three cartel convictions.

The rest of the paper is organized in the following manner: in section 2 and section 3, review of the current literature in the evaluation of cartel penalty regime and the evolution of the competition policy in India is discussed. The data is described in section 4, followed by the empirical analysis in section 5 and conclusion in section 6.

2 Literature Review

Collusive agreements have been extensively researched upon by competition law and economics researchers since the early 90s. The effectiveness of an antitrust commission has been researched upon by researchers such as Borrell and Jimènez G. (2008), Levenstein and Suslow (2011), Klein (2011), and many others. The first step in assessing a competition policy is to evaluate the penalty regime, as it is highly correlated with the deterrence effect of the policy, which in turn is the main objective of most of the competition policies. The research done on the CCI is primarily based on theoretical models such as seen in (Singh (2020), Swamy (2015), Biswal (2020) and, Shroff and Uberoi (2013)), where the approach of the researchers is similar which is to assess the Competition Act 2002 on a case by case basis and try to identify a trend in

[5]Final order till September 2021

[6]This reasoning has been assessed by going through the final orders of such cases by the authors

the analysis. Thus, there is a vast gap in empirical literature on the CCI which could identify the flaws in the current competition regime.

On the international front, competition commission, such as of the EU or the US, are researched upon by most of the competition law and economics researchers as these are some of the oldest competition commissions' out there. Other researchers that have researched about the cartel penalty regime such as in (Wells and Clarke (2018)), the author uses descriptive analysis to compare the Australian method of cartel penalty enforcement with the international methods and similarly, (Aydin and Figueroa (2018)) researches on the Chilean experience of the cartel penalty regime and how the competition policy has evolved over the course of time.

According to the recent literature on the CCI's optimality of fines, of whether relevant turnover or net profits should be considered while calculating the sanctions, by (Bhattacharjea and De (2021)) shows that the latter, results in much harsher sanctions. They use a theoretical model by using the works of Becker (1968), Connor and Lande (2006), Landes (1983) and, Connor (2011). The research suggests that profit metric is detrimental as it destabilizes existing cartels and has a positive effect in deterring future cartels. This is also explored in this research paper using econometric analysis.(Katsoulacos and Ulph (2017)) examines revenue-based, overcharge-based and illegal-gains penalties of several monetary penalty regimes, and suggests a sophisticated revenue-based monetary sanction where the rate of the penalty depends on the overcharge rate of the cartel and, (Motchenkova and Kort (2004)) talks about what strategies are best to curb down the degree of price-fixing and, how the probability of detection and severity of the punishment, makes up the two foundational pillars for achieving an optimal level of deterrence.

There are only a handful of research articles on the involvement of associations in a cartel agreement, as it is difficult to obtain data regarding it. Trade associations because of their very structure could give rise to tacit collusion as it allows different firms/individuals access to confidential data such as prices or sales information. Dick (1992), explores the exploitative nature of Japanese export cartels and concludes that the associations perceptibly fail to have a significant effect on the industry's export prices or volume. In Bruneckienė, Pekarskienė I., Guzavičius A., Palekienė O. and, Šovienė J. (2015), the authors assess the cartel occurrences in different market structures and conclude that cartels are more frequent in an oligopolistic structure and associations tend to facilitate collusion at various levels. The comparison of success of cartelization with and without associations is done by Schuldt and Taylor (2017), wherein the authors find that it is easier to monitor collusion through an associations and hence the cartel arrangement becomes more sustainable. This paper will use the above-mentioned papers as a foundation for understanding the role of associations in a cartel agreement and try to assess its impact on the competitive environment by analyzing the penalty regime used by the CCI for such organizations.

Recent literature on cartel penalties for individuals, revolves around the debate of private and criminal sanctions. The Indian competition law, although, distinguishes individuals as separate entities from firms but is yet to adapt criminal sanctions for the cartelists. Researchers like Lande and Davis (2011), Gorecki and Maxwell (2013), Luz and Spagnolo (2017) and Marvão and Spagnolo (2020), talk extensively about criminal sanctions and the concept of 'leniency inflation'. However, this paper will only explore the civil sanctions as per the forementioned reason and in turn will aim at determining the various factors that might affect the individual's liability in a cartel case.

Since 2009, the literature on leniency has evolved drastically from exploring the advantages of leniency as a driver for antitrust effectiveness as seen in Borrell and Jimènez G. (2008) to the concept of leniency inflation which is harmful for competition in general, as seen in Marvão and Spagnolo (2020). In Miller (2009), the author successfully showed that the number of cartels detected increases as a leniency policy is introduced is reduced to pre-leniency times afterwards. Researchers such as Klein (2011), Wils (2016) and Bigoni et al. (2008), empirically suggests that there is a positive deterrent effect on cartelists under the leniency policy regime, but this conclusion is derived by assessing the prosecuted cartels. This shortcoming is assessed by Gartner and Zhou (2013) by analyzing a dynamic model to account for the heterogeneity of cartels and the

time-varying impacts of the policy. This paper will, however, focus on a descriptive analysis due to lack of data for assessing the leniency policy regime but will be building on the works of researchers mentioned above by identifying distinguishing trends in the data and try to assess the reason behind why is there such a low proportion of cartelists opting for leniency.

3 Competition Policy in India

In this section, we briefly describe the development of competition law in India and some characteristics of the cartel penalty regime, particularly highlighting those which are distinctive from the EU or the US.

3.1 Development of a new competition authority

After independence in 1947, the Indian economy was vulnerable, and government policies focused on protecting the internal market.[7]. In 1969, the MRTP Act (Monopolies Restrictive Trade Practices Act)[8] was enacted to govern and monitor the Indian competition regime, which was governed directly by the State and used as a trade-act, whose sole aim was to prevent the emergence and survival of monopolies (Mehta and Agarwal, 2006).

Since 1991, the Indian economy took a drastic turn and opened its borders towards an economic reform, leading to the LPG policy (liberalization, privatization, and globalization). A committee set up by the Government suggested that the MRTP Act was highly restrictive as it ignored cartels, predatory pricing, and abuse of dominance; and it lacked the much-needed adaptability in that time of change.[9]

The Competition Act of 2002 was passed to tackle the shortcomings of the MRTP trade-act and provided a generic definition of anticompetitive practices, as it would form the foundation of competition law in India. The new act had three core areas: anticompetitive agreements between firms, abuse of dominance and regulation of combinations (mergers and amalgamations).

The Competition Commission of India (CCI) was established in 2009, as a statutory body with the right to undertake investigations in anticompetitive practices and to pass interim orders if it believes that there could be an irreversible damage due to the arrangement or an adverse effect on the competition in the market. It was established to regulate and monitor the competition law regime, and it was structured by combining elements of EU and US competition laws, but it has some distinctive characteristics which we will discuss in the next subsection.

3.2 Cartel Penalty Regime

The Competition Act of 2002, similarly to many modern law regimes, states that a cartel "*includes an association of producers, sellers, distributors, traders or service providers who, by agreement amongst themselves, limit, control or attempt to control the production, distribution, sale or price of, or, trade in goods*".[10]

The Act allows for heavy cartel sanctions. Pecuniary fines can be imposed on firms, associations and individuals. The maximum fine that the CCI can impose is either three times the net profit for each cartel year (profit metric) or ten percent of the annual turnover for each cartel year (turnover metric); whichever is larger. For cartel related activities, the CCI takes the full cartel duration (according to the available evidence) into account when imposing fines, but in other anticompetitive agreements it issues a 'civil penalty' based on

[7]The Government imposed a closed-economy to protect local producers which were incapable of surviving the competition from international markets

[8]The Act was a "command and control" law, which was popular in the Indian legislature post-colonial time, as the Government was skeptical of transferring power to independent institutions

[9]A detailed analysis can be found in Chakravarthy (2006).

[10]Section 2, clause (c) of the Act.

the average annual turnover of the entities over the three preceding years. In section 4, the analysis of the data suggests that the CCI often mimics this 'civil penalty' regime when prosecuting cartelists.

Prior to 2017, the use of relevant turnover in the turnover metric was almost non-existent. After the appeal by the cartelists in the case Excel Crop Care Ltd. v CCI[11], the Supreme Court of India ordered the commission to undertake the calculation of fines based on the relevant turnover of the cartelists rather than the overall turnover. The rationale was that the cartelists should only be penalized for the anticompetitive behavior undertaken by them in a particular market, rather than in all business areas of the entities. This was a major development in the Indian competition act, as it narrowed down the broad yet vastly ambiguous definition of cartel related penalties in the act. The fines are therefore capped as follows, wherein *'n'* corresponds to the cartel duration in years:

$$Fine(firm) \leq max\{\sum_{i=1}^{n}(3 * yearly\ net\ profit_i)\ ;\ \sum_{i=n}^{n}(10\%\ annual\ turnover_i)\} \tag{1}$$

$$Fine(individual)\ \leq \sum_{i=1}^{n}(10\%\ annual\ income_i) \tag{2}$$

$$Fine(association)\ \leq \sum_{i=1}^{n}(10\%\ annual\ membership\ fees_i) \tag{3}$$

The final fine includes a reduction for mitigating circumstances, such as low gravity of infringement for consumers/ competitors, bad economic conditions prevailing in the economy and a low annual turnover of the cartelist. For example, in the recent case of cartelization and bid rigging in the railway's industry, the CCI considered the MSME status of the cartelists, the limited amount of staff and the low annual turnover[12]. There is however a heavy inconsistency in the calculation of fines imposed by the CCI, which will be discussed in sections 4 and 5.

Cases are initiated by the CCI's own initiative (denoted *"Suo-moto"*) or a third-party report[13]. The case is then heard in a preliminary meeting, where the CCI decides whether the case in its prima-facie (first instance) is anticompetitive in nature or not. If it is, then the CCI directs the Directorate General (DG) to investigate the case and submit a report to the CCI. A memo is then sent to all the concerned parties so that they can dispute the claims (intervention period). The final verdict passed by the CCI can be appealed by the prosecuted parties by raising an issue in the Competition Appellate Tribunal (COMPAT) [14].

A popular and widely adopted tool for cartel detection is the leniency policy, which grants a fine reduction (up to immunity) in exchange for the reporting of a cartel or significant cooperation with an investigation. It was introduced in the Indian legislation in 2009, but it was not applied until 2017. Similar to the EU, the first leniency applicant is not guaranteed immunity from fines, as it depends on the amount of information that the CCI already has against the cartelists and the additional information offered by the applicant.

In India, the leniency reduction is not only granted to firms but also to individuals that were prosecuted along with the cartel firms/ associations, although their share of leniency reduction is the same that was granted to the firm. There are no extra provisions in place to grant individuals additional leniency for added cooperation or for being the first reporter.

[11] https://www.cci.gov.in/sites/default/files/Case2of2011MainOrder$_0$.pdf

[12] The case of collusion amongst eight firms while submitting bids for the tender of axel bearing used by the Indian Railways (http://www.cci.gov.in/sites/default/files/02-of-2018.pdf).

[13] Third parties include other government agencies or an informant

[14] In 2017, COMPAT was replaced by NCLAT (National Companies Law Appellate Tribunal)]. This procedure is similar to that of the EU (Hellwig and Huschelrath (2016))

4 Data

This section describes the method used for data collection and the data itself which will be used in the econometric analysis.

4.1 Data Collection

The data used in the analysis was collected by the authors using publicly available final-order reports under section 27 of the competition act, which can be accessed via the commission's website[15]. From these, the cartel cases were selected. As section 27 is not exclusive to cartel related decisions, the authors scrutinized all the final-order reports and identified cartel related cases using the cartel definition as mentioned in section 3. During the period of 2009 to 2021, there were 79 cartel convictions of which in 22, the cartel members were either ordered to cease and desist (with no fines imposed), or were charged a monetary fine at the CCI's discretion; neither considering the turnover nor the profit metric. Hence, we do not include these cases in the empirical analysis. These cartels were treated in such a manner due to the following factors: (i) having a small turnover/ insignificant market share; (ii) being a micro, small and medium firm (MSME); (iii) having already ended the agreement[16].

Some anticompetitive agreements, such as those in the pharmaceutical and the cinematic distribution sectors could easily be misinterpreted as non-cartel agreements, as the word "cartelization" is not clearly used in the final orders. Instead, the CCI considered the associations in these particular sectors to create a cartel-like environment in the market because of the way they operate and the interdependence of entities in these markets. Therefore, we have considered all those cases in which the CCI has mentioned that the entities were either "*behaving like a cartel*" or making a "*cartel-like environment*" in the economy, as cartel cases.

The final sample consists of 57 cartel convictions, which include 256 firms, 61 associations and 320 individuals. In 11 cases, leniency applications were made, and a leniency reduction was granted.

4.2 Data Description

The majority of the cartels in the dataset are in the pharmaceutical and cinematic distribution sectors, i.e., 35% and 14% respectively, as depicted in figure 1. About 84% of all associations involved in cartel agreements in the dataset belong to these two sectors. The distinguishing feature about these sectors is that they are dominated by associations which make new entrants or existing firms sign special agreements such as a NOC (no objection certificate)[17] without which the firms or individuals cannot procure supplies or distribute their goods to suppliers. For instance, in the case where the Chemists and Druggists association of Goa[18] was involved, the DG found that the association had set up rules/guidelines which its members had to abide by, without which their licenses would be revoked, or they would not be able to get stock from the suppliers. As such, these associations created a cartel-like environment in these sectors.

Table 7 in the appendix provides a brief description of the cartels analyzed in the dataset. It took two years for the CCI to prosecute its first cartel since its establishment in 2009. The reasoning behind this could be the fact that the CCI was the first regulatory authority that was established to monitor and regulate competition in modern Indian economy and just like with any other policy, the authority needed time and expertise to function effectively. Moreover, all the pending cases from the previous MRTP commission were passed on to the CCI, thus, creating a bigger backlog of cases that needed attention.

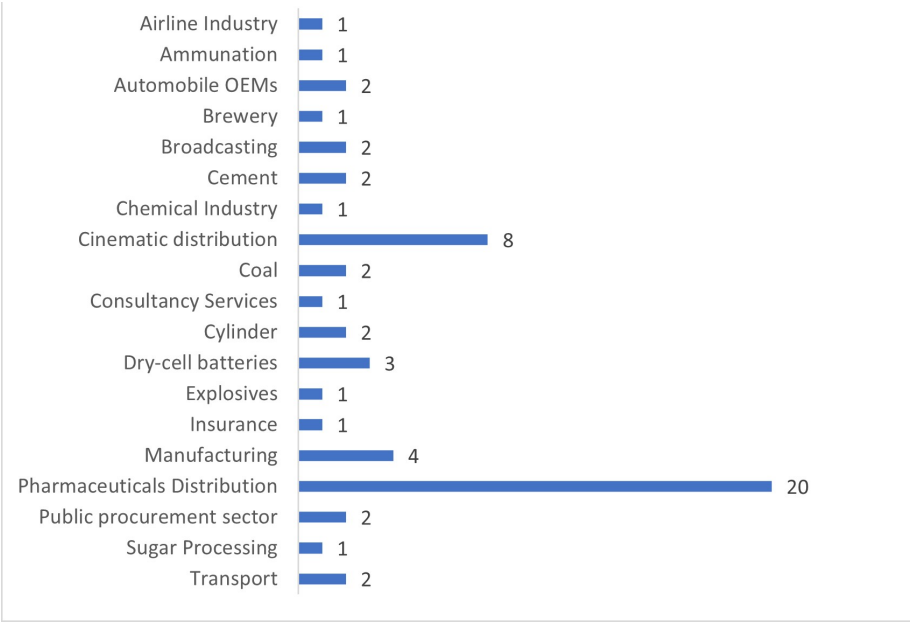
[15] https://www.cci.gov.in/orders-commission/102

[16] Case in 2014: https://www.cci.gov.in/sites/default/files/Ref.%20Case%20No%20%2006%20of%202014.pdf

[17] The associations imposed unfair/restrictive trade conditions in the market by asking firms to get a NOC approved by it before becoming a new entrant/stockist and launching any new products. If a firm fails to do so, then the other stockists are forced not to deal with the new firm/stockist and prevents the launch of the new product.

[18] MRTP Case No. C-127/2009/DGIR

Figure 1: Cartels per sector (2009-2021)



There has been a long economic debate related to the deterrent effect and optimality of the two metrics: the profit metric and the turnover metric. For example, Bhattacharjea and De (2021), Combe and Monnier (2011) and Allain M. L., Marie L., Boyer M. and Kotchoni R. (2015) have discussed optimality of fines by equating the loss to consumer surplus as harm. As the consumer surplus is non-measurable, therefore, many economists consider that fines should be based on either illicit gains from collusion or the harm done. Although this is outside the scope of this research, the analysis in section 5 sheds some light on this topic.

Table 1 differentiates the cartel cases based on the metric used by the CCI to penalize the firms. As associations and individuals neither have turnover nor profits, hence the cases which included these two entities are not part of this table. The maximum statutory limit for the profit metric is 3 times the net profits for each cartel year, and the same for the turnover metric is 10% of the annual turnover for each cartel year.

As per the data from table 1 and table 7, the CCI has used the profit metric purely in 4 cartel cases and a mixture of the two metrics in 5 other cases, which constitutes about 27% of the sample; keeping in mind that this metric could only be used in cartel cases which involve firms, as associations and individuals do not incur profits.

The descriptive analysis of the case decisions in table 7 suggest that there is a third metric, which has been commonly implemented by the CCI in cartel cases but has only been mentioned in the competition act for other anticompetitive agreements, i.e., monetary sanctions based on an average annual turnover metric. The setting of monetary sanctions has been very ambiguous; considering only the cases where firms were involved and penalized, about 66% of the monetary sanctions that have been imposed were based on average annual turnover and mimicked the civil penalties mentioned above. As stated earlier, the concept of using relevant turnover while calculating monetary sanctions is relatively new as it was implemented in 2017 after the *Excel Crop Care v CCI case*, therefore in only seven cases in the data set, has this been implemented so far and even then in about four of these cases, the CCI has used average annual relevant turnover rather than annual relevant turnover itself. When setting fines using the average annual turnover metric, the magnitude of

Table 1: Penalty metric in cartel cases

Metric		Range	Cases
Profit		3 times	0
		2 times	5
		1 time	5
Turnover	**Overall**	10%	3
		5%-10%	5
		1%-5%	11
		<1%	1
	Relevant	10%	0
		5%-10%	2
		1%-5%	2
		<1%	0

Note: This table does not distinguishes between cartel cases where average or annual turnover was used.

these fines are relatively low as compared to what the ceiling of these fines have been set in the competition act of 2002.

Table 2: Descriptive Statistics

Variable	Definition	Obs.	Mean	Std.Dev.	Min.	Max.
Entity characteristics:						
dfirm	Dummy (=1) if entity is a firm	637	0.402	0.491	0	1
RSF	Relative savings from fines; between 0 (no savings) and 1 (no monetary fine paid)	637	0.818	0.142	0	1
foreign	Dummy (=1) if firm is international or running an international subsidiary in the domestic market	637	0.055	0.228	0	1
listed	Dummy (=1) if the firm is listed on the National Stock Exchange (NSE) or the Bombay Stock Exchange (BSE)	637	0.149	0.357	0	1
MO	Dummy (=1) if the entity is penalized in more than one cartel case	637	0.148	0.355	0	1
Firm1	Dummy (=1) if the firm was the first to apply for leniency	637	0.072	0.259	0	1
Firm2	Dummy (=1) if the firm was the second to apply for leniency	637	0.042	0.202	0	1
Firm3	Dummy (=1) if the firm was the third to apply for leniency	637	0.03	0.17	0	1
dindividual	Dummy (=1) if entity is an individual	637	0.502	0.5	0	1
topmgmt	Dummy (=1) if the individual has a top-level position in the firm	323	0.471	0.5	0	1
partof	Dummy (=1) if the individual is part of a multiple-offending firm t	330	0.424	0.495	0	1
dassociation	Dummy (=1) if entity is an association	637	0.096	0.294	0	1

Table 2: Descriptive Statistics

Cartel characteristics:						
bid	Dummy (=1) if the cartel included bid-rigging	637	0.496	0.5	0	1
price	Dummy (=1) if the cartel included price-fixing	637	0.484	0.5	0	1
mktsh	Dummy (=1) if the cartel included market-sharing	637	0.152	0.36	0	1
duration	Duration of the cartel (years)	637	4.185	2.237	1	13
Decision characteristics:						
profit	Dummy (=1) if the CCI used the '3 times net-profit metrics' instead of the 'turnover-metric'	637	0.044	0.205	0	1
inv	Duration of the investigation (months) (DG's investigation to final decision)	637	36.516	20.291	4	100
thirdp	Dummy (=1) if the CCI started investigation of the cartel after the case was brought to them by a third party	637	0.468	0.499	0	1
TFratio	Ratio between the maximum fine (permissible by law) and the firm's total turnover in the collusive period	630	0.104	0.031	0.026	0.49
Pratio	Ratio between the paid fine (post-leniency) and the firm's total turnover in the collusive period	630	0.018	0.0145	0	0.1
Lpercent	Percentage of leniency granted to a firm /individual /association	637	8.689	24.786	0	1

Note: Table 2 provides an overview of the variables included in our empirical analysis.

The average cartel duration is four years (as per the duration for which the cartel is fined, and not its true duration). The time between the DG's investigation and the CCI's final order is 37 months (variable *inv*). This may be due to a heavy backlog of cases, as all anticompetitive cases from the previous MRTP commission were passed to the CCI for further investigation, but also due to the CCI's difficulty in gathering sufficient evidence to convict a cartel (even in cases where a leniency applicant reports the cartel)[19]

The literature suggests that there is a strong correlation between the magnitude of fines and the level of deterrence (eg. (Calvani and Torello, 2011; Heimler and Mehta, 2012) such that the more the CCI is lenient in sanctioning cartels, the lesser the deterrence effect of the competition policy. Examining the potential savings from fines is therefore relevant for the evaluation of cartel sanctions. We do this in the next section.

5 Firms: Empirical Analysis

This section describes the empirical method and discusses the results regarding the fine savings of convicted cartel firms.

[19]In a 2017 case (Suo-Motu Case No. 01 of 2017, available at: https://www.cci.gov.in/sites/default/files/SuoMoto-01-of-2017.pdf), five entities were accused of a price-fixing cartel in the flashlights' market. Although this case involved a leniency applicant, the CCI failed to gather sufficient evidence for a conviction.

5.1 Method

We want to provide insight into how the CCI makes fining decisions. For this purpose, we run a regression where the dependent variable is denoted by 'relative savings from fines (RSF)' and is calculated as follows:

$$RSF = 1 - \frac{Pratio - (Lpercent * Pratio)}{TFratio} = 1 - \frac{Fine - Leniency\ amount}{Max.Fine} = 1 - \frac{Paid\ Fine}{Max.Fine} \quad (4)$$

This variable allows us to compare the fines of all entities, as it is a ratio which can take a value between 0 (no savings) and 1 (no fine). The RSF is inversely proportional to the magnitude of the fine, such as, the harsher the monetary sanctions, the lower the relative savings from fines and vice versa. This variable tells us what the firms are saving if the maximum fine were to be imposed, and it has an average value of 0.82, suggesting that the average convicted cartel member pays a fine of around 18% of the maximum fine.

A fixed-effects model is used to analyze the dependent variable, and we use different explanatory variables at the firm and cartel levels. We do not control for sector characteristics, but we control for the most common sectors, which will subsume all sector-varying patterns. These are sectors with NAICS codes 3520 (distribution and sale of gaseous fuels), 4649 (pharmaceutical distribution) and 5912 (cinematic distribution). We also include year fixed effects (between 2009 and 2021) to control for time-invariant effects, and these do collectively pass a likelihood-ratio chi-square test.

The regression results are presented in tables 3 for firms only and in table 4 for firms and associations.

5.2 Relative Savings from Fines (RSF)

The variable 'duration' has not been included in any of the regressions as it has already been accounted for in the calculation of the dependent variable i.e. RSF. Only three types of cartel are used in the econometric analysis such as; bid rigging, price fixing and market sharing. The former being the most pernicious one, as competition commissions all around the globe sanction severe monetary penalties on cartelists being part of such an arrangement as usually this type of cartel is seen in the public procurement sector or the manufacturing sector, which directly manipulates the market which result in a higher rigged price for a good/service. Countries such as *Ireland, Germany, Austria, Poland, Italy and Hungary* have imposed criminal sanctions for individuals who are being prosecuted by the competition commission in a case of bid-rigging.

Table 3 shows the breakdown of the RSF using a firms'-only conditional regression, so that the relationship of each component of the RSF could be assessed. There is a drop in seven observations in the first two regressions (TFratio and Pratio), which is because some firms were missing turnover data. The profit metric leads to a higher amount of fine paid by the cartelists as using it gives us an increase in the total fine by 6% points (p.p.). This in turn leads to a 19 p.p. lesser relative savings, as the magnitude of the fine is larger for such cartelists when compared with the ones whose net profits weren't taken into consideration while calculating the monetary sanctions. As per the law, the CCI has to compute the turnover as well as the net profits of the cartelists and sanction monetary penalties from whichever is higher, but in the majority of the final orders, the commission has failed to do so. It could be because cartelists are not very cooperative, and they try to hide as many details as possible, but the commission has not mentioned any such shortcomings in the final orders, so this reasoning is based on the assumption of the authors. The coefficients of leniency *'Firm 1, Firm 2 and Firm 3'* are in order, with the first applicant being granted the maximum amount of leniency and thus, has to pay 34 p.p. lesser amount of monetary sanctions. The coefficients for leniency under the *'Pratio regression'* are almost non-significant in magnitude, thus this raises concerns as to why doesn't entities apply for leniency.

Table 3: Breakdown of RSF for firms

VARIABLES	(1) TFratio	(2) Pratio	(3) Lpercent	(4) RSF
Entity characteristics:				
foreign	-0.0161	-0.0027	0.0755	0.0252
	(0.0126)	(0.0034)	(0.0455)	(0.0312)
MO	0.0103	-0.0050	-0.0074	0.0704*
	(0.0078)	(0.0035)	(0.0094)	(0.0368)
listed	-0.0067	-0.0019	0.0160*	0.0057
	(0.0040)	(0.0018)	(0.0090)	(0.0132)
Firm 1	-0.0147	-0.0296***	0.7194***	0.3364***
	(0.0181)	(0.0083)	(0.0696)	(0.0652)
Firm 2	-0.0367	-0.0277**	0.2672***	0.2720 ***
	(0.0282)	(0.0121)	(0.0583)	(0.0767)
Firm 3	-0.0538	-0.0226*	0.1441*	0.1667***
	(0.0400)	(0.0120)	(0.0812)	(0.0549)
Cartel characteristics:				
nbfirms	0.0003	-0.0003	-0.0025	0.0091
	(0.0012)	(0.0009)	(0.0031)	(0.0056)
Bid-rigging	-0.0551*	0.0069	0.0177	-0.2424***
	(0.0323)	(0.0549)	(5.4946)	(0.0847)
Bid-rigging and Price-fixing	-0.1084**	-0.0006	0.0493	-0.3190**
	(0.0525)	(0.0218)	(0.0845)	(0.1166)
Bid-rigging and Mkt.-sharing	-0.0102	0.0111	0.0329	-0.1389*
	(0.0217)	(0.0093)	(0.0483)	(0.0707)
Mkt.-sharing	-0.1221**	-0.0099	0.0432	-0.2162
	(0.0556)	(0.0229)	(0.0798)	(0.1369)
Mkt.-sharing and Price-fixing	-0.0234	0.0089	0.0033	-0.1778
	(0.0711)	(0.0255)	(0.0966)	(0.1479)
Price-fixing	-0.0765**	0.0047	0.0604	-0.2177**
	(0.0362)	(0.0135)	(0.0518)	(0.0955)
Bid-rigging, Mkt.-sharing and, Price-fixing	-0.0495	0.0266	0.1166	-0.4486***
	(0.0340)	(0.0158)	(0.0695)	(0.1080)
Decision characteristics:				
third-party case	-0.0105	-0.0040	-0.0378	-0.0371
	(0.0141)	(0.0070)	(0.0280)	(0.0403)
profit	0.0647***	0.0196**	0.0510	-0.1952***
	(0.0187)	(0.0082)	(0.0346)	(0.0550)
inv	0.0006*	-0.0002	0.0010	0.0032*
	(0.0003)	(0.0003)	(0.0008)	(0.0016)
year F.E.	Y	Y	Y	Y
industry F.E.	Y	Y	Y	Y
Constant	0.2312***	0.0362	-0.0073	1.0117***
	(0.0602)	(0.0253)	(0.0987)	(0.1515)
N	249	249	256	256
R-squared	0.7056	0.6244	0.9502	0.6929

Note: Significance level: * p <0.1, ** p <0.05, *** p <0.01. The clustered standard errors (by cartel) are shown in the parenthesis.

5.3 Firms and Associations

Table 4 presents the conditional fixed effects regression model for just firms in (1) and a combination of firms and associations in (2); as there are only 61 associations in the data set which corresponds to 32 cartels, and the authors are considering the similarities between the sanctions for firms and associations[20], hence, to get robust results it is better to combine these two separate entity types. Table 8, which is a descriptive table for cartels in which an association was penalized; will be used to further analyze the cartel penalty regime for associations. As there are few variables such as 'dassociation', 'multipleoff' and 'type of the cartel'; capturing the relationship between the cartel penalty parameters and the involvement of associations, therefore the authors find it necessary to assess this using a case-by-case methodology along with the econometrical analysis.

It is to be noted that (1) in table 4 is similar to (4) in table 3. All the regressions have been controlled for some particular NAICS codes, as only these codes showed variability across the conditional data set. The international firms and associations, either directly or through Indian subsidiaries, do not affect the magnitude of fines in all the regressions. There are only 18 foreign firms and no foreign associations in the data set; therefore, there is no economic rationale behind the interpretation of this result. This is also the case for the firms listed on India's stock exchange and also if the case has been brought to the commission by a third party,[21].

Building on the research of (Bhattacharjea and De (2021)), (Combe and Monnier (2011)) and (Harrington (2013)) on the optimality of fines, cartelists being fined using the profit metric have lesser RSF values, and thus, the magnitude of the fine is more significant than that of the fines based on the turnover metric. However, this result might be an overestimation of the effects of the profit metric on the RSF as there are only 28 firms that have been penalized using this metric, and the rest have been penalized using a turnover metric and that too in a majority of them, the CCI has used an average annual turnover metric which is far lesser than the annual turnover metric.

Particularly for firms in (1), the multiple offenders relatively save 7 p.p. more from fines, which could be due to two factors: (I) There is no special mention/amendment in the competition act of 2002 for multiple offenders and CCI in its final order in most of the cases fail to even recognize it as a condition for harsher penalties. (II) The multiple offenders know the rules of the game, and they either terminate the cartel before enough harm to competition/consumer welfare is done, or they know how to sway the investigation in their favor. On the other hand, the first leniency application relatively saves higher from fines (33 p.p.) than the second (26 p.p.), which in turn saves higher than the third (18 p.p.). This result econometrically shows how the leniency program is structured, i.e., the first leniency is always granted a higher % of leniency as compared to the second. Although as per the Indian competition law, the first leniency applicant is not guaranteed a 100% reduction, similar to several other competition laws such as of the EU and the US.

The cartel type plays a pivotal role in setting up monetary sanctions, as it is clear from the analysis that bid rigging leads to a higher monetary sanction than the rest of the two types. This result is in line with the functionality of several competition commissions around the globe, as each of them finds bid-rigging to be the most precarious cartel type. A cartel could be of two or more types simultaneously; therefore, it's fair to use the interaction to see the effect on the RSF when the cartel is of such nature. The results indicate that bid-rigging leads to 24 p.p. lesser relative savings than compared to the 22 p.p. lesser savings for a price-fixing cartel. However, the cartels that are of these three types combined relatively save 45 p.p. lesser from fines. This is an exciting result, as this shows that certain types of cartels attract harsher penalties than compared to the rest. The variable for investigation period (inv) is significant at 10% which a lot of researchers might argue upon, but considering it leads to a conclusion that longer the period of investigation, i.e., the duration

[20] Similarities such as associations consist of a group of firms that pay membership fees or annual receipts

[21] An external source such as any other govt. Institution, firm/association/individual or the case has been passed down from the previous MRTP commission.

between the start of the investigation by the DG and the final order being passed by the court, the more the RSF. One solid reason for this could be that during the intervention period, i.e., where the cartelists are sent a memo from the CCI and may put forward their cases, the cartelists might sway the CCI for a lenient sanction, in other words, the CCI might be considered as 'easy to bargain with'.

Table 8 in the appendix, provides a descriptive table for cartels in which an association had been penalized. About 31% of these cartels are price-fixing in nature, and 50% of the cartels are not defined by the three types of cartels used in this paper. There are two dominant sectors where the maximum number of associations have been penalized for collusion and, i.e., the pharmaceutical distribution and the cinematic distribution sector, respectively, in the order as mentioned. These two sectors are fragmented because a lot of smaller firms and individuals are involved and closely related, and they club together under the umbrella of an association, which makes it easier for them to collude. Most of the collusive activity in the pharmaceutical sector deals with forcing the new entrant to sign a NOC document and follow specific guidelines as set by the associations; such as employing the particular stockist that has been ordered by the association and dealing with only those businesses that have been allocated to them. If a member defaults on the mentioned guidelines, then they could face a boycott of services from fellow businesses. This creates a cartel-like environment, which is not acceptable by the CCI. In several final orders where such a case has arisen, there has been a special mention by the commission as well as the High Court of India regarding the continuation of such practices even after the associations have been ordered to cease and desist from such arrangements. In the cinematic distribution sector, a similar case is seen, but it is related to film distribution rights in various states. The maximum penalty charged by the CCI to an association is 10% of the annual average receipts for the cartel years taken into consideration, which is in about 25 cartels out of 32, in which an association was penalized. This gives us an average of 0.65 RSF, which suggests that the associations tend to save less, or the magnitude of the fines charged from associations are relatively higher than the fines charged from firms. The author concurs that this could be because the CCI is aware of associations being used by firms/individuals to facilitate collusion and the sectors in which these associations have been penalized have a direct effect on the consumer welfare; therefore, the commission is relatively harsher in monetary sanctions as CCI's main objective other than preserving the competition in the markets is protecting the welfare of consumers just like any other competition commission in the world. The other reason could be that about 78% of the cartels had multiple offenders involved. In 2015, the CCI in its final order for a case in the cinematic distribution sector[22], increased the penalty of the associations involved just because they were multiple offenders (M.O.). This was a landmark decision, as this was the first cartel prosecuted by the CCI in which there was a change in the penalty just because of being a (MO).

In table 4,(2) corresponds to the regression, which includes firms as well as associations. The above descriptive results are proved econometrically as associations tend to save 22 p.p. lesser than firms as their magnitude of fines is higher than that of firms. The reasoning for the type of the cartel is similar to that mentioned above for the firm's regression in (1). The results are over-simplifying, and due to the lack of variables depicting the characteristics of an association, the authors are using a descriptive analysis as the foundation for the econometric analysis.

[22]https://www.cci.gov.in/sites/default/files/582012.pdf

Table 4: Regression for firms and associations

VARIABLES	(1) RSF	(2) RSF
Entity characteristics:		
dassociation		-0.2207***
		(0.0529)
foreign	0.0252	-0.0293
	(0.0312)	(0.0397)
MO	0.0704*	0.0377
	(0.0368)	(0.0238)
listed	0.0057	-0.0043
	(0.0132)	(0.0180)
Firm 1	0.3364***	0.2428***
	(0.0652)	(0.0686)
Firm 2	0.2720***	0.1147
	(0.0767)	(0.0815)
Firm 3	0.1667***	-0.0136
	(0.0549)	(0.0717)
Cartel characteristics:		
nbfirms	0.0091	0.0048
	(0.0056)	(0.0058)
Type of Cartel		
Bid-rigging	-0.2424***	-0.0755
	(0.0847)	(0.0592)
Bid-rigging and Price-fixing	-0.3190**	-0.0592
	(0.1166)	(0.0950)
Bid-rigging and Mkt.-sharing	-0.1389*	0.0697
	(0.0707)	(0.0942)
Mkt.-sharing	-0.2162	-0.0107
	(0.1369)	(0.0505)
Mkt.-sharing and Price-fixing	-0.1778	0.1272*
	(0.1479)	(0.0740)
Price-fixing	-0.2177**	-0.0012
	(0.0955)	(0.0578)
Bid-rigging, Mkt.-sharing and, Price-fixing	-0.4486***	-0.1430**
	(0.1080)	(0.0642)
Decision characteristics:		
profit	-0.1952***	-0.1950***
	(0.0550)	(0.0680)
Inv	0.0032*	0.0028
	(0.0016)	(0.0018)
third-party case	-0.0371	-0.0364
	(0.0403)	(0.0503)
Controls:		
Year F.E.	Y	Y
Industry F.E.	Y	Y
Constant	1.0117***	0.1553

	(0.1515)	(0.1123)
N	256	317
R-squared	0.6929	0.6392

Note: Significance level: * p <0.1, ** p <0.05, *** p <0.01. The clustered standard errors (by cartel) are shown in the parenthesis.

5.4 Individuals

Due to lack of availability of data, as to define the characteristics of individuals penalized in a cartel prosecution, the author is employing a descriptive analysis methodology for this segment of the paper. The final order of the CCI mentions the name and the designation of the individuals that will be prosecuted along with the firms and associations but fails to mention the extent of their involvement in most of the cases as it is very hard to determine that.

There are 320 individuals that have been penalized under section 27 of the competition act of 2002, which corresponds to 27 cartels, as shown in Table 5. The first case where an individual was prosecuted was in 2014 in the cartelization of Indian sugar manufacturers. All the individuals penalized were not part of the top management but ordinary associations members. The pharmaceutical distribution sector, just like with associations, is dominant in table 5 and in most cases, the individuals penalized in this sector are secretaries or presidents of the associations.

It is easier to facilitate collusion through an association as information is shared easily through regular meetings and sensitive data of firms, such as prices and sales, is readily available. Only 10 individuals have been (M.O.), but 138 of them have been penalized in a cartel case where an (M.O.) firm was involved. The final order does not pay much attention to the number of offenses an individual has been part of because there has been no such special mention for this in most cartel cases. Due to a lack of data and transparency, there is not much information available on individuals except the penalty amount and their designation.

Table 5: Descriptive table for Individuals in cartels

S.No.	**Case No.**	**Sector**	**No. of Ind.***	**Foreign**	**Top mgmt.**	**Part of M.O. Firm**	**M.O.**	**Order Year**
1	38/2011	Manu.	43	0	0	0	0	2014
2	60/2012	Pharma Distribution	7	0	3	0	0	2014
3	Suo-moto 02/2012 and Ref. 01/2013	Pharma Distribution	56	0	5	0	0	2014
4	78/2012	Pharma Distribution	1	0	1	0	0	2015
5	43/2013	Transport	8	0	0	0	0	2015
6	45/2012	Cinematic distribution	4	0	0	1	0	2015
7	28/2014	Pharma Distribution	3	0	1	1	1	2015
8	71/2013	Pharma Distribution	4	0	2	0	0	2016
9	Suo Moto 03 of 2014	Manu.	3	0	3	0	0	2017
10	98/2014	Cinematic distribution	5	0	0	0	0	2017
11	34/2015	Coal	10	0	7	0	0	2017
12	54/2015	Pharma Distribution	6	0	6	6	0	2017

Table 5: Descriptive table for Individuals in cartels

S.No.	Case No.	Sector	No. of Ind.*	Foreign	Top mgmt.	Part of M.O. Firm	M.O.	Order Year
13	Suo Motu 2 of 2013	Sports Broadcast	8	2	8	0	0	2018
14	50 of 2015	Public procurement sector	5	0	5	5	0	2018
15	Suo Motu 02 of 2016	Dry-cell batteries	23	0	3	23	0	2018
16	Suo Motu 03 of 2016	Manu.	4	0	4	4	3	2018
17	Suo Moto 02/2017	Dry-cell batteries	5	0	2	5	2	2018
18	65/2014, 71/2014, 72/2014 and 68/2015	Pharma Distribution	12	0	9	10	0	2018
19	42/2017	Pharma Distribution	2	0	1	2	0	2018
20	97/2013	Pharma Distribution	2	0	2	2	2	2018
21	Suo Moto 1 of 2014	Cylinder	58	0	58	58	0	2019
22	Suo Moto 07 (01) of 2014	Automobile OEMs	15	15	4	15	0	2019
23	Suo Moto 03/2017	Dry-cell batteries	6	0	2	6	2	2019
24	12/2017	Consultancy Services	4	0	4	0	0	2019
25	61/2015	Pharma Distribution	2	0	2	0	0	2019
26	64/2014	Pharma Distribution	10	0	6	0	0	2019
27	Suo motu 06/2017	Brewery	14	0	13	0	0	2021
		Total	**320**	**17**	**151**	**138**	**10**	

*Individuals

5.5 Leniency Policy

Leniency policy is considered to be the biggest asset for a competition commission. The lesser penalty program was introduced in India in 2009 but the first time it was granted was in the Brushless-DC fans[23] cartel in 2017. The reasons for such a gap could be the lack of advocacy of such a program but as per the analysis done in this paper, the authors suggest that this could also be due to the lenient nature of the CCI as the cartelists are indifferent towards applying for leniency and being found out by the CCI, as the magnitude of the sanctions are low and usually are mimicking the civil penalty metric.

[23] https://www.cci.gov.in/sites/default/files/Order$_{S}$ $uo_{M}oto_{0}3_{o}f_{2}014\%20\%28Final\%29_{1}.pdf$

From 2009-2021, there have been 12 leniency application cases. However, only 11 are listed in table 6 because in the cartelization case in the flashlight's market[24] was investigated by the DG, and it failed to provide sufficient evidence to the CCI to prove the existence of a price-fixing cartel, although this case was brought to the CCI by a cartel member (Eveready Industries India Ltd.).

The leniency policy program which is known as the 'lesser penalty regime' in India was introduced in 2009. The first cartel case to use it was in 2017 in the Brushless DC fan cartel[25]. There could be a strong unobservable positive correlation between the magnitude of monetary sanctions and the use of the leniency policy as on an average a cartelist relatively saves 82% from monetary sanctions and the difference between a cartelist opting for leniency and the one without it is approximately 34 p.p fine reduction, which could make a considerable difference in the amount of fines that the cartelists have to pay. Yet, there has been a very low turn-out of leniency applications which could point us in the direction of lack of advocacy or to the fact that the perpetrators are in-different towards such a policy as the gains from it are highly insignificant against the gains from a future collusion with the same firms/associations.

Firms/associations will self-report only if they fear the scrutiny of the anticompetitive commission, i.e., if the monetary sanctions are more than the gains made under collusion. The biggest challenge in cartel enforcement is if the cartelists believe that they will not be caught or can predict that the sanctions imposed will be lesser than the gains they will earn from collusion, therefore the incentive to collude supersedes the incentive to self-report. As shown in the results above, the sanctions imposed by the CCI are lesser than the optimal, as they are, in most cases, they are mimicking a civil penalty regime rather than the actual cartel penalty regime mentioned in the legislature.

According to the legislation on leniency policy, the percentage of leniency is dependent on the relevance of the information shared by the leniency applicant and the amount of information already with the CCI. However, in the Brushless DC fans cartel case, the CCI decided to grant a 75% leniency reduction to the applicant without any reasoning as to why. This raises a question on the structure of the leniency policy regime of the CCI, as there seems to be many discrepancies, which would reduce the incentive of firms to self-report and thus affect the deterrence effect of such a program.

About 28% of foreign firms[26] and all the foreign nationals in the data set have opted for leniency, and these belong to countries like UK, Germany, Japan, US, and Italy. All these countries have a thing in common, and that is a well-established competition policy; therefore, the authors are assuming that these entities are well-aware of the game and are experienced in it; therefore, they may know when to bail out before doing much harm. There is no special treatment for the multiple offenders as they are also granted full/partial immunity depending on their application hierarchy.

The author concludes that due to the low magnitude of fines and the high RSF, the firms might predict the leniency of the CCI and, therefore, fails to self-report. Another reason that contributes to this is the discrepancy on CCI's final orders, in granting leniency reductions ambiguously, as shown in table 6. Even when the first applicant has been granted complete immunity as in the first case of cartelization in the dry-cell batteries, the second applicant was granted only 30% of the immunity, and also there has been one company in all three of the dry-cell batteries cartel, i.e., Panasonic India Ltd. which was granted leniency in these cases. Therefore, there is no clear reasoning given by the CCI in the final order, which makes it safe to suggest that the leniency policy regime of India needs restructuring and specific guidelines should be followed, such as like in the EU competition law, where the leader of the cartel is not given complete immunity even if it was the first applicant and also, there is a clear decrease in leniency reduction for multiple offenders to ensure the deterrence effects of the competition policy.

[24] https://www.cci.gov.in/sites/default/files/SuoMoto-01-of-2017.pdf

[25] https://www.cci.gov.in/sites/default/files/Order$_S$ $uo_M oto_0 3_o f_2 014\%20\%28 Final\%29_1 .pdf$

[26] Inclusive of foreign firms and foreign firms operating through Indian subsidiaries

Table 6: Leniency Policy cases

	Cartel Name	Entities	Leniency given	Leniency %				Order Year	M.O.	Foreign
				1st	2nd	3rd	4th			
1	**Brushless DC fans**	**6**	**2**					**2017**	**0**	**0**
	Firm	3	1	75	-	-	-		0	0
	Indiv.	3	1	75	-	-	-		0	0
2	**Solid waste-processing**	**11**	**8**					**2018**	**0**	**0**
	Firm	6	4	50	50	40	25		0	0
	Indiv.	5	4	50	50	40	25		0	0
3	**Pharmaceutical Industry**	**20***	**3**					**2018**	**0**	**0**
	Firm	4	1	40	-	-	-		0	0
	Indiv.	12	2	40	-	-	-		0	0
4	**PMC waste-processing**	**8**	**2**					**2018**	**0**	**0**
	Firm	4	1	50	-	-	-		0	0
	Indiv.	4	1	50	-	-	-		0	0
5	**Sports Broadcasters**	**11**	**11**					**2018**	**0**	**3**
	Firm	3	3	100	100	30	-		0	1
	Indiv.	8	8	100	100	30	-		0	2
6	**Dry-cell batteries**	**27***	**26**					**2018**	**0**	**0**
	Firm	3	3	100	30	20	-		0	0
	Indiv.	23	23	100	30	20	-		0	0
7	**Dry-cell batteries**	**7**	**3**					**2018**	**3**	**1**
	Firm	2	1	100	-	-	-		1	1
	Indiv.	5	2	100	-	-	-		2	0
8	**Dry-cell batteries**	**8**	**1**					**2019**	**1**	**1**
	Firm	2	1	100	-	-	-		1	1
	Indiv.	6	2	100	-	-	-		2	0
9	**Supply of EPS Systems**	**19**	**19**					**2019**	**0**	**17**
	Firm	4	4	100	100	50	50		0	2
	Indiv.	15	15	100	100	50	50		0	15
10	**Beer Industry**	**19***	**17**					**2021**	**0**	**0**
	Firm	3	3	100	40	20	-		0	0
	Indiv.	14	14	100	40	20	-		0	0

11	**Paper Manufacturing Industry**	**21***	**1**					**2021**	**0**	**0**
	Firm	20	1	100	-	-	-		0	0
	Indiv.	0	0	0	-	-	-		0	0

*Entities in bold include the summation of firms, individuals, and associations

5.6 Shortcomings

Although the authors have taken the utmost care in collecting and analyzing the data, but some biases might still be present. Such as: -

1. Sample selection bias - Studies done on collusive activities are usually prone to such a bias because cartels are formed in secret with the ideology that they might never get caught. This creates the possibility of unobservables in the form of cartels that haven't been identified by the commission yet, but that still exists.

2. The author considers the duration of the cartel as mentioned in the final orders of the CCI during the calculation of the RSF, which may have been biased downwards as it only measures the number of years that the cartel had been fined for by the CCI and not the actual duration of the cartel. In some cases, the actual duration of the cartel is unknown due to lack of data.

3. There could be an under-estimation of cartel cases as the CCI lacks an official database of cartels and all anti-competitive agreements are clubbed together therefore, as per the definition of a cartel used in this research paper, this bias could be present.

4. There may be several unobservable characteristics of a cartel that forces the CCI to sanction such lenient monetary penalties. Therefore, to limit this, the authors are using clustered standard errors to assess the subdivision of groups in the data set; and is controlling for year fixed effects to control for the variability throughout different years.

5. The empirical analysis is only evaluating the cartel penalty regime, as in trying to develop a relationship between the magnitude of fine and several factors that the authors think might have an effect on it. Therefore, any amendments in the monetary sanctions after the cartelists appeal to the Appellate Tribunal has not been considered and neither does the paper include any extra penalties charged by the CCI for late/no submission of fines by the cartelists.

6 Conclusion

Competition law is the first and the last line of defense against anti-competitive conduct in the market, preserving competition and consumer welfare. Therefore, it is crucial to assess the effectiveness of a competition authority and bring out its flaws so that policymakers can improve upon them. The Indian competition authority is relatively new compared to the EU and the US competition authorities, and researchers such as (Armoogum (2016)) have pointed out the relevance of the age of a competition authority, which is considered as a proxy for its level of experience in combating anti-competitive conduct. This research shows that the sanctions levied by the commission are nowhere near the permissible limit set by the legislation.

The lenient nature of the CCI might lead to an insignificant deterrence effect, as the firms can predict the magnitude of fines, which in most cases is mimicking a civil penalty metric. Some recent examples

of this involves the Suo-moto case of 2017[27], where the commission identified a cartel in the Industrial and Automotive Bearings industry; this cartel directly affected the competition in the market and has been affecting consumer welfare for 5 years (2009-2014). However, the commission did not levy any monetary penalties on the cartelists as the case was concluded in June 2020, when the economic condition of India was far from being stable. The decisions taken by the CCI, in this case, gives us a perfect example of how ambiguous the monetary sanctions have been in many cartel cases.

The data on leniency policy is limited as the first case where leniency was granted was in 2017; therefore, a robust analysis could not be done. Although there has been an increasing trend in leniency applicants, this paper shows that the firms are even better off without applying for one as the magnitude of monetary sanctions is low. "*A developed nation brings out policies to preserve the current level of competition in the economy, but the developing nation does so solely for the economy's growth, with little concern over the competition in the market*". This statement might explain why the CCI has been so lenient towards cartel cases and why there are just so few lesser penalty cases, although the CCI has been advocating competition policies to firms, associations, and individuals since 2009.

[27] https://www.cci.gov.in/sites/default/files/05-of-2017.pdf

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A Appendix

Table 7: Cartel Cases

			Type of members			Fine metric				
	Case	**Sector**	**Ind.**	**Assoc.**	**Firm**	**F.Avg. Turn.**	**F.Turn.**	**F.Rlt.Turn.**	**F.Profit**	**Final Order**
1	01/2009	Cinematic dist.	0	1	0	0	0	0	0	25/05/2011
2	25,41,45,47,48,50,58, 69/2010	Cinematic dist.	0	7	0	0	0	0	0	22/02/2012
3	52/2010; 56/2010	Cinematic dist.	0	6	0	0	0	0	0	23/02/2012
4	03/2011 (Suo Moto)	Cylinder	0	0	47	1	0	0	0	24/02/2012
5	06/2011	Explosives	0	0	10	1	0	0	0	16/04/2012
6	43/2010	Pharma Dist.	0	0	3	1	0	0	0	16/04/2012
7	2/2011 (Suo Moto)	Pharma Dist.	0	0	3	1	0	0	0	23/04/2012
8	C-127/2009/DGIR (MRTP)	Pharma Dist.	0	1	0	0	0	0	0	11/06/2012
9	36/2011	Broadcasting	0	0	3	1	0	0	0	03/07/2012
10	C-87/2009/DGIR (MRTP)	Pharma Dist.	0	1	0	0	0	0	0	05/09/2012
11	56/2011	Cinematic dist.	0	3	0	0	0	0	0	10/01/2013
12	20/2011	Pharma Dist.	0	1	0	0	0	0	0	19/02/2013
13	01/2012	Manu.	0	0	11	1	0	0	0	06/08/2013
14	30/2011 & 41/2011	Pharma Dist.	0	1	0	0	0	0	0	09/12/2013
15	03/2012	Public procurement	0	0	3	1	0	0	0	05/02/2014
16	60/2012	Pharma Dist.	7	1	0	0	0	0	0	05/02/2014
17	02/2012 (Suo Moto) & Ref.Case 01/2013	Pharma Dist.	56	1	0	0	0	0	0	11/03/2014
18	03/2011	Automobile OEMs	0	0	14	1	0	0	0	25/08/2014
19	05/2013 (Suo Moto)	Pharma Dist.	0	1	0	0	0	0	0	27/10/2014
20	38/2011	Manu.	43	2	0	1	0	0	0	31/10/2014
21	62/2012	Cinematic dist.	0	1	0	0	0	0	0	23/12/2014
22	78/2012	Pharma Dist.	1	1	0	0	0	0	0	29/01/2015
23	43/2013	Transport	8	1	0	0	0	0	0	04/02/2015
24	61/2012	Transport	0	1	0	0	0	0	0	16/02/2015
25	26/2013	Pharma Dist.	0	0	2	1	0	0	0	04/06/2015
26	04/2013 (Suo Moto)	Ammunation	0	0	12	1	0	0	0	10/06/2015

Table 7: Cartel Cases

27	45/2012	Cinematic dist.	4	2	0	0	0	0	0	23/06/2015
28	02/2014 (Suo Moto)	Insurance	0	0	4	1	0	0	0	10/07/2015
29	58/2012	Cinematic dist.	0	3	0	0	0	0	0	27/07/2015
30	30/2013	Airline Industry	0	0	3	1	0	1	0	17/11/2015
31	28/2014	Pharma Dist.	3	1	1	1	0	0	0	01/12/2015
32	71/2013	Pharma Dist.	4	1	1	0	0	0	0	28/07/2016
33	52/2006 (RTPE)/ 29/2010	Cement	0	1	11	0	0	0	1	31/08/2016
34	03/2014 (Suo Moto)	Manu.	3	0	3	0	1	0	1	18/01/2017
35	05/2013	Cement	0	0	7	1	0	0	0	19/01/2017
36	98/2014	Cinematic dist.	5	4	0	0	0	0	0	24/03/2017
37	34/2015	Coal	10	0	8	1	0	0	0	14/09/2017
38	03/2013	Chemical Industry	0	0	3	1	0	1	0	05/10/2017
39	54/2015	Pharma Dist.	6	3	0	0	0	0	0	31/10/2017
40	97/2013	Pharma Dist.	2	2	0	0	0	0	0	04/01/2018
41	61/2013	Coal	0	0	3	0	0	0	1	10/01/2018
42	02/2016 (Suo Moto)	Dry-cell batteries	23	1	3	0	0	0	1	19/04/2018
43	50/2015	Public procurement	5	0	6	1	0	0	0	01/05/2018
44	03/2016 (Suo Moto)	Manu.	4	0	4	1	0	0	0	31/05/2018
45	2/2013 (Suo Moto)	Broadcasting	8	0	3	0	0	0	1	11/07/2018
46	5/2014, 71/2014, 72/2014 and 68/2015	Pharma Dist.	12	4	4	1	0	0	0	12/07/2018
47	02/2017 (Suo Moto)	Dry-cell batteries	5	0	2	0	1	0	1	30/08/2018
48	42/2017	Pharma Dist.	2	1	0	0	0	0	0	30/08/2018
49	21, 29, 36, 47, 48 & 49/ 2013	Sugar Processing	0	2	18	1	0	1	0	18/09/2018
50	03/2017 (Suo Moto)	Dry-cell batteries	6	0	2	0	1	1	1	15/01/2019
51	C-87/2009/DGIR	Pharma Dist.	0	1	0	0	0	0	0	15/01/2019
52	64/2014	Pharma Dist.	10	2	2	1	0	0	0	03/06/2019
53	61/2015	Pharma Dist.	2	1	0	0	0	0	0	20/06/2019
54	12/2017	Consultancy Services	4	0	3	1	0	0	0	02/08/2019
55	1/2014 (Suo Moto)	Cylinder	58	0	50	1	0	1	0	09/08/2019

Table 7: Cartel Cases

56	07(01)/2014 (Suo Moto)	Automobile OEMs	15	0	4	0	1	1	1	09/08/2019
57	06/2017 (Suo Moto)	Brewery	14	2	3	0	1	1	1	24/09/2021

Note: F.Avg.Turn, F.Turn, and F.Profit, F.Rlt.Turn. denote cases in which average annual turnover, annual turnover or profits for each cartelling year, or relevant turnover were used for calculating monetary fines.

Table 8: Descriptive table for associations in cartels

	Case	**Sector**	**Assoc.**	**Duration (years)**	**Type of Cartel**			**Penalty (%)**	**M.O.**
					Bid-Rig	**Price-fix**	**Mkt.Sh.**		
1	RTPE 52/2006; 29/2010	Cement	1	3	0	1	1	10	1
2	Suo Motu 02/2016	Dry-cell batteries	1	8	0	1	1	10	0
3	52 of 2010/ 56 of 2010	Cinematic distribution	6	3	0	0	0	10	3
4	25, 41, 45, 47, 48, 50, 58 and 69/2010	Cinematic distribution	7	3	0	0	0	10	7
5	21, 29, 36, 47, 48 and 49/2013	Sugar Processing	2	2	1	0	0	7	0
6	56/2011	Cinematic distribution	3	3	0	0	1	10	1
7	38/2011	Manufacturing	2	3	0	1	0	5	0
8	78/2012	Pharmaceuticals Distribution	1	3	0	1	0	10	0
9	01/2009	Cinematic distribution	1	2	0	1	0	10	0
10	20/2011	Pharmaceuticals Distribution	1	3	0	0	0	10	1
11	30/2011 and 41/2011	Pharmaceuticals Distribution	1	3	0	0	0	10	0
12	60/2012	Pharmaceuticals Distribution	1	3	0	0	0	10	0
13	Suo moto 02/2012 and Ref. 01/2013	Pharmaceuticals Distribution	1	4	0	1	0	10	0
14	43/2013	Transport	1	3	0	1	0	10	0
15	61/2012	Transport	1	2	0	1	0	10	1
16	45/2012	Cinematic distribution	2	3	0	0	0	7	2
17	98/2014	Cinematic distribution	4	3	0	0	0	5	0
18	65/2014, 71/2014, 72/2014 and 68/2015	Pharmaceuticals Distribution	4	5	0	0	0	10	0
19	Suo motu 06/2017	Brewery	2	13	0	1	1	3	0
20	61/2015	Pharmaceuticals Distribution	1	3	0	0	0	10	0
21	64/2014	Pharmaceuticals Distribution	2	4	0	0	0	10	0
22	C-87/2009/DGIR	Pharmaceuticals Distribution	1	3	0	0	0	10	1
23	42/2017	Pharmaceuticals Distribution	1	3	0	0	0	10	1
24	54/2015	Pharmaceuticals Distribution	3	4	0	0	0	10	1

Table 8: Descriptive table for associations in cartels

	Case	**Sector**	**Assoc.**	**Duration (years)**	**Type of Cartel**			**Penalty (%)**	**M.O.**
					Bid-Rig	**Price-fix**	**Mkt.Sh.**		
25	97/2013	Pharmaceuticals Distribution	2	3	0	0	0	10	2
26	71/2013	Pharmaceuticals Distribution	1	4	0	0	0	10	0
27	28/2014	Pharmaceuticals Distribution	1	3	0	0	0	10	1
28	58/2012	Cinematic distribution	3	5	0	0	0	10	1
29	62/2012	Cinematic distribution	1	3	0	1	0	5	1
30	Suo-Moto 05/2013	Pharmaceuticals Distribution	1	3	0	0	1	10	1
31	MRTP C-87/2009/DGIR	Pharmaceuticals Distribution	1	3	0	0	0	10	0
32	MRTP C-127/2009/DGIR	Pharmaceuticals Distribution	1	2	0	0	0	10	0