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Managerial Incentives to Repeatedly Collude: Frequency, Partners and Governance Rules

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Managerial Incentives to Repeatedly Collude: Frequency, Partners and Governance Rules[1]

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ABSTRACT

Cartel recidivism has been discovered among many convicted firms and is often perceived as a result of the limited efficiency of competition policy. The incentives for managers to collude have been linked to the firm's organizational structure, the corporate culture, and the type of executive compensation packages in place.

To the extent that undetected cartels differ from detected ones in relevant dimensions, the current empirical results on illegal cartels are biased. To tackle this issue, we use a novel dataset of a population of cartels, which were legal in Sweden up until 1993. We contribute to the current debate on the importance and extent of recidivism, exploiting managers' willingness to collude (repeatedly), absent law enforcement. This is a particularly important issue in the current climate of (potentially) weak law enforcement in terms of detected cartels and lack of optimal enforcement tools.

We illustrate how recidivism is, in a legal setting, a widespread phenomenon. We show that: (i) cartel members tend to be multiple colluders (MCs), i.e., participate in many cartels (up to 63 in a 46-year period); (ii) MCs tend to collude with similar firms, refuse entry and/or exit from the agreement and have less-strict governance rules (fewer meetings, fewer voting mechanisms and a less delineated hierarchy); and (iii) contrary to the current literature, there is no clear trend between the MCs and the involvement of a trade association.

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1. Introduction

Recidivism in any criminal setting is often considered a failure of the system in fighting such behavior, as well as a clear sign of the limited effectiveness of its enforcement tools. Recidivism in collusive behavior is no exception. The fact that many cases of recidivism have been discovered among convicted cartel members is often perceived as a result of the limited efficiency of competition policy (Levenstein et al., 2016).

Several reasons have been put forward to explain cartel recidivism. The current literature argues that recidivism, just like explicit collusion per se, is more frequent in industries with a high degree of market concentration (e.g. Pirrong, 1992), with inelastic demand (e.g. Grout and Sonderegger, 2005), or where a culture of collusion was established over time (e.g. Spar, 1994). Recidivism can be also explained at the managerial level, since the decision to collude is often taken by higher-level managers. Ashton and Pressey (2012) document that marketing and sales managers were involved in 43% of 56 cartels convicted by the European Commission (EC) between 1990 and 2009 and were frequently those deciding to enter a collusive agreement. More recently, Bloomfield et al., (2020b) examine the position of all the individuals named in EC cartel fines (1996–2020) and indicted by the US Department of Justice (DOJ) (1984–2011) and find that chief executive officers and chairs are named/indicted in only 12% of EC and 7.5% of DOJ cases, whereas general and division managers are named indicted in 41% of EC and 34% of DOJ cases. Levenstein et al. (2016) also discuss a *learning-by-doing* effect, where firms (and managers) collude because they imitate their peers – previously involved in successful cartels – and, in doing so, develop a set of capabilities and expertise that encourage collusion in the industry. Cartels may also be easier to organize if firms with previous collusive experience (or multi-cartelist firms) are involved. The incentives for managers to collude have also been linked to the firm's organizational structure (e.g. Connor, 2008), the corporate culture (e.g. Eichenwald, 2012), and the type of executive compensation packages in place (e.g. Bloomfield et al., 2020a).

There is an established literature on the role played by managerial incentives in sustaining collusion. Footnote: See the seminal paper by Spagnolo (2000), followed by an extensive literature: Spagnolo 2004, 2005; Buccirossi and Spagnolo, 2008; Aubert, 2009; Thépot and Thépot, 2017, among others. We contribute to that literature by analysing a novel research question – the link between recidivism and cartel features. In particular, we examine whether managers' decision to repeatedly collude is associated with specific cartel characteristics. This allows us to discuss the types of incentives that managers may have when deciding to repeatedly collude.

While valuable, the above-mentioned literature suffers from an inherent issue of sample selection bias, as it examines only the detected and convicted cartels. In fact, Ormosi (2013) calculates that only 20% of all cartels are detected. Therefore, to the extent that undetected cartels differ from detected ones in relevant dimensions, the results reported by the papers described above will be biased.

To tackle this issue, we use a novel dataset of a population of cartels, which were legal in Sweden up until 1993. Given that these cartels were legal, firms (and managers) were not legally limited in the number of cartels they could be involved in. Using a dataset of a population of cartels[2] allows for sharper inferences and eliminates the need to construct a control group of matched firms (which may contain undetected cartels), as is done in other studies. In particular, our analysis allows us to account for recidivism in a much more accurate way and sheds some light on the recent debate about the extent to which recidivism is or is not an important issue (Connor, 2010; Werden et al., 2011; Marvão, forthcoming). Since recidivism is usually linked to illegal cartel agreements, we label firms that were involved in more than one cartel *multi-cartelists* (MCs).

We have four main results. First, in our legal cartel setting, we find that about half of cartel members participated in more than one agreement and few MCs being involved in up to 63 agreements over a

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period of 46 years. Further, the majority of cartels included at least one MC and many were composed of only MCs. These numbers are much higher than those found in studies of convicted illegal cartels (Connor, 2010; Werden et al., 2011; Marvão, forthcoming) but suggest that absent cartel enforcement, managers will form and/or participate in many cartel agreements.

Second, we show that cartels with MCs included more-similar firms. In particular, they included fewer foreign firms and had less entry and exit over the lifetime of the cartel. Relatedly, we find that cartels with MCs were more likely to include one or more trade associations (TAs), but there is no clear trend between the number of collusive agreements per firm and the involvement of a TA. The latter result is rather surprising, as it has been argued that TAs might play a major role in inducing managers to collude (e.g. Levenstein and Suslow, 2011).

Finally, we find that cartels with MCs imposed less-strict governance rules, such as holding fewer meetings, engaging in less voting, and having hierarchical scheme, as collusion may be easier to implement and/or sustain.

Buccirossi et al. (2013) find that the quality of cartel enforcement is the most crucial determinant of the effects of competition policy on total factor productivity growth. In the last decade, antitrust fines have increased exponentially. However, cartel fines are well below the legal cap of 10% of a firm's turnover, and a new phenomenon of leniency inflation (i.e. many cartel members receiving large fine discounts in exchange for cooperation with an investigation) has been documented in the EU (Marvão and Spagnolo, 2018). Cartels remain a widespread phenomenon which is not well understood for at least two reasons: first, since cartels are illegal, cartel studies are biased to the extent that undetected cartels may be numerous and different from detected ones; second, while cartel dynamics per se have been extensively studied (e.g. Harrington, 2004), studies of cartel formation and/or participation at the managerial level and its regulatory consequences are few and recent (see e.g. González et al., 2019; Bloomfield et al., 2020b; Combe and Monnier, 2020).

Some authors have addressed the first issue through case studies (e.g. Asker, 2010), while others have addressed the second issue using data, at the cartel-level, on legal cartels (e.g. Hyytinen et al., 2019). We simultaneously address these issues by using firm-level data on a population of legal cartels. Our analysis offers some important insights. If recidivism can also be explained at the managerial level, designing optimal competition policies requires integrating this dimension. Further, using a population of legal cartels provides less-biased estimates of not only the true number of cartels in the economy, but also the characteristics of cartels and cartel members, such as cartel duration and welfare effects.

Combe and Monnier (2020) discuss the "psychological cost related to public stigmatization of cartels or to damages inflicted to others." In this sense, the involvement of one or several TAs in the cartel may establish a norm among peer firms. We therefore see two opposite effects of TAs with respect to incentives to collude. If TAs facilitate coordination between members (Schuldt and Taylor, 2018), this "help" might be less required and/or less desirable in cartels with MCs that have past (or contemporaneous) experience in colluding. Alternatively, if TAs facilitate collusion by setting "collusive norms," MCs might be more receptive and more likely to join cartels where TAs are involved.[3]

This article is also related to the literature on *trust* in dynamic games. In line with the experimental literature on infinitely repeated games (e.g. Bigoni et al., 2015, or Dal Bó and Fréchette, 2018), meeting in different cartels might facilitate trust between members. Additionally, this element of trust might be easier to establish between similar firms which belong to the same TA and in cartels where entry and exit are limited.[4]

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[3] Levenstein and Suslow (2011) suggest that the probability of detection for a cartel with a TA might be higher, as it is easier to discover when an TA acts as a cartel leader or helps to organize meetings.

[4] See Bigoni et al. (2015) for experimental evidence on trust as a deterrence channel, as well as a discussion on cultural similarities that may facilitate collusion.

We also contribute to the literature on optimal deterrent cartel fines. For example, although the current EU fine guidelines of 2006 state that firms involved in "repeated infringements" should receive a fine increase, the EU Leniency Notices are not explicit as to whether or not recidivists should receive a lower fine reduction, if any. Marvão (2016) finds that recidivism is one of the main factors which positively influence the granting and scale of EU leniency reductions. As such, our results on how widespread recidivism is, in a legal setting, are significant.

2. Legal cartel data and variables

2.1. Our approach and dataset

Although the majority of cartel studies focus on detected and convicted illegal cartels, these studies suffer from a well-known issue of sample bias selection. This makes it challenging to study the true extent of recidivism and how managers' decisions to repeatedly collude relate to specific cartel and firm characteristics. We address this issue by using a novel dataset of legal cartels in Sweden.

Despite obvious differences in cartel enforcement, there are numerous common features between legal and illegal cartels. In both, cartels form because they are beneficial for the cartel members (theoretically, the participation constraint must be fulfilled). Moreover, cartel duration depends on how profitable it is to deviate from the cartel agreement, partly due to the punishment strategies in place (theoretically, the incentive compatibility constraint must also be fulfilled). These similar cartel features make our analysis relevant to the analysis of the efficiency of the current antitrust enforcement and they provide insights not only on the prevalence but also on the features cartels would ideally contract on, given the possibility of doing so.

2.2. The Swedish cartel register

The Swedish cartel register includes 4,777 agreements registered between 1947 and 1993. The legislation governing the register was not specific as to what constituted a potential anti-competitive agreement, which resulted in a variety of supposedly collusive agreements being registered. Although the structure of the files in the register was mostly similar, the registration practices were very imprecise: some agreements were withdrawn and some of these were replaced by new ones, other agreements included a "cartel" composed of a group of local "cartels" and others were bilateral contracts with individuals.

During the manual collection of the data, we started by identifying 3,231 unique agreements including at least two firms. Furthermore, there were 198 missing case numbers. However, since the register was transferred between four different authorities throughout the years, it is possible that the case numbers did not follow a specific order, such that the missing case numbers may not exist. Within the 3,231 agreements, we then categorized the type of agreement as vertical, horizontal, or vertical and horizontal.

We then coded them as collusive or non-collusive agreements. As per EU legislation, a cartel is defined as any horizontal agreement on pricing (including margins and discounts), market sharing (including quotas, discounts, and margins), or other restrictive practices, at local, national, or international level. Based on this definition, we classify 2,440 agreements in the register as cartels. For example, agreements concerning vertical collusion or agreements with no obvious competition-hindering clauses are not included. We also exclude industries such as civil service, defense, and public education, due to the lack of private actors in these sectors. Table 1 summarizes the different types of contract.

Although the register was founded in 1946, no agreements were registered in its initial year. New agreements were registered over 32 years, between 1947 and 1978, but 50% of the registrations

occurred in the initial 13 years. Between 1979 and the end of the register, in 1993, when Sweden prohibited tender cartels, no agreements were registered.

	Cartel agreements	Non-cartel agreements	Total
Vertical	0	649	649
Horizontal	2261	251	2512
Both	57	13	70
Total			**3231**

Table 1. Overview of the dataset

2.3. Accounting for recidivism

In our dataset, we identify the firms involved in each cartel. We code as a multi-cartelist any firm that participated in at least two cartel agreements, except where a new agreement substituted a previous one or where firms participated in contemporaneous cartels, in the same product and with the same group of cartel members. We measure multi-cartelism in terms of frequency, i.e. the number of cartel agreements they were involved in over the lifetime of the cartel register (1947–1993), and in terms of weight, i.e. the share of multi-cartelists per cartel.

These are true measures of the frequency and weight of multi-cartelists. However, we expect these numbers to be greater than in a context where cartels are illegal, since cartel detection and deterrence tools are likely to reduce the number of recidivists and the number of cartels they are involved in.

3. Cartel formation with multi-cartelists

In this section we address three specific questions: (1) How common are multi-cartelists when firms are allowed to form a cartel? (2) Are there substantial differences in internal mechanisms between cartels with and without multi-cartelists? (3) Wo are the members in multi-cartelists' cartels?

As we have argued already, our dataset is unique in the sense that if a manager wanted to enter a cartel, there was no legal obstacle to their doing so, and we assume that such an agreement is then registered and, thus, part of our dataset. Below we compare cartels with and without multi-cartelists.

3.1. Multi-cartelists: A widespread phenomenon

Recidivism is a highly debated issue. Connor (2010) suggests that there is evidence of a large amount of recidivism: he identified 389 recidivists worldwide between 1990 and 2009, which amounts to 18.4% of all convicted cartel members in 648 international hardcore cartels. Werden et al. (2011) dispute Connor's definition of recidivism and his calculation of the numbers of multiple and repeat offenders. The main discrepancy between the two arguments appears to be in how cartel members who merge and form a new firm are dealt with. Werden and others follow the legal practice (of the US DOJ and the EC), and therefore they suggest that no repeat offenders in US cartels have been fined since 1999. As for the EU, Marvão (2014) identified 63 multiple offenders (12%) and six repeat offenders (1%) since 1998, when the first leniency reduction was granted.

In our data, we find that 48% of firms (in a total of 2,839 firms) were involved in more than one cartel (see Figure 1). In fact, many firms (92) were involved in as many as 51 to 63 cartels. On average, the firms in the data participated in five cartels. These numbers illustrate the willingness of firms to enter into collusive agreements, in a setting where these were not illegal.

We also find that 78% of cartels included at least one MC and 16% of cartels were composed of 91 to 100% of MCs (see Figure 2).

These are important findings, as they suggest that recidivism is a widespread phenomenon. One explanation is the potential for "economies of scale" in being part of many cartels. This is related to the finding of Levenstein and Suslow (2011) that many (international and convicted) cartels with a large number of firms rely on the active involvement of a trade association. We explore this further in Section 3.3.

Alternatively, if agreements involving MCs can increase cartel stability (as mentioned in the introduction), this may explain why managers decide to participate in several cartels. Figure 3 depicts this relationship. We show that average cartel participation was higher for MCs up to a given threshold (of around 30 cartels), after which it was lower than for single-cartelists. It is noteworthy that we find no obvious trend in the relationship between average cartel duration and the share of MCs per cartel.
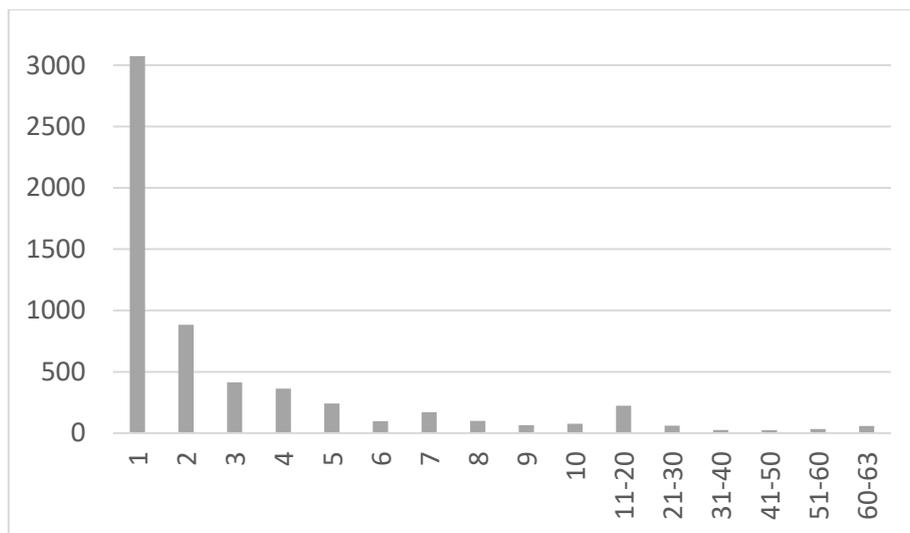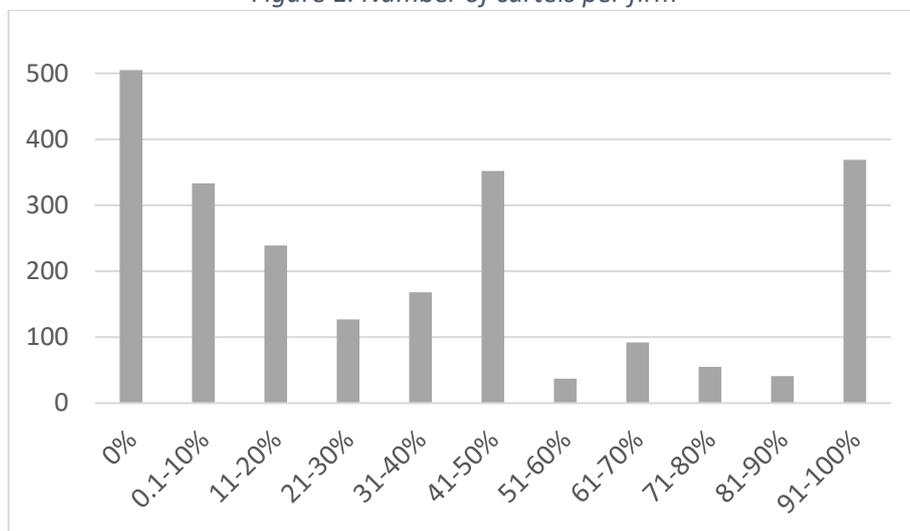

Figure 1. Number of cartels per firm

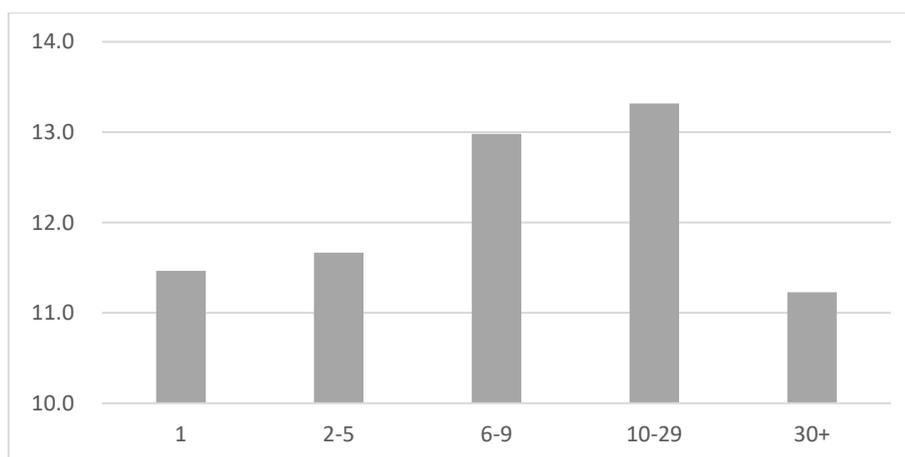*Figure 2. Share of multi-cartelists per cartel*

Figure 3. Average cartel duration (years) (vertical axis) by number of cartels per firm (horizontal axis)

3.2. Cartel members

The group of firms that constitute a cartel is a crucial element for its stability. Our dataset includes some information regarding the cartel members, as shown in Table 3.

3.2.1. Nationality and cartel size

The average cartel included three firms, which is much smaller than the average size of six firms in EC cartels (Marvão, forthcoming), but cartels included up to 27 cartel members. This figure is similar for cartels with and without MCs. However, cartels with MCs included very few foreign firms.

We also examine net entry (i.e. the number of firms entering the cartel after the initial agreement minus those exiting the agreement). The data clearly shows that cartels with MCs were substantially more stable in terms of entry and exit.

3.2.2. Trade associations

It is often argued that a TA offers a propitious environment for cartel formation. Indeed, several EC cartel convictions indirectly involve an association. For example, in the lysine, citric acid, bathroom fittings, and car battery recycling cartels (convicted in 2000, 2002, 2016, and 2017, respectively), trade associations' activities were used to organize parallel "unofficial meetings" where prices and quantities were then agreed. In the lysine cartel, the american company Archer Daniels Midland (ADM) "proposed that the producers attend trade association meetings quarterly to adjust their price and sales volumes according to their agreements. It explained how forming an industry association could provide a seemingly legitimate, but artificial, reason to meet, and thus conceal the fact that purported competitors were secretly meeting to discuss prices and sales volumes."

A second indirect role of associations is that they can be used to coerce new association members to join the cartel. In the citric acid cartel, the "General Manager of Cerestar Bioproducts was approached on that occasion by Hoffmann-La Roche's World Head of Marketing Vitamins and Fine Chemicals, whom he subsequently met on 12 February 1992 in Basel where he was 'explained the basic mechanisms of the cartel' which Cerestar Bioproducts eventually joined."

In the cases above, TAs serve to ease communication between the cartel members and find new cartel partners. However, TAs can also have direct involvement, organizing and/or enforcing antitrust violations such that a much larger number of firms can be effectively organized. For example, in the EU cement cartel (fined in 1994), the European producers and their TA agreed on a market allocation scheme: each competitor would sell only in its home market and export the excess production at previously agreed terms. In the US supermarket chains' cartel of 1971, a cooperative association of supermarkets allocated markets geographically for Topco generic products, such that only one of its members would have the use of its brand name in any given area. More recently, in 2011, the EC fined

a TA (Fachverband Verbindungs- und Befestigungstechnik) in the fasteners' cartel for organizing the price-fixing cartel.

Table 2 shows that trade associations were present in 48% of the cartels but were a lot more common in cartels with multi-cartelists. However, the number of cartels in which multi-cartelists participate does not seem to matter. A visual inspection of Figure 4 shows that there is no clear link between the number of cartel agreements firms were involved in and the involvement of TAs.

Levenstein and Suslow (2011) find that cartels that rely on TAs are less likely to end due to a "natural death." In our data, we find no link between cartel duration and the involvement of TAs in a cartel agreement, while Karlsson et al. (2020) find only a weak effect of TAs on cartel formation and cartel death. Levenstein and Suslow (2011) also find that many cartels with a large number of members are sustained by the active involvement of a TA. Once more, we find no clear trend between these two variables. As we argued in the introduction, this finding may be the result of two opposite effects: (i)TAs should contribute to the cartel's stability by setting the norm or facilitating the coordination of cartel members; but (ii) with more experienced cartel members, TAs should be less "necessary."

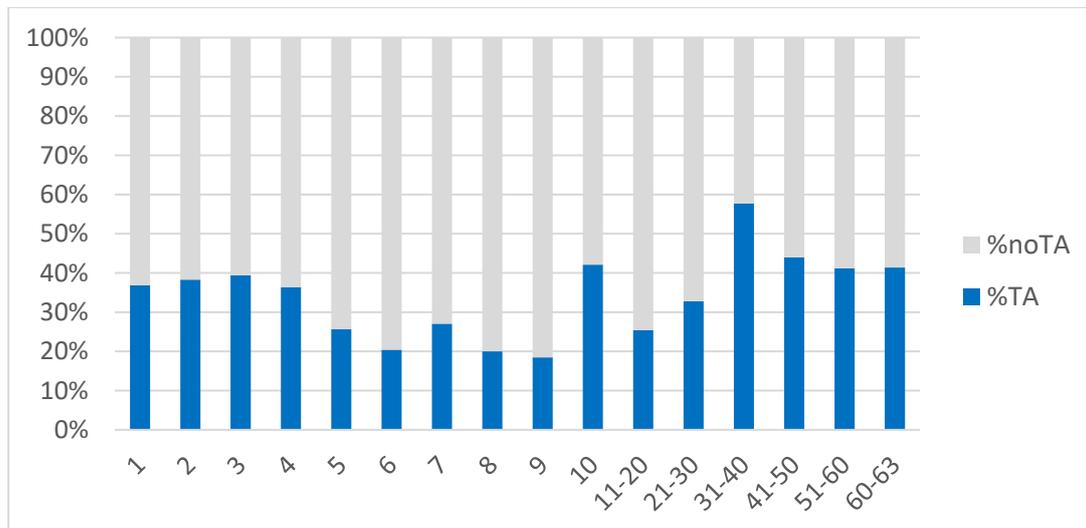|	#firms		# foreign firms		Net entry	TA(s) involved
	Max	**Av.**	**Max**	**Av.**	**Av.**	**% cartels**
With MCs	20	3.34	2	0.09	0.73	38.5%
No MCs	27	3.73	12	0.13	7.60	9.5%
Overall	*27*	*3.45*	*12*	*0.14*	*2.05*	47.9%

Table 2. Cartel members

Figure 4. Cartels per firm, with(out) trade association(s)

3.3. Cartel governance

Due to the illegal nature of cartels, very little is known about their internal governance. This is because, cartels do not usually formalize sanctions, hierarchy, and other internal mechanisms. However, many legal cartel agreements were explicit about whether they included sanctions, fines, formal meetings, a dispute resolution mechanism, a strict voting mechanism, and an explicit hierarchical system.

Table 3 summarizes these results. For example, the data shows that 44% of the cartel agreements included explicit sanctions in case of a deviation from an agreement. These ranged from a short

suspension from the agreement to full exclusion or the member having to sell their product under conditions (e.g., to another member for a low price or to specific customers).

The sample is also split between cartels with and without MCs. While many characteristics are similar, two are worth highlighting. First, cartels with MCs were less likely to hold meetings. This may mean that these firms were also meeting for other cartels or that they had already established a (collusive) relationship which decreased the need for meetings. In fact, Levenstein et al. (2016) argue that norms established during explicit cartel agreements ease the subsequent engagement of the members in tacit collusion without explicit communication.

Second, voting mechanisms were a lot less common in cartels with MCs. Overall, cartels with MCs appear to have less-strict rules and less-formal mechanisms.

	Sanctions			Fines			Meetings		
	N	Count	%	N	Count	%	N	Count	%
With MCs	760	322	42%	1715	21	1%	1800	382	21%
No MCs	165	84	51%	440	8	2%	498	218	44%
Overall	925	406	44%	2155	29	1%	2298	600	26%
	Dispute resolution			Voting			Hierarchy		
	N	Count	%	N	Count	%	N	Count	%
With MCs	1793	984	55%	1794	343	19%	1808	129	7%
No MCs	504	336	67%	505	208	41%	509	147	29%
Overall	2297	1320	57%	2299	551	24%	2317	276	12%

Table 3. Types of internal mechanisms for cartels with(out) multi-cartelists (MCs). N = sample size

CONCLUSION

This article sheds some light on cartel participation when managers of a given firm repeatedly collude. We use a unique dataset of legal cartels registered in Sweden, and which operated after the end of the Second World War and until the cartel ban in 1993. In particular, we are able to observe recidivism in a population of cartels, thus overcoming the usual issue of sample selection bias in studies of detected and convicted illegal cartels.

We describe some interesting differences between cartels with and without multi-cartelists. Our analysis shows that, absent legal cartel enforcement, firms collude in many cartels and most cartels include recidivists. Cartels with recidivists are also shown to include more-homogeneous firms and to be more stable in terms of cartel size. Further, we show that cartel agreements differ greatly in their internal governance when they include recidivists. Such cartels appear to have less strict rules, with fewer meetings, fewer voting mechanisms and a less delineated hierarchy. Finally, we find that cartels with and without recidivists do not differ in terms of size or involvement of trade associations. The latter result is rather surprising as it is often argued that trade associations might play a major role in inducing managers to repeatedly collude.

Our results contribute to the current debate on the importance and extent of recidivism, exploiting managers' willingness to collude (repeatedly), absent law enforcement. These results help us in understanding recidivism in the current climate of (potentially) weak law enforcement in terms of detected cartels (e.g. Ormosi (2013) suggests that 80% of cartels are undetected) and lack of optimal enforcement tools (e.g. Marvão and Spagnolo (2018) suggest that without criminalization, treble damages and with leniency inflation, EC fines are sub-optimal).

Our data does however not allow us to account for individual (un)observable characteristics of managers (e.g. risk aversion and managerial compensation) that determine their repeated participation in cartels. This would be an interesting avenue for further study.

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