

Research Article

# Which Arguments are most Persuasive of the Seriousness of Cartels: An Experimental Study

Peter T. Dijkstra<sup>\*</sup>, Loet van Stekelenburg<sup>\*</sup>

**Abstract:** The effectiveness of competition authorities is partly dependent on the public attitude towards cartels. In Dijkstra and Van Stekelenburg (2021), we found that the Dutch public considers cartels to be less serious offenses than comparable economic infringements. If the general public better understands why cartel behavior is bad, it might improve firm compliance and could help in receiving more tip-offs about potential cartels. Competition authorities could attain this by investing in raising the negative attitude of the public towards cartels: we therefore examine which arguments are most persuasive in the Netherlands. The most persuasive arguments are on overpricing, consumer deception, cartel secrecy and conformism. Subsequently, we run an experiment to test which term and line of argumentation are most effective communicating the seriousness of cartels. We find that the term “competition fraud” is more effective in conveying the problematic nature of cartels than the traditional term “cartel”, resulting in a more negative attitude among respondents in this condition. Again, arguments on overpricing are most convincing and result in more negative attitude towards cartels and stronger support for government action than other lines of argumentation.

Keywords: Cartels, Public Attitudes, Experiment

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## 1. Introduction

Competition authorities throughout the world promote competition by fighting anticompetitive conduct.<sup>1</sup> One of the responsibilities of competition authorities is the detection and sanctioning of cartel behavior. A cartel entails an agreement between firms that sell the same product or offer the same service, not to compete with each other. They might, for example, agree to ask their customers the same price, or could agree which firm sells to which customer or in which area, agree on output restrictions, bid values in tenders, etc. The damage of cartel behavior can be quite substantial: according to Atkinson (2019) cartels deeply and fundamentally undercut public trust, and thereby harms the relation between government and public negatively. Moreover, financial damage to customers is large: Connor and Lande (2008) find in a meta-analysis of over 600 cartels that the median overcharge is 20%.<sup>2</sup> Nowadays, the European Commission also informs that anyone affected by cartel behavior can seek compensation for damages and provide a tool to estimate those damages (European Commission, 2021). To cartel members, although profits increase, there are also disadvantages of being in a cartel: productivity and R&D investments decrease and, thereby, cartel members are not economically efficient with respect to allocative, productive and dynamic efficiency (Thomas, 1993; Hüschelrath, 2010). Moreover, if firms are convicted for cartel behavior<sup>3</sup>, the fines can also be substantial: recently the EC fined five banks a total of about €340 million (European Commission, 2021). Fines in European cartel enforcement

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<sup>\*</sup>Netherlands Authority for Consumers & Markets (ACM)

Address correspondence to Peter T. Dijkstra at [peter.dijkstra@acm.nl](mailto:peter.dijkstra@acm.nl).

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surged in the 2000s but the effect seems limited since the EC still has too many cartel cases to consider (McGowan, 2005). Some argue that fines should be raised further, although there are arguments why this is not possible. First, the maximum height is restricted by law and competition authorities cannot raise this. Second, according to Outhuijse (2019, chapter 4) cartel fines are frequently decreased by court decisions<sup>4</sup> implying there cannot be an effect of a raise of the maximum cartel fine with regard to cartel deterrence or desistance. Moreover, there is no consensus when fines are high enough, and potentially the best way cartel oversight can be effective is to impose jail sentences for managers of cartels (McGowan, 2009; Marvão and Spagnolo, 2021). Hence, it is unsurprising that cartels still exist today, and that the fight against cartels remains a priority as indicated by Commissioner Vestager (European Commission, 2014). Furthermore, fines are thus not the silver bullet to deter cartels, and competition authorities should consider other ways of increasing firm compliance. In this paper we do exactly that, by attempting to affect the social norm regarding cartel behavior in order to increase firm compliance.

Clearly, we can conclude that cartel conduct is a serious offense. However, the damage an offense inflicts is not the only factor that determines how problematic a society considers a particular offense. In their seminal paper Sellin and Wolfgang (1964) argue that public perceptions of an offense should be taken into account as well. For competition authorities this raises the question: how do people perceive cartel behavior? There are a few studies on the public perception of cartels. In the UK Stephan (2008) has examined these perceptions. He finds that the majority of Britons recognize the harmfulness of price-fixing. Furthermore, the results show support for punishment of businesses involved in cartel behavior. Stephan (2017) confirms these findings in a second, larger study, in which he finds similar results for Germany, Italy and the US.<sup>5</sup> In Australia, Beaton-Wells et al. (2011) find that most respondents consider cartel behavior unacceptable. In general, respondents know what cartels entail, and they find competition healthy. In France the majority of respondents consider cartels harmful and are in favor of sanctions for cartel conduct (Combe and Monnier-Schlumberger, 2019). Finally, the European Commission investigates the opinion of EU citizens regarding competition via the Flash Eurobarometer (EC, 2019). Most respondents in the EU believe that effective competition has a positive impact on them as consumers (78% of respondents). Moreover, most EU citizens agree that competition leads to better prices (83%), higher quality goods and services (74%), more innovation (85%), and more choice for consumers (87%).

In our companion paper (Dijkstra and Van Stekelenburg, 2021) we investigated the public attitude in the Netherlands towards cartels in comparison to other economic offenses. Based on our survey, we concluded that cartels are considered to be a serious offense, immoral behavior and have negative consequences for society. Additionally, respondents largely assumed them to be prohibited. Nevertheless, we also found that most of the comparable offenses we investigated (e.g., tax evasion and selling counterfeit products) were considered to be more serious, more immoral and have more negative consequences for society. Finally, we found that the perceived seriousness of an offense is explained by people's personal norms, followed by its perceived negative consequences, whether people think the offense is allowed and to what extent it directly impacts people. We argue that people are less familiar with cartel conduct than the other offenses since, to most people, cartel behavior is much less vivid than other offenses: one does not observe the prices that would be asked if the cartel had not exist.

Based on these papers we conclude that public perceptions of cartel behavior are negative. Nevertheless, Atkins (2020) argues it is important to show the public – and firms – what the benefits of competition are and, as ICN (2017) argues, if the general public better understands the benefits of competition, it might help in creating a culture expecting healthy competition between firms and – thereby – establishing a standard in which the gains of competition are indeed reaped by the public. Research in social psychology has shown that norms are a foundational factor in the forming of many different kinds of behavior (Fishbein and Ajzen, 1975). Social psychologists distinguish personal norms, an individual's personal and moral expectations on how to act (Schwarz, 1977), and social norms. For our current research social norms are of particular interest. Social norms are partly made up of injunctive norms, other's moral opinions on specific behaviors (Cialdini et al., 1990). We can thus conclude that social norms are for a large part based on public perceptions. These norms are relevant for authorities for a few reasons. First, they have a strong influence on compliance with rules. For example littering (Cialdini et al., 1990), tax compliance (Wenzel, 2005) and specifically cartel behavior (Van Stekelenburg et al., 2021). This means that competition authorities could attain a better rate of compliance by investing in

the public attitude against cartel behavior and thereby improving the social norm against cartels. Second, it could also help in receiving more tip-offs about potential cartels. Previous research has shown that perceptions of a situation's seriousness are important drivers for whistleblowing (Mesmer-Magnus and Viswesvaran, 2005; Andon et al., 2018). Third, research shows that social norms are very likely to influence public support for government actions. This has been shown for, e.g., environmental policies (de Groot and Schuitema, 2012) and urban traffic management measures (Schade and Slag, 2003).

In order to create a stronger societal norm, competition authorities should start by succinctly and clearly explaining the disadvantages of cartel behavior to the general public. This can create a negative attitude toward cartel conduct, and thereby improve people's personal norms. This might lead to a stronger social norm. There is indeed a body of literature showing that narratives affect, among others, personal norms and social norms (Jones and McBeth, 2010). Chong and Druckman (2007) in particular show that the framing of messages can affect public opinion and, in turn, firms may feel more pressure to adhere to the rules (Walls et al., 2004). Arai (2013) illustrates that the public's opinion might induce government to make changes: due to an ill working competitive system in public tenders in Japan, criticism arose of, among others, illegal cartel agreements between firms. This issue has been (at least partially) solved by reforming the process to one with more open competitive tendering. Finally, influencing the public's norm might affect political decisions regarding an authority's budget (Vining, 2011; Dahlström et al., 2012), a prerequisite if an authority wants to perform its duties autonomously.<sup>6</sup> Crosby and Bryson (2005) argue that (re)framing the message of an authority's duties could achieve this.

In this paper we examine which arguments on cartel behavior are most persuasive and, thereby, improve social norms. Our study consists of two parts. We start by investigating which arguments are most effective in creating a negative attitude towards cartel behavior. We do this through a discrete choice experiment. Subsequently, we create a series of short texts about the seriousness of cartels and experimentally test which term and line of argumentation are most convincing.

The first part of our studies shows that the most convincing and persuasive arguments are about overpricing, deceiving consumers, secrecy of cartels and abiding the rules. In the second part we combine several arguments and use them in texts with an explanation of cartel behavior. We observe that the argumentation on overpricing yields a more negative attitude and stronger support for governmental action and is perceived as most convincing. Furthermore, these effects are stronger when the term "competition fraud" (in Dutch this is called "concurrentievervalsing") is used rather than "cartel". The relative effectiveness of the different arguments and texts do not differ by gender, but on average men show a more negative attitude towards cartel behavior than women.

The literature on public management regarding cartel oversight is very limited. This is surprising because EU competition policy is a prerequisite for realizing a successful internal market (McGowan, 2000). More scholarship is concerned with general competition policy like mergers and state aid, while cartel detection is the best developed aspect (McGowan, 2000). The literature in economics and law is much more abundant regarding cartel oversight (e.g., see the before mentioned Connor and Lande, 2008; Brenner, 2009; Hüscherlath, 2010; and Marvão and Spagnolo, 2021), but the impact of narratives is to our knowledge non-existent in that scholarship. In this paper we attempt to report for policymakers and competition authorities how the social norm on cartels can be communicated such that firms are more inclined to compete fairly, and show to economists and lawyers that firm compliance<sup>7</sup> is not only affected by determinants as profitability, detection probability and (potential) fines.

The remainder of our paper is organized as follows. We test which arguments most convincingly communicate why cartels are bad in Section 2. Subsequently, we use a selection of arguments in Section 3 to test which term and line of argumentation work best. Section 4 concludes.

## **2. Arguments against cartels**

We start by examining which arguments are most persuasive in communicating to the general public why cartels are bad. We are aware of only one other study that tested which arguments were important in why people think cartels are serious offenses, which is by Combe and Monnier-Schlumberger (2019). They found that almost all

respondents agree with the arguments on the hidden nature of a cartel, that cartels harm the market, and that cartel behavior is dishonest. In their survey, however, respondents merely indicated their level of agreement with each argument, resulting in over 95% of respondents agreeing with the arguments provided. We are, however, interested in which arguments are more convincing than others. We investigate this by implementing a discrete choice experiment (DCE) as in Broecks et al. (2016).<sup>8</sup> The setup is as follows. Respondents are offered several pairs of arguments from a larger set of arguments. At each point the respondent has to decide which of the two arguments they find most convincing. The experimental design include many combinations of all arguments, which are randomly assigned to the participants.

### Setup of DCE

Our DCE consists of 14 different arguments, divided over 6 types of arguments. The arguments are generic and not specific to a certain type of cartel. Hence, some arguments apply (more or less) to specific forms of cartels.

#### A. *Disadvantages for customers*

1. Firms raise their prices, resulting in customers overpaying
2. There are fewer suppliers (firms) from which customers can choose
3. There are fewer products from which customers can choose
4. Customers are not completely free to choose from whom they buy their products
5. Customers do not know they are being harmed because cartel agreements are secret

#### B. *Abstract consequences*

6. Firms are less likely to create new or improved products
7. Without competition, firms do not have to do their best, which is bad for the economy

#### C. *Advantages for cartel members*

8. Firms sell their products for more money than they are worth
9. Firms that would normally go bankrupt continue to exist

#### D. *Disadvantages other firms*

10. It is harder for starting entrepreneurs to start a new business
11. Other firms that do compete are disadvantaged

#### E. *Conformism*

12. Cartel agreements are prohibited

#### F. *Emotional arguments*

13. Cartel agreements are type of secret conspiracy
14. Cartel agreements are deliberate deception of customers

Each respondent received 14 different pairs of two arguments. Since there are only 14 arguments respondents saw most arguments more than once. All arguments were tested in qualitative pilot interviews. The arguments that were unclear to several participants in the pilot were improved before the actual DCE started. The above arguments are the final set. The setup of the survey around the DCE was as follows:<sup>9</sup>

- (i) Respondents received a short (general) text about cartel behavior.
- (ii) Some questions about whether the respondent has a positive or negative attitude towards cartels, whether they consider it to be good or bad behavior, and whether they think cartels are prohibited or not.
- (iii) A short summary in bullets of the consequences of cartels.
- (iv) Start of the DCE in which we asked respondents to pick the argument that personally convinces them the most that cartel agreements are indeed bad out of 14 pairs of 2 arguments.
- (v) Respondents were asked to individually rate half of the arguments (randomly distributed) on their persuasiveness
- (vi) Respondents had to indicate which harmed party they consider most important in their attitude toward cartel agreements: the cartel's competitors, firms that buy from the cartel, consumers, the Dutch economy, or all of the above.
- (vii) Finally, they had to indicate again whether their attitude towards cartels is positive or negative.

We do not presume any of the arguments to be more or less convincing. We do expect, however, that more respondents will have a negative attitude towards cartels after the experiment.

**Results arguments**

The DCE was conducted by Motivaction in October 2018. A total of 1016 respondents participated and finished the survey, of which 45% are female. The majority of respondents finished secondary education (22% primary, 53% secondary, and 25% tertiary) and most respondents were between 45 and 65 years old (7% are aged 18-24 years, 12% 25-34 years, 15% 35-44 years, 21% 45-54 years, 23% 55-64 years, and 21% 65-80 years).<sup>10</sup>

We start by describing some general statistics, followed by explaining the level of persuasiveness of the arguments, and testing which arguments are considered to be more persuasive than others.

**Descriptive statistics**

In Table 1, we present the results regarding the attitude towards cartel behavior. We see that both before and after respondents read the arguments, the majority has a negative attitude towards cartels. Moreover, we see that after reading the arguments more respondents have a negative attitude towards cartels (an increase from 63.6% to 81.7%), and that the percentage of respondents positive towards cartels (from 16.3% to 5.7%) and do not know (from 20.1% to 12.6%) have decreased. This is an indication that the general public can be persuaded to consider cartel behavior as negative. Nevertheless, we also see that a small minority of respondents (1.2%) changed their attitude from negative to positive towards cartels after reading all arguments about why cartel behavior is bad.

**Table 1**  
**Attitude towards cartel behavior, before and after respondents read the arguments**

<b>Attitude before</b>	<b>Attitude afterwards</b>	<b>Percentage</b>
Negative (63.6%)	Negative	61.5%
	Positive	1.2%
	Do not know	0.9%
Positive (16.3%)	Negative	9.2%
	Positive	4.2%
	Do not know	3.0%
Do not know (20.1%)	Negative	11.0%
	Positive	0.3%
	Do not know	8.8%

We also asked on a scale from 1 till 5 how positive or negative a respondent was towards cartels. To compare the attitudes before and after respondents read the arguments, we combined these items to one scale ranging from 1 very positive to 10 very negative. For all respondents who provided a score before and after respondents read the arguments, we see that on average the attitude became more negative (from 7.58 to 8.34), an increase significant at 0.1%.<sup>11</sup> Furthermore, we asked respondents to indicate whether they consider it to be good or bad behavior if firms engage in a cartel agreement, on a scale from 1 extremely good to 7 extremely bad.<sup>12</sup> For all respondents who provided a score before and after respondents read the arguments, we see a change in moral judgement of the behavior from 5.10 to 5.59, indicating a more negative judgement of cartel behavior. This increase is significant at 0.1%.<sup>13</sup>

It appears that most respondents think that cartels are prohibited (see Table 2), which is in line with our result in Dijkstra and Van Stekelenburg (2021). Nevertheless, there is still quite a large group that needs to be educated that cartel behavior is prohibited. About one third of respondents do not know that cartels are prohibited or even think that they are allowed. We also consider the average negative attitude between groups in Table 2. As expected, the more certain respondents are that cartels are prohibited, the more negative their attitude towards cartel behavior. The average attitude of the group who are certain that cartels are prohibited

is significantly more negative than the average attitude of all others. If we consider all respondents who at least think that cartels are prohibited their average attitude is significantly more negative than the groups who think or are certain that cartels are allowed.<sup>14</sup>

**Table 2**  
**Distribution of whether cartels are considered to be allowed, and the average level of negative attitude towards cartel behavior before respondents read the arguments**

Cartels are...	Observations	Percent	Negative attitude		
			<i>Observations</i>	<i>Mean</i>	<i>Std. Dev.</i>
Certainly prohibited	417	41.0	400	8.65	1.24
Probably prohibited	293	28.8	231	7.79	1.54
Probably allowed	153	15.1	125	3.87	2.00
Certainly allowed	21	2.1	21	3.48	2.66
Do not know	132	13.0	35	5.57	2.55
Total	1016	100.0	812	7.40	2.40

Note: Not all respondents provided their attitude towards cartel behavior.

In Table 3, we show the distribution which harmed party respondents consider most important to their opinion on cartel agreements. The majority of respondents feel the consumers are most important, but a considerable group of respondents feels all harmed parties are equally important. If we compare the answers by gender, we see that men think of consumers as the most important harmed party more often than women do. We discuss differences in attitudes between gender in more detail in Appendix A.

**Table 3**  
**Which harmed party respondents consider most important**

Harmed party	Men	Women	Total
Cartel's competitors	10.8%	9.2%	10.0%
Firms that buy from the cartel	4.1%	4.4%	4.2%
Consumers	43.2%	35.8%	39.9%
Dutch economy	4.8%	6.6%	5.6%
All equally important	28.3%	29.7%	28.9%
Do not know	8.8%	14.4%	11.3%

### Explanation of persuasiveness

Table 4 shows the eventual ranking of arguments, based on how often the argument was chosen as most convincing and, subsequently, the average level of persuasiveness. The top 5 consist of arguments regarding overpricing, deceiving consumers, secrecy of cartels and conforming to the rules. The latter is in line with Combe and Monnier-Schlumberger (2019) who found that many people in France agree with that type of argument as well.

**Table 4**  
**Ranking of most convincing and most persuasive arguments**

Rank	Argument	Type of argument	Chosen as most convincing	Persuasiveness (scale from 1-7)
1	(5) Customers do not know they are being harmed because cartel agreements are secret	Disadvantage customer	69%	5.85
2	(1) Firms raise their prices, so that customers pay too much	Disadvantage customer	68%	5.79
3	(13) Cartel agreements are some sort of secret conspiracy	Emotional	61%	5.86
4	(14) Cartel agreements are deliberate deception of customers	Emotional	61%	5.77
5	(8) Firms sell their products for more money than they are worth	Advantage cartel members	60%	5.79
6	(11) Other firms that do compete are at a disadvantage	Disadvantage other firms	56%	5.49
7	(7) Without competition, firms do not have to do their best, which is bad for the economy	Abstract consequence	54%	5.28
8	(12) Cartel agreements are prohibited	Rules	49%	5.79
9	(10) It is harder for starting entrepreneurs to start a new business	Disadvantage other firms	49%	5.11
10	(2) There are fewer suppliers (firms) from which customers can choose	Disadvantage customer	42%	5.01
11	(4) Customers cannot determine themselves from whom to buy their products	Disadvantage customer	41%	4.88
12	(6) Firms are less likely to create new or improved products	Abstract consequence	35%	4.91
13	(3) There are fewer products customers can choose from	Disadvantage customer	31%	4.71
14	(9) Firms that would normally go bankrupt continue to exist	Advantage cartel members	23%	4.23

As is evident from Table 4 the persuasiveness of each argument ranges from 4.23 to 5.88 on a scale of 7. This scale is an ordinal variable. Therefore we will estimate an ordered logit model (Greene, 2012, pp. 824-827). An ordered logit model does not estimate the values of the observed ordinal variable  $y$  but uses the values of a latent variable  $y^*$  instead (Train, 2009, pp. 159-163). To be precise, a respondent is forced to assign a value out of 7 categories, but may assign any value between 1 and 7. If the value of  $y^*$  is below some cutoff point  $c_1$ , the respondent assigns  $y=1$ ; if the value is above  $c_1$  but below cutoff point  $c_2$ , the respondent assigns  $y=2$ ; and so on. Hence, in order to explain the level of persuasiveness we next estimate the following regression model:

$$\text{Persuasiveness} = \alpha_0 + \alpha_1 * \text{Age Category} + \alpha_2 * \text{Education level} + \alpha_3 * \text{Attitude before} + \alpha_4 * \text{Knowledge of prohibition} + \varepsilon \quad (1)$$

where  $\alpha_0$  till  $\alpha_4$  are coefficients to be estimated, and  $\varepsilon$  are logistically distributed errors.

Regression results are provided in Table 5. We see that most arguments are considered to be more persuasive by respondents who already had a negative attitude towards cartels before the experiment than by respondents who did not have an attitude towards cartels. Respondents who had a positive attitude towards cartels before the experiment do not find any argument less persuasive than respondents who did not have an attitude towards cartels, except for argument 1 about prices that are raised. They think this argument is less persuasive.<sup>15</sup>

The respondents who think that cartels are (probably) allowed, are more persuaded by arguments 2 (fewer suppliers), 6 (less new or improved products) and 11 (competing firms are at a disadvantage). Finally, age and education did not have an effect in general on the level of persuasion.<sup>16</sup>

### *Comparison of persuasiveness*

To find out which arguments are significantly more persuasive than other arguments, we conduct regression analysis. In particular, to test whether arguments  $x$  and  $y$  are considered differently persuasive, we estimate the following ordered logit model:

$$\begin{aligned} \text{Persuasiveness}_{ar} = & \beta_0 + \beta_1 * \text{Indicator}_a + \beta_2 * \text{Age Category}_r \\ & + \beta_3 * \text{Education level}_r + \beta_4 * \text{Attitude before}_r \\ & + \beta_5 * \text{Knowledge of prohibition}_r + \varepsilon \end{aligned} \quad (2)$$

where  $\text{Persuasiveness}_{ar}$  measures the level of persuasiveness of argument  $a \in \{x, y\}$  for respondent  $r$ ,  $\text{Indicator}_a$  equals 1 for argument  $x$  and 0 otherwise,  $\beta_0$  till  $\beta_5$  are coefficients to be estimated, and  $\varepsilon$  are logistically distributed errors which we cluster at the respondent level. Only those respondents who rated either argument  $x$  or argument  $y$  are included in the analysis. Each pairwise comparison is reported by the significance level of  $\beta_1$  in equation (2). Results are provided in Table 6. This table reads as follows: the argument in the row is compared with the argument in the column. A  $<$  means that the argument in the row is less persuasive than the argument in the column, whereas  $>$  means that the row argument is more persuasive than the column argument, and  $=$  means that there is no significant difference between both arguments. It is obvious that arguments 1 (prices are raised), 5 (cartels are secret agreements), 8 (products are sold for more than it is worth), 12 (cartels are prohibited), 13 (cartels are a secret conspiracy) and 14 (cartels are deceptive) are significantly more persuasive than the other arguments. These arguments focus on overpricing, consumer deception, cartel secrecy and conformism. There are just a few significant differences in the level of persuasiveness of any of the pairwise comparisons between these six arguments, but there is no full transitivity. These six arguments were already identified as most persuasive in Table 4, but interestingly argument 12 was chosen in less than half of the argument pairs as the most persuasive. Hence, the argument on conformism is persuasive in itself, but in comparison with others slightly less.

The least persuasive argument is 9 (too many firms exist) which scores significantly lower than all other arguments. After that arguments 3 (fewer products) and 4 (consumers cannot buy from whom they want) are least persuasive, followed by 2 (fewer suppliers) and 6 (there are less new or improved products). These results are in a line with the results of Table 4: it thus seems that, after correcting for several background variables, the result regarding the level of persuasiveness for each argument is robust.



**Table 5**  
**Ordered logistic regression results of the explanation of persuasiveness per argument**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
	Prices are raised	Fewer suppliers	Fewer products	Cannot buy from whom they want	Secret agreement	Less new or improved products	Firms do not have to do their best	Products sell for more than it is worth	Too many firms exist	Harder for start-ups	Compe-ting firms are at a disad-vantage	Prohi-bited	Secret conspi-racy	Decep-tion
<b>Negative attitude before</b>	0.738* (0.300)	0.399 (0.333)	0.337 (0.248)	0.458 (0.299)	1.217*** (0.297)	0.588* (0.258)	0.566* (0.285)	1.003*** (0.295)	0.183 (0.288)	0.737** (0.272)	1.123*** (0.246)	0.324 (0.296)	1.216*** (0.267)	1.540*** (0.308)
<b>Positive attitude before</b>	-0.613+ (0.353)	-0.126 (0.368)	-0.003 (0.267)	-0.141 (0.306)	-0.360 (0.338)	-0.222 (0.320)	-0.446 (0.314)	-0.325 (0.398)	-0.026 (0.410)	0.236 (0.347)	-0.053 (0.304)	-0.319 (0.348)	-0.429 (0.353)	-0.394 (0.362)
<b>Certainly prohibited</b>	0.063 (0.368)	0.119 (0.453)	-0.628+ (0.356)	0.027 (0.372)	0.017 (0.395)	-0.256 (0.342)	-0.336 (0.341)	0.028 (0.451)	-0.504 (0.344)	-0.671+ (0.372)	0.587+ (0.330)	1.541*** (0.454)	-0.062 (0.415)	0.228 (0.442)
<b>Probably prohibited</b>	-0.432 (0.348)	0.040 (0.390)	-0.687* (0.310)	-0.036 (0.337)	-0.395 (0.352)	-0.047 (0.298)	-0.418 (0.316)	-0.558 (0.407)	-0.155 (0.322)	-0.505 (0.330)	0.043 (0.318)	0.257 (0.398)	-0.453 (0.392)	-0.395 (0.408)
<b>Probably allowed</b>	0.467 (0.380)	0.472 (0.425)	-0.264 (0.316)	0.392 (0.361)	0.340 (0.386)	0.692* (0.343)	0.235 (0.318)	0.146 (0.452)	-0.003 (0.393)	-0.116 (0.379)	0.249 (0.323)	-0.534 (0.403)	-0.398 (0.424)	0.072 (0.439)
<b>Certainly allowed</b>	1.062 (0.720)	1.397* (0.653)	0.075 (0.521)	0.590 (0.674)	1.241 (0.936)	0.595 (0.624)	-0.064 (0.621)	1.054 (0.794)	0.653 (0.556)	0.451 (0.722)	1.051* (0.507)	0.603 (0.920)	-0.448 (0.740)	0.462 (0.930)
<b>Expected cutoff point 1</b>	-5.303*** (0.806)	-3.693*** (0.459)	-4.678*** (0.501)	-3.474*** (0.495)	-3.724*** (0.657)	-4.083*** (0.504)	-4.535*** (0.559)	-4.660*** (0.652)	-3.466*** (0.538)	-4.357*** (0.536)	-3.940*** (0.588)	-4.028*** (0.626)	-3.714*** (0.647)	-4.408*** (0.810)
<b>Expected cutoff point 2</b>	-4.041*** (0.553)	-3.030*** (0.412)	-3.359*** (0.410)	-2.629*** (0.434)	-3.154*** (0.573)	-3.176*** (0.399)	-3.830*** (0.461)	-4.247*** (0.571)	-2.469*** (0.507)	-3.441*** (0.438)	-2.819*** (0.465)	-3.319*** (0.540)	-3.302*** (0.600)	-2.877*** (0.526)
<b>Expected cutoff point 3</b>	-2.901*** (0.428)	-2.178*** (0.357)	-2.368*** (0.396)	-1.574*** (0.407)	-2.113*** (0.541)	-1.962*** (0.349)	-2.458*** (0.382)	-3.162*** (0.502)	-1.515** (0.489)	-2.321*** (0.396)	-2.281*** (0.458)	-2.433*** (0.478)	-2.178*** (0.552)	-1.751*** (0.467)
<b>Expected cutoff point 4</b>	-1.677*** (0.397)	-0.587+ (0.338)	-0.968* (0.385)	-0.327 (0.402)	-0.779 (0.511)	-0.336 (0.341)	-1.012** (0.362)	-1.696*** (0.463)	-0.158 (0.481)	-0.922* (0.391)	-0.752+ (0.451)	-0.927* (0.453)	-0.855 (0.531)	-0.606 (0.447)
<b>Expected cutoff point 5</b>	-0.480 (0.386)	0.671* (0.341)	0.304 (0.384)	0.892* (0.405)	0.488 (0.515)	1.036** (0.342)	0.222 (0.364)	-0.322 (0.461)	0.978* (0.485)	0.168 (0.393)	0.537 (0.455)	-0.219 (0.452)	0.161 (0.528)	0.807+ (0.452)
<b>Expected cutoff point 6</b>	1.161** (0.390)	2.237*** (0.373)	1.664*** (0.406)	2.149*** (0.418)	2.043*** (0.530)	2.576*** (0.357)	1.712*** (0.378)	1.226** (0.467)	2.028*** (0.514)	1.627*** (0.413)	2.274*** (0.469)	0.979* (0.458)	1.697** (0.529)	2.400*** (0.475)
<b>Age dummies</b>	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
<b>Education dummies</b>	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
<b>Observations</b>	463	453	488	476	471	517	485	492	452	463	469	495	496	461
<b>Pseudo R<sup>2</sup></b>	0.0296	0.0128	0.0116	0.0105	0.0574	0.0127	0.0138	0.0424	0.00593	0.00922	0.0452	0.0833	0.0761	0.0865

Estimated cut points of the latent variable persuasiveness is used to differentiate between assigning a score below or at the mentioned value versus above the mentioned value when values of all independent variables are evaluated at zero. Robust standard errors in parentheses. Base category for age is 18-24 years and for education is primary education. Models are estimated using equation (1). + significant at 10%; \* at 5%; \*\* at 1%; \*\*\* at 0.1%.

**Table 6**  
**Pairwise comparisons of arguments by level of persuasiveness**

Argument	1	2	3	4	5	6	7	8	9	10	11	12	13	14
	Prices are raised	Fewer suppliers	Fewer products	Cannot buy from whom they want	Secret agreement	Less new or improved products	Firms do not have to do their best	Products sell for more than it is worth	Too many firms exist	Harder for start-ups	Competing firms are at a disadvantage	Prohibited	Secret conspiracy	Deception
1: Prices are raised		>***	>***	>***	=	>***	>***	=	>***	>***	>***	<*	=	=
2: Fewer suppliers	<***		>***	>+	<***	=	<***	<***	>***	=	<***	<***	<***	<***
3: Fewer products	<***	<***		=	<***	<*	<***	<***	>***	<***	<***	<***	<***	<***
4: Cannot buy from whom they want	<***	<+	=		<***	=	<***	<***	>***	<**	<***	<***	<***	<***
5: Secret agreement	=	>***	>***	>***		>***	>***	=	>***	>***	>***	=	=	=
6: Less new or improved products	<***	=	>*	=	<***		<***	<***	>***	<**	<***	<***	<***	<***
7: Firms do not have to do their best	<***	>***	>***	>***	<***	>***		<***	>***	>+	<**	<***	<***	<***
8: Products sell for more than it is worth	=	>***	>***	>***	=	>***	>***		>***	>***	>***	<*	<+	=
9: Too many firms exist	<***	<***	<***	<***	<***	<***	<***	<***		<***	<***	<***	<***	<***
10: Harder for start-ups	<***	=	>**	>***	<***	>**	<+	<***	>***		<***	<***	<***	<***
11: Competing firms are at a disadvantage	<***	>***	>***	>***	<***	>***	>**	<***	>***	>***		<***	<***	<***
12: Prohibited	>*	>***	>***	>***	=	>***	>***	>*	>***	>***	>***		=	>+
13: Secret conspiracy	=	>***	>***	>***	=	>***	>***	>+	>***	>***	>***	=		=
14: Deception	=	>***	>***	>***	=	>***	>***	=	>***	>***	>***	<+	=	

Entries in the right-hand panel indicate whether the level of persuasiveness of the row argument is significantly lower (<), significantly higher (>), or does not differ significantly (=) from the column argument. Differences are tested using ordered logistic regressions as outlined in equation (2). + significant at 10%; \* at 5%; \*\* at 1%; \*\*\* at 0.1%.

We see that the most persuasive arguments include both emotional arguments and the argument on the prohibition of cartels. Furthermore, arguments on the disadvantages to customers are rated very differently: arguments 2, 3 and 4 are considered low on persuasiveness whereas arguments 1 and 5 are considered very persuasive. Moreover, the two arguments on advantages to cartel members are either considered very persuasive (argument 8) or the least persuasive (argument 9).<sup>17</sup> In our follow-up analysis in Section 3, we analyze how persuasive the combination of arguments are, where we drop the least persuasive arguments and provide more context with respect to what a cartel entails.

### 3. Term and argumentation

Next, we develop a text that very basically explains what a cartel is and why cartel behavior is bad. We supplement this text with different paragraphs, through which we test which arguments are most persuasive of the fact that cartel behavior is bad. We select several arguments from the first study (Section 2) for this purpose.

#### Setup of experiment

In total, the experiment has 13 conditions: a control group, a basic explanation of cartels, and conditions with the basic explanation and an additional paragraph with one of 5 different argumentation lines.<sup>18</sup> The control group is only provided a short definition of a cartel without any examples. The explanation text has a short explanation of what a cartel is and a few general examples of cartel behavior. In the argumentation conditions we add a single paragraph with a few arguments. We chose the most persuasive arguments. These argumentation focus on:

- I. *Deception*: cartel agreements made in secret, thereby consciously deceiving consumers (based on arguments 5, 13 and 14).
- II. *Overpricing*: firms in a cartel can easily raise their prices and ask more for their product/service than it is actually worth (based on arguments 1 and 8).
- III. *Conformism*: cartels are severe offenses and may lead too high fines for firms and the responsible managers (based on argument 12).

Furthermore, since a combination of arguments may be more convincing than separate arguments, we also select the arguments that were neither the most nor the least persuasive as found in the previous section.

- IV. *Hurting the economy*: cartel agreements give firms benefits such that they have to innovate less (fast), which slows down progress and eventually the Dutch economy (based on arguments 6 and 7).
- V. *Disadvantage other firms*: firms outside the cartel are set at a disadvantage (based on arguments 10 and 11).

The basic explanation condition and the argumentation conditions have two distinct versions that differ in the term used to denominate cartel behavior. First, we use the common term “cartel”. Second, we use the term “competition fraud”.<sup>19</sup> This yields a 2x7 design, as shown in Table 7. We did not run a control group with the term “competition fraud”, yielding a total of 13 different groups.<sup>20</sup> We use a between-subjects design, implying that every respondent only read one of the texts.

**Table 7**  
**Experimental design of the texts**

<b>Argumentation</b>	<b>Cartel</b>	<b>Competition fraud</b>
Control (just definition)	260	n.a.
Explanation	257	260
Deception	260	255
Overpricing	262	261
Conformism	260	263
Hurting the economy	259	257
Disadvantage other firms	258	263

Note: numbers indicate net respondents per text. N.a. means not applicable.

First, we expect, in line with earlier research on the effect of narratives on the social norm (e.g., Jones and McBeth, 2010), that adding an explanation will result in a stronger effect and, hence, respondents will be more negative in comparison with the control group. Second, we expect that adding arguments yields a stronger effect than only adding an explanation. Third, since the texts on deception, overpricing and conformism are based on the most persuasive arguments, as found in Section 2, we hypothesize that these three texts will result in the most negative attitude towards cartels.

After reading the text, respondents were asked to fill out a survey including questions regarding

- (i) Attitude towards cartels: either positive or negative, and subsequently on a scale from 1 to 5 how positive or negative;
- (ii) How immoral they perceive cartel behavior, based on 6 different items<sup>21</sup>;
- (iii) How negative they perceive the consequences to consumers<sup>22</sup>;
- (iv) How much they approve government actions towards cartels, based on 3 different items<sup>23</sup>;
- (v) Willingness to report a cartel to the authorities;
- (vi) Knowledge regarding legality of cartel behavior, based on 3 different items; and
- (vii) How convincing the text is that cartels are bad.

The full questionnaire is translated into English and can be found in Appendix C. **Translated surveys.** Below, each item is presented in such a way that, as a competition authority, higher numbers are better: a more negative attitude towards cartels, more immoral, more negative consequences, more support for government action, higher willingness to report, higher level of knowledge, and respondents are more convinced that cartels are bad.

### Results term and argumentation

The experiment was conducted by Motivaction in December 2018. A total of 3375 respondents participated and finished the survey,<sup>24</sup> of which 53% are female. In our survey 16% are primary educated, 52% secondary educated, and 32% tertiary educated. The average age of respondents was 53 years ( $\sigma=14.6$ , range between 18 and 80 years old).<sup>25</sup>

We compare several variables of interest. In order to test whether, on average, scores between groups are different, we conduct regression analyses. In particular, to test between groups  $x$  and  $y$ <sup>26</sup> we estimate the following ordered logistic regression model:

$$Y_{gr} = \gamma_0 + \gamma_1 * \text{Indicator}_g + \gamma_2 * \text{Age Category}_r + \gamma_3 * \text{Education level}_r + \gamma_4 * \text{Heard of collusion before}_r + \epsilon \quad (3)$$

where  $Y_{gr}$  is the variable of interest of group  $g \in \{x, y\}$  for respondent  $r$ , Indicator equals 1 if respondent is part of group  $x$  and 0 otherwise,  $\gamma_0$  till  $\gamma_4$  are coefficients to be estimated, and  $\epsilon$  are logistically distributed errors. Only those respondents who were part of group  $x$  or group  $y$  are included in the analysis.<sup>27</sup>

**Comparison of terms**

We start by comparing the different terminologies. We use all texts(6 different texts x 2 terminologies). Results are shown in Table 8. The first thing to note is that a slightly higher percentage of respondents has a negative attitude towards cartels when using the term “competition fraud”. On a 10-point scale we see that the term “competition fraud” leads to a significantly more negative attitude towards cartels. Furthermore, using “competition fraud” rather than “cartel” leads to a view of cartel behavior as significantly more immoral and more support for government action. Furthermore, the term “competition fraud” slightly increases the number of correctly answered questions and respondents are more convinced that cartel behavior is bad. Furthermore, there is no significant difference in the willingness to report a cartel between both terminologies. Overall, we see that the term “competition fraud” seems to be more effective than the term “cartel”.<sup>28</sup>

We observe a high level of support for governmental action towards cartel behavior with either term. This is in line with Stephan (2017) who found considerable support for monetary fines among four countries (between two thirds and three-quarter), and also support for compensation for consumers and public naming and shaming (between half and three-quarter).

**Table 8**  
**Comparisons of terms by different levels**

	<b>Cartel</b>		<b>Competition fraud</b>	<b>Scale</b>
Attitude: negative	74.6%		78.6%	
positive	8.4%		5.8%	
do not know	17.0%		15.5%	
Negative attitude	8.15 (1.91)	<*	8.30 (1.66)	1 very positive – 10 very negative
Immorality	4.71 (1.26)	<***	5.05 (1.15)	1 very moral – 7 very immoral
Consequences to consumers	5.21 (1.48)	>+	5.03 (1.59)	1 very positive – 7 very negative
Government action	5.28 (1.38)	<***	5.46 (1.24)	1 completely disagree – 7 complete agree
Willingness to report	3.47 (1.11)	=	3.46 (1.07)	1 certainly not – 5 certainly
Knowledge	1.87 (1.00)	<**	1.92 (1.03)	3 questions true/false
Convincement	5.38 (1.40)	<**	5.52 (1.29)	1 not at all convincing – 7 very convincing

Note: Differences between terms are tested using ordered logistic regressions as outlined in equation (3). + indicate a significant difference at 10%; \* at 5%; \* at 1%; \*\*\* at 0.1%. Standard deviations in parentheses.

### Comparison of argumentation

Next, we compare the different lines of argumentation. Results are presented in Table 9.

**Table 9**  
**Comparison of argumentation with control group, by different levels**

	Control	Explanation	Deception	Overpricing	Conformism	Hurting the economy	Disadvantage other firms
Attitude:							
negative	53.8%	70.0%	81.4%	81.3%	70.4%	78.9%	77.9%
positive	19.6%	9.9%	5.6%	4.0%	10.1%	6.8%	6.1%
do not know	26.5%	20.1%	13.0%	14.7%	19.5%	14.3%	15.9%
Negative attitude	7.04 (2.57)	7.91*** (2.05)	8.36*** (1.66)	8.58*** (1.46)	7.90*** (2.02)	8.27*** (1.74)	8.29*** (1.69)
Immorality	4.23 (1.28)	4.63*** (1.25)	4.91*** (1.13)	5.03*** (1.19)	4.84*** (1.25)	4.92*** (1.21)	4.99*** (1.20)
Consequences to consumers	4.96 (1.48)	4.86 (1.52)	5.27** (1.55)	5.41*** (1.51)	5.00 (1.52)	5.09 (1.57)	5.06 (1.51)
Government action	4.91 (1.48)	5.16 (1.40)	5.46*** (1.22)	5.49*** (1.30)	5.33*** (1.37)	5.39*** (1.30)	5.40*** (1.28)
Willingness to report	3.43 (1.07)	3.35 (1.14)	3.45 (1.10)	3.56 (1.05)	3.35 (1.09)	3.49 (1.07)	3.58 (1.08)
Knowledge	1.67 (1.05)	1.87* (1.00)	1.86* (0.98)	1.93** (1.05)	1.93** (1.02)	1.90** (1.01)	1.88* (1.03)

Note: Differences between text in the column and the control group are tested using ordered logistic regressions as outlined in equation (3). + significant at 10%; \* at 5%; \*\* at 1%; \*\*\* at 0.1%. Standard deviations in parentheses. Scale labels can be found in Table 8.

Comparing the control group with all texts we observe they are less often negative about cartels. This result is in line with our expectation. In fact, their average attitude towards cartels is more positive than that of the respondents who read the texts, they consider cartels to be more moral, are less in favor of government action and know less of the (il)legality of cartels. Thus, it seems that it is important to provide context in order to increase the negative attitude towards cartels. Nevertheless, it will probably not lead to more reports of cartels, as there is no significant effect of any of the arguments on willingness to report.

**Table 10**  
**Comparison of argumentation with explanation group, by different levels**

	Explanation	Deception	Overpricing	Conformism	Hurting the economy	Disadvantage other firms
Negative attitude	7.91 (2.05)	8.36*** (1.66)	8.58*** (1.46)	7.90 (2.02)	8.27*** (1.74)	8.29** (1.69)
Immorality	4.63 (1.25)	4.91*** (1.13)	5.03*** (1.19)	4.84** (1.25)	4.92*** (1.21)	4.99*** (1.20)
Consequences to consumers	4.86 (1.52)	5.27*** (1.55)	5.41*** (1.51)	5.00 (1.52)	5.09* (1.57)	5.06* (1.51)
Government action	5.16 (1.40)	5.46*** (1.22)	5.49*** (1.30)	5.33* (1.37)	5.39** (1.30)	5.40** (1.28)
Willingness to report	3.35 (1.14)	3.45 (1.10)	3.56* (1.05)	3.35 (1.09)	3.49+ (1.07)	3.58** (1.08)
Knowledge	1.87 (1.00)	1.86 (0.98)	1.93 (1.05)	1.93 (1.02)	1.90 (1.01)	1.88 (1.03)
Convincement	4.95 (1.53)	5.66*** (1.21)	5.68*** (1.25)	5.27*** (1.42)	5.59*** (1.26)	5.56*** (1.25)

Note: Differences between argumentation text in the column and the explanation group are tested using ordered logistic regressions as outlined in equation (3). + significant at 10%; \* at 5%; \*\* at 1%; \*\*\* at 0.1%. Standard deviations in parentheses. Scale labels can be found in Table 8.

We proceed in Table 10 by comparing the explanation text, with the argumentation texts. The same pattern emerges as with the control group in Table 9: their average attitude towards cartel behavior is lower than in the texts including argumentation (all differences are significant except conformism), think that cartels are less immoral, think that cartels result in less negative consequences to consumers (all differences are significant except conformism), are less in favor of government action and are less convinced that cartels are bad. Nevertheless, there is no significant difference in the average number of correctly answered questions about the (il)legality of cartels when comparing the explanation text with the argumentation texts, nor does it lead to a consistent rise in willingness to report (few differences are significant). In summary, we see that adding arguments to the explanation of cartels yields a more negative attitude toward cartels.

Combining the results of the control group and the explanation text, we see a clear indication that competition authorities should not only explain what cartels are, but also explain to the general public why cartels are bad as our texts with arguments frequently score better in most dimensions than the control group and the explanation text.

**Table 11**  
**Comparison of argumentation texts with each other, by different levels**

	Deception	Overpricing	Conformism	Hurting the economy	Disadvantage other firms
Negative attitude	8.36 (1.66)	8.58*** (1.46)	7.90*** (2.02)	8.27 (1.74)	8.29 (1.69)
Immorality	4.91 (1.13)	5.03 (1.19)	4.84+ (1.25)	4.92 (1.21)	4.99 (1.20)
Consequences to consumers	5.27+ (1.55)	5.41*** (1.51)	5.00** (1.52)	5.09 (1.57)	5.06* (1.51)
Government action	5.46 (1.22)	5.49 (1.30)	5.33 (1.37)	5.39 (1.30)	5.40 (1.28)
Willingness to report	3.45 (1.10)	3.56 (1.05)	3.35** (1.09)	3.49 (1.07)	3.58* (1.08)
Knowledge	1.86 (0.98)	1.93 (1.05)	1.93 (1.02)	1.90 (1.01)	1.88 (1.03)
Convincement	5.66* (1.21)	5.68* (1.25)	5.27*** (1.42)	5.59 (1.26)	5.56 (1.25)

Note: Differences between argumentation in the column with all other types of argumentation are tested using ordered logistic regressions as outlined in equation (3). + significant at 10%; \* at 5%; \*\* at 1%; \*\*\* at 0.1%. Standard deviations in parentheses. Scale labels can be found in Table 8.

Which brings us to comparing the argumentation texts, results are presented in Table 11. We expected the first three texts to perform better than the other two, since they are based on the most convincing arguments of the first part of our research. From the table it seems this is not the case. In fact, the argumentation of “deception” only scores significantly better than the other texts with regard to convincement and with regard to consequences. The argumentation of “overpricing” appears to perform better: it yields the highest values for all dimensions (except willingness to report), and is significantly different from the other texts for negative attitude towards cartels, consequences to consumers and convincement. The text on “conformism” even shows lower levels on the dimensions in comparison with the other texts: a lower negative attitude, immorality, consequences to consumers, willingness to report and convincement. This is especially interesting as the argument on conformism in itself was deemed one of the most persuasive arguments in the previous section, but was chosen in less than half of the instances in the DCE, and that seems to be an explanation of the lower score in the texts as well. Finally, the argumentation on “hurting the economy” shows no significant difference with the other argumentation texts; the argumentation line “disadvantage to other firms” shows a higher willingness to report, but a slightly lower level regarding consequences to consumers.

Earlier we concluded that arguments on overpricing, deception and conformism were most persuasive, while our latter findings seems at odds with this notion. However, from Table 9 and Table 10 we already concluded that all argumentation texts perform in general better than the control group and the explanation text. Hence, it is still better to use arguments to persuade people that cartels are bad. We thus conclude that competition authorities should explain what cartels are and argue why they are bad. Arguments on overpricing seem most convincing to the general public.

## 4. Conclusion

The effectiveness of the work of competition authorities partly depends on the public attitude towards cartels and the support for government action against them. As ICN (2017) argues, this effect could be harnessed if investments are made to create a stronger social norm against cartel behavior. Chong and Druckman (2007)



show that the framing of messages can affect public opinion and Walls et al. (2004) showed that this could increase firm compliance. Therefore, creating a stronger norm against cartels could influence the public attitude towards cartels and result in improved firm compliance and an increase in tip-offs by the public about potential cartels. A stronger social norm can be reached by explaining the disadvantages of cartel behavior to the general public. In this paper we examined which arguments on why cartel behavior is bad, are considered most persuasive by the general public in the Netherlands.

We investigated this in two stages. First, we investigated which arguments against cartels are most persuasive. We did this by having respondents evaluate arguments in a discrete choice experiment. The most persuasive arguments are about overpricing, consumer deception and the secrecy of cartels. Second, we selected several of these arguments and combined them into texts on cartels. We experimentally tested which term and line of argumentation were most convincing. Adding arguments explaining why cartel behavior is bad creates a more negative attitude towards cartels and increases the support for government action. More specific, the argumentation on overpricing is most convincing and yields a more negative attitude towards cartels and a higher support for government action than the other lines of argumentation. However, the arguments on deception are not more persuasive than other arguments anymore and the argument on conformism is considered less persuasive than the other arguments, but they still perform better than not using any argumentation. Furthermore, using the term “competition fraud” rather than “cartel” yields a more negative attitude and is more convincing to respondents. In both parts of our research we observe no qualitative difference in results by gender, although, on average, men show a more negative attitude towards cartel behavior than women.

Based on our findings we argue that, to be more effective, competition authorities should use the term “competition fraud” when talking about cartels. Additionally, competition authorities can improve their communication by explaining why cartels are bad using arguments that they lead to an increase in price. In the Netherlands, the ACM now incorporates the term “concurrentievervalsing” and the most convincing arguments in press releases.

Our research focuses on cartels, but in Dijkstra and Van Stekelenburg (2021) we found that insider trading and accounting fraud are considered similarly serious offenses as cartels. Based on our findings from the current study we recommend that authorities concerned with fraud look into reframing their message as well. Our research shows that this relatively simple change could improve oversight effectiveness. In general, we conclude that it matters how government communicates with the public: we find a message frame may affect the social norm, firm compliance and support for government action in a specific field of oversight.

A limitation of our research is that it is only tested in the Netherlands and specifically in the Dutch language. The effects could be different in other languages and cultures, and would be an interesting strand of further research.

Furthermore, arguments on overpricing, which were shown to be most convincing, do not apply to all types of cartels: it will be interesting to test the different arguments in different types of cartels, like price fixing, market sharing or tender allocation. Moreover, people’s attitude towards cartels might also be influenced by the sector of the cartel: e.g., construction cartels could be considered worse than cartels in health care. Thereby, the convincement of arguments might also differ.

In this paper we focused on the opinion of consumers. It is also interesting to see how one could affect the opinion regarding collusion of business executives. In that line of research it is also interesting to see what determines whether firms engage in collusive conduct, which we explore in another paper (Van Stekelenburg et al., 2021).

## Notes

1. McGowan (2005) argues that it is mandatory to have an authority policing the marketplace and enforcing competition rules in order to reap the advantages of competition.
2. Oxera (2009) perform a sensitivity analysis on this dataset, and find a median overcharge in price-fixing cartels of 18% where most overcharges are between 10% and 20%.
3. Before a competition authority could convict firms for their cartel agreement, they need to perform a thorough investigation of the industry. Such an investigation might take several years (Brenner, 2009).

Hence, it is important that competition authorities screen in which industries their cartel investigations could lead to the detection of a cartel. Such a screening can be done based on evidence submitted by firms revealing their own cartel conduct: firms could do this under the leniency program, where they might receive a fine reduction or even fine immunity. Given the recent decrease in the number of leniency applications in the Netherlands (Dijkstra and Frisch, 2018) it becomes more important to rely on other sources to detect cartels. Another method of screening is based on signals from whistleblowers (e.g. the public, competitors or (former) employees) about their suspicion of firms' wrongdoing (Hüschelrath, 2010). Finally, screening can be done after information sharing between competition authorities (McGowan, 2005): in the EU there is a decentralized system of national competition authorities for the 'smaller' and national cases, and the centralized Directorate-General Competition that assesses the 'larger' and supranational cases. All European competition authorities cooperate within the European Competition Network (ECN). This network also led to a common culture regarding competition policy (Blauberger and Rittberger, 2015) and harmonizes the approach towards cartels.

4. This is not only the case in the Netherlands but in many European countries (Outhuijse, 2019, chapter 4). In fact, Outhuijse (2019) argues that there are frequent appeals to cartel decisions because the cost-benefit analysis shows that it pays to try to get the cartel fine reduced by court.
5. Around two thirds of respondents in Stephan's (2017) study consider price fixing as bad behavior. In the UK and Germany this was almost 75%.
6. An example is provided by Cavalcante (2021) who argues that narratives could "play a central role in shaping public policies". This is illustrated via the national Brazilian bank that changed their work's narrative, which led to a budget raise from the government. From a theoretical perspective, Schinkel, Tóth and Tuinstra (2020) show, if the board is also concerned with the authority's public image, that the public could influence what type of cases an authority engages in.
7. In this respect Van Stekelenburg et al. (2021) is also relevant, as they show that firm compliance is more affected by norms and the social cohesion within the sector than economic determinants.
8. For an overview of DCE research see Amaya-Amaya et al. (2008).
9. The survey is translated into English and can be found in Appendix C.1.
10. Distribution across education is independent from gender, but age categories are not distributed independently from gender: there appears to be an underrepresentation of male respondents aged 18-34 year and overrepresentation of male respondents aged 35-54 years.
11. As indicated by a regression controlled for background characteristics age, education and knowledge of prohibition the difference.
12. We reversed the scale in comparison to the actual question, see Appendix C.1.
13. As indicated by a regression controlled for background characteristics age, education, attitude before, and knowledge of prohibition the difference.
14. Differences are significant at 0.1% based on regressions controlled for background characteristics age and education. Group "do not know" was excluded from the analyses.
15. When comparing the group that had a negative attitude towards cartels before the arguments with the group that had a positive attitude towards cartels before the arguments, we see that also arguments 4 and 12 are considered more persuasive by the group with a negative attitude.
16. Only 9 coefficients of these dummies turn out to be significant, but most are only significant at 10%. The dummies significant at 5% or less are for arguments 13 (cartels are a secret conspiracy) and 14 (cartels are deceptive) for respondents aged 65-80.
17. We also examined whether there are differences in persuasiveness by gender. Results are included in Appendix A.
18. We frame the control group and treatments in a neutral way, i.e. we avoid terms with possible negative connotations like price fixing (as e.g. Stephan, 2008, 2017, does), for a few reasons. First, we do not want to focus on respondents' familiarity with terminology, but rather investigate what reasons people could have against cartel behavior. Second, price fixing is just one type of cartel conduct, (terminology of) other types of cartel behavior are less known and, hence, the (un)associated negative connotations would affect the results.

19. This is a literal translation of the Dutch word “concurrentievervalsing”, or “vervalsing van de mededinging” in Article 6 of the Dutch competition law, see <https://wetten.overheid.nl/jci1.3:c:BWBR0008691&hoofdstuk=3&paragraaf=1&artikel=6&z=2019-01-01&g=2019-01-01>. There is no satisfying English translation. The connotation of the Dutch word lies somewhere between the English words competition fraud and the more formal competition distortion.
20. The full texts are translated into English and can be found in Appendix D. **Translated texts.**
21. We only include those respondents who filled out at least 3 of the 6 items.
22. We reversed the scale in comparison to the actual question, see Appendix C.2.
23. We only include those respondents who filled out at least 2 of the 3 items.
24. See Table 7 for the number of respondents per text.
25. Education and gender are not independently distributed: there appears to be overrepresentation of male tertiary-educated respondents. Also age categories are not distributed independently from gender (neither in exact age nor in age categories): women are on average (50.2 years,  $\sigma=15.1$ ) younger than men (56.1 years,  $\sigma=13.4$ ) in our sample, and in particular in the age category 18-34 years there appears to be underrepresentation of male respondents and in the age category 65-80 years there appears to be overrepresentation of male respondents.
26. To compare the use of different terminologies the groups are defined as texts using “cartel” versus texts using “competition fraud”. To compare different types of argumentation, we compare the type of argumentation with the average score over all other texts with argumentation. Finally, we compare the control group with the average level of all texts.
27. We also explored whether there is a difference in scores between terms and texts by gender. This can be found in Appendix B.
28. We also examined whether there are differences between men and women regarding their perception of cartel behavior. Results are included in Appendix B.
29. This difference is significant at 10% as indicated by a regression controlled for background characteristics age, education, and knowledge of prohibition the difference.

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## Appendix

### Appendix A. Comparison of persuasiveness by gender

In this section we compare the results by gender in more detail. Table A.1 shows the attitudes regarding cartels before and after the experiment: women are less often negative towards cartels than men, both before and after the experiment. This result is in line with our companion paper (Dijkstra and Van Stekelenburg, 2021) in the Netherlands, Stephan (2008) in the UK and Combe and Monnier-Schlumberger (2019) in France. Women, on average, also have a less negative attitude towards cartels than men. Before the exposure to the arguments women average an attitude towards cartel behavior of 6.80 whereas men average of 8.05.<sup>i</sup> Both men (8.51) and women (8.07) show a more negative attitude towards cartel behavior after respondents read the arguments.<sup>ii</sup> As we can see the gap between men and women is much smaller after the exposure to the arguments, not to mention statistically insignificant.<sup>iii</sup>

**Table A.1.**  
Attitude towards cartel behavior before and after respondents read the arguments, by gender

Attitude before	Attitude after	Men	Women
Negative	Negative	75.1%	45.0%
Negative	Positive	1.6%	0.7%
Negative	Do not know	1.1%	0.7%
Positive	Negative	6.1%	12.9%
Positive	Positive	3.4%	5.2%
Positive	Do not know	2.2%	3.9%
Do not know	Negative	5.7%	17.5%
Do not know	Positive	0.2%	0.4%
Do not know	Do not know	4.7%	13.8%

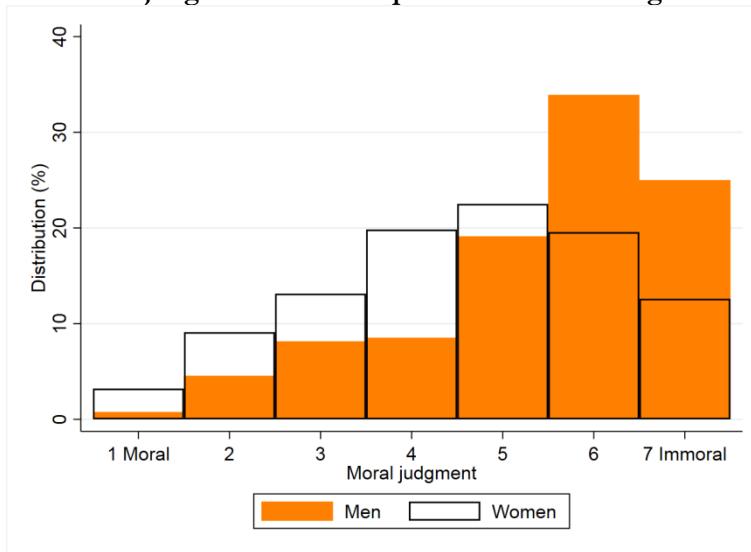
Regarding how certain respondents are about the prohibition of cartels, we clearly see in Table A.2 that men are more often certain that cartels are prohibited while women more often reply that they do not know whether cartel behavior is allowed.<sup>iv</sup> In Table 3, we already saw that the most important harmed party women think of, compared to men, is more often the Dutch economy, less often consumers and slightly less often cartel's competitors.

Next, we consider the level of moral judgement. We show the distribution of moral judgment by gender before the exposure to the arguments in Figure A.1 and after respondents read the arguments in Figure A.2. We see that before respondents read the arguments, the distribution is left skewed for men but for women it is much more normally distributed. After the exposure to the arguments both distributions are left skewed. Men's moral judgment of cartels goes from 5.43 to 5.78 after being exposed to the arguments, whereas women's judgement goes from 4.61 to 5.31, indicating a more negative judgement of cartel behavior for both groups. Both increases are significant at 0.1%<sup>v</sup>, and the difference in moral judgment between gender are significant at 0.1% both before respondents read the arguments as well as after they read the arguments.<sup>vi</sup>

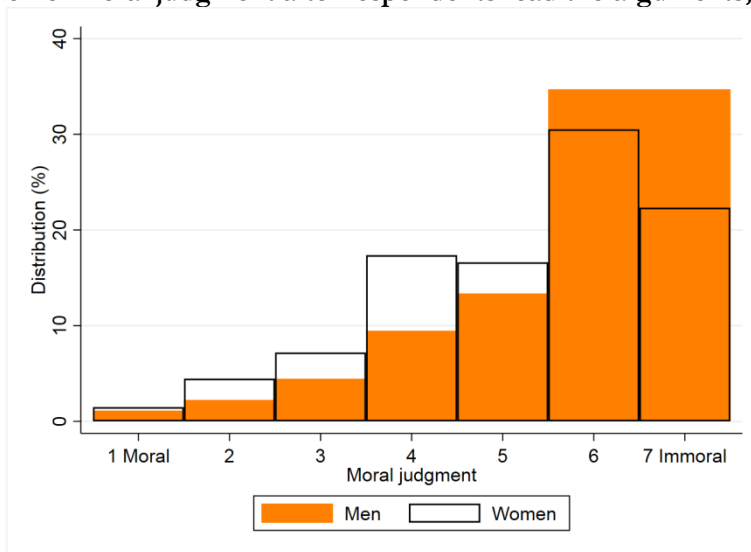
**Table A.2.**  
**Distribution of whether cartels are considered to be allowed, by gender**

Cartels are...	Men	Women
Certainly prohibited	56.5%	22.3%
Probably prohibited	26.5%	31.7%
Probably allowed	9.1%	22.3%
Certainly allowed	2.0%	2.2%
Do not know	5.9%	21.6%

**Figure A.1.**  
**Distribution of moral judgment before respondents read the arguments, by gender**



**Figure A.2.**  
**Distribution of moral judgment after respondents read the arguments, by gender**



Finally, we test whether some of the arguments are considered more persuasive by women than by men. In Table A.3, we observe that this is the case for most arguments. Arguments 10 (harder for start-ups) and 14 (deception) show the largest and highest significant effects for women. Comparing the average scores with those in Table 6, we observe that women consider the most persuasive arguments (1, 5, 8, 12, 13 and 14), *ceteris paribus*, to be more persuasive than men do (although the difference is not significant for arguments 12 on prohibition and 13 on secrecy). This might be due to the fact that women are, on average, less negative about cartel behavior before exposure to the arguments than men. Hence, it could be that women are less likely to have considered these arguments when spontaneously judging whether cartels. Note that we do not present the results on all background variables as they are qualitatively the same as in Table 5.

This raises the question whether the pairwise-comparison order of arguments is different between men and women. However, both genders' ranking of the arguments' persuasiveness is qualitatively the same. Results are provided in Tables A.4 and A.5. Therefore, there is no need to augment the list of arguments we focus on in our examination of the most persuasive term and argumentation in texts, in Section 3.

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<sup>i</sup> This difference is significant at 10% as indicated by a regression controlled for background characteristics age, education, and knowledge of prohibition the difference.

<sup>ii</sup> For men the difference is significant at 0.1% as indicated by a regression controlled for background characteristics age, education, and knowledge of prohibition the difference. For women the difference is significant at 5% as indicated by a regression with background characteristics.

<sup>iii</sup> This difference in attitude between men and women after the DCE is insignificant when controlling for background characteristics age, education, and knowledge of prohibition.

<sup>iv</sup> Both differences are significant at 0.1% according to regressions with background characteristics age and education level.

<sup>v</sup> The regression with background characteristics age, education level, attitude before and knowledge of prohibition is significant at 0.1% for men but at 5% for women.

<sup>vi</sup> In all cases only respondents who answered the question on morality before and after the DCE are included. Significance tests are based on a regression with background characteristics age, education level, attitude before and knowledge of prohibition.



Table A.3.

Ordered logistic regression results of the explanation of persuasiveness per argument to test for difference in gender

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
	Prices are raised	Fewer suppliers	Fewer products	Cannot buy from whom they want	Secret agreement	Less new or improved products	Firms do not have to do their best	Products sell for more than it is worth	Too many firms exist	Harder for startups	Competing firms are at a disadvantage	Prohibited	Secret conspiracy	Deception
<b>female</b>	0.422*	0.377+	0.246	0.423*	0.508*	0.325+	0.293+	0.419*	0.472**	0.653***	0.134	0.141	0.183	0.641***
	(0.193)	(0.200)	(0.188)	(0.192)	(0.207)	(0.184)	(0.171)	(0.195)	(0.179)	(0.177)	(0.175)	(0.186)	(0.185)	(0.194)
<b>Attitude before</b>	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
<b>Knowledge of prohibition</b>	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
<b>Age dummies</b>	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
<b>Education dummies</b>	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
<b>Observations</b>	463	453	488	476	471	517	485	492	452	463	469	495	496	461
<b>Pseudo R<sup>2</sup></b>	0.0333	0.0154	0.0127	0.0137	0.0623	0.0148	0.0156	0.0460	0.00987	0.0174	0.0456	0.0837	0.0768	0.0947

Robust standard errors in parentheses. Base category for attitude before is “do not know”, for knowledge of prohibition it is “do not know” whether cartels are prohibited or allowed, age is 18-24 years and for education it is primary education. Model estimates are based on equation (1). + significant at 10%; \* at 5%; \*\* at 1%; \*\*\* at 0.1%.

Table A.4.

## Pairwise comparisons of arguments by level of persuasiveness for men

Argument	1	2	3	4	5	6	7	8	9	10	11	12	13	14
	Prices are raised	Fewer suppliers	Fewer products	Cannot buy from whom they want	Secret agreement	Less new or improved products	Firms do not have to do their best	Products sell for more than it is worth	Too many firms exist	Harder for start-ups	Competing firms are at a disadvantage	Prohibited	Secret conspiracy	Deception
1: Prices are raised		>***	>***	>***	=	>***	>***	=	>***	>***	>+	<***	<**	=
2: Fewer suppliers	<***		>**	=	<***	=	<**	<***	>***	=	<***	<***	<***	<***
3: Fewer products	<***	<**		=	<***	=	<***	<***	>***	<*	<***	<***	<***	<***
4: Cannot buy from whom they want	<***	=	=		<***	=	<***	<***	>***	=	<***	<***	<***	<***
5: Secret agreement	=	>***	>***	>***		>***	>***	=	>***	>***	>**	<*	=	=
6: Less new or improved products	<***	=	=	=	<***		<***	<***	>***	=	<***	<***	<***	<***
7: Firms do not have to do their best	<***	>**	>***	>***	<***	>***		<***	>***	>*	<***	<***	<***	<***
8: Products sell for more than it is worth	=	>***	>***	>***	=	>***	>***		>***	>***	>+	<**	<*	=
9: Too many firms exist	<***	<***	<***	<***	<***	<***	<***	<***		<***	<***	<***	<***	<***
10: Harder for start-ups	<***	=	>*	=	<***	=	<*	<***	>***		<***	<***	<***	<***
11: Competing firms are at a disadvantage	<+	>***	>***	>***	<**	>***	>***	<+	>***	>***		<***	<***	<**
12: Prohibited	>***	>***	>***	>***	>*	>***	>***	>**	>***	>***	>***		=	>*
13: Secret conspiracy	>**	>***	>***	>***	=	>***	>***	>*	>***	>***	>***	=		=
14: Deception	=	>***	>***	>***	=	>***	>***	=	>***	>***	>**	<*	=	

Entries in the right-hand panel indicate whether the level of persuasiveness of the row argument is significantly lower (<), significantly higher (>), or does not differ significantly (=) from the column argument. Differences are tested using ordered logistic regressions as based on equation (2). + significant at 10%; \* at 5%; \*\* at 1%; \*\*\* at 0.1%.

Table A.5.

Pairwise comparisons of arguments by level of persuasiveness for women

Argument	1	2	3	4	5	6	7	8	9	10	11	12	13	14
	Prices are raised	Fewer suppliers	Fewer products	Cannot buy from whom they want	Secret agreement	Less new or improved products	Firms do not have to do their best	Products sell for more than it is worth	Too many firms exist	Harder for start-ups	Competing firms are at a disadvantage	Prohibited	Secret conspiracy	Deception
1: Prices are raised		>***	>***	>***	=	>***	>***	=	>***	>***	>***	=	=	=
2: Fewer suppliers	<***		>*	=	<***	=	=	<***	>***	=	<*	<***	<***	<***
3: Fewer products	<***	<*		=	<***	=	<***	<***	>*	<***	<***	<***	<***	<***
4: Cannot buy from whom they want	<***	=	=		<***	=	<***	<***	>***	<***	<***	<***	<***	<***
5: Secret agreement	=	>***	>***	>***		>***	>***	=	>***	>***	>***	=	=	=
6: Less new or improved products	<***	=	=	=	<***		<***	<***	>***	<***	<***	<***	<***	<***
7: Firms do not have to do their best	<***	=	>***	>***	<***	>***		<***	>***	=	=	<***	<***	<***
8: Products sell for more than it is worth	=	>***	>***	>***	=	>***	>***		>***	>***	>***	=	=	=
9: Too many firms exist	<***	<***	<*	<***	<***	<***	<***	<***		<***	<***	<***	<***	<***
10: Harder for start-ups	<***	=	>***	>***	<***	>***	=	<***	>***		=	<***	<***	<***
11: Competing firms are at a disadvantage	<***	>*	>***	>***	<***	>***	=	<***	>***	=		<***	<***	<***
12: Prohibited	=	>***	>***	>***	=	>***	>***	=	>***	>***	>***		=	=
13: Secret conspiracy	=	>***	>***	>***	=	>***	>***	=	>***	>***	>***		=	=
14: Deception	=	>***	>***	>***	=	>***	>***	=	>***	>***	>***		=	=

Entries in the right-hand panel indicate whether the level of persuasiveness of the row argument is significantly lower (<), significantly higher (>), or does not differ significantly (=) from the column argument. Differences are tested using ordered logistic regressions as based on equation (2). + significant at 10%; \* at 5%; \*\* at 1%; \*\*\* at 0.1%.

## Appendix B. Comparison of texts by gender

In the analyses of terms and argumentation we did not include gender as a possible background variable in the comparison. This is because there appears to be a significant difference between men and women regarding their perception of cartel behavior. We tested for differences in their opinion via the following ordered logistic regression model:

$$Y = \gamma_0 + \gamma_1 * \text{Female} + \gamma_2 * \text{Age Category} + \gamma_3 * \text{Education level} + \gamma_4 * \text{Heard of collusion before} + \varepsilon \quad (\text{B.1})$$

where Y is the variable of interest, Female equals 1 if the respondent is female and 0 otherwise,  $\gamma_0$  till  $\gamma_4$  are coefficients to be estimated, and  $\varepsilon$  are logistically distributed errors.

Results overall and by term are shown in Table B.1. If a difference in values by gender is significant, male respondents have a higher average than female respondents on that item. On average, men tend to find cartels more immoral, have higher support for government action, and show a higher willingness to support. Overall and for term “competition fraud” men show a more negative attitude towards cartels, and the number of correctly answered questions is higher for men overall and for term “cartel”. Interestingly, men and women indicate the same level of how convinced they are after reading the text regarding that cartels are bad.

The results are in line with our results on the different arguments, where men, on average, also showed more negative attitude towards cartels and found cartels to be more immoral. As indicated there, these results are also in line with our companion paper (Dijkstra and Van Stekelenburg, 2021) in the Netherlands, Stephan (2008) in the UK and Combe and Monnier-Schlumberger (2019) in France, which all found that women consider cartel behavior to be less problematic than men do.

**Table B.1**  
Comparison of different levels, by gender

	All			Cartel			Competition fraud		
	Men		Women	Men		Women	Men		Women
Negative attitude	8.47 (1.74)	>***	7.80 (1.96)	8.47 (1.74)	>**	7.79 (2.04)	8.58 (1.63)	>***	8.02 (1.63)
Immorality	5.05 (1.25)	>***	4.63 (1.18)	4.95 (1.29)	>***	4.48 (1.17)	5.23 (1.19)	>**	4.89 (1.08)
Consequences to consumers	5.27 (1.56)	=	4.95 (1.50)	5.37 (1.49)	=	5.04 (1.46)	5.19 (1.63)	=	4.89 (1.54)
Government action	5.58 (1.30)	>***	5.11 (1.33)	5.51 (1.37)	>**	5.05 (1.36)	5.69 (1.20)	>***	5.25 (1.24)
Willingness to report	3.60 (1.10)	>**	3.32 (1.05)	3.61 (1.11)	>+	3.30 (1.09)	3.60 (1.09)	>**	3.32 (1.03)
Knowledge	2.07 (0.97)	>*	1.71 (1.04)	2.06 (0.95)	>+	1.69 (1.02)	2.11 (0.97)	=	1.76 (1.05)
Convincement	5.52 (1.33)	=	5.39 (1.37)	5.46 (1.38)	=	5.31 (1.41)	5.59 (1.27)	=	5.47 (1.32)

Entries in the middle column indicate whether the mean value of male respondents is significantly lower (<), significantly higher (>), or does not differ significantly (=) from the mean value of female respondents. Differences between texts are tested using ordered logistic regressions as outlined in equation (B.1). + significant at 10%; \* at 5%; \*\* at 1%; \*\*\* at 0.1%. Standard deviations in parentheses. Scale labels can be found in Table 8.

## Appendix C. Translated surveys

In this part of the appendix we provide the translated surveys.

### 1 Survey “Arguments”

In this study, we would like to ask you a number of questions about cartel agreements.

#### *What are cartel agreements?*

Cartel agreements are agreements between firms that sell the same product or offer the same service. These firms agree not to compete with each other. For example, they might agree that they will give their customers the same price for their product (or service). They might also agree on which firm sells to which customer or in which area, so they do not have to compete there with each other.

1. Before this study, had you ever heard about cartel agreements?
    - No, I had never heard of them
    - Yes, but I wasn't sure about what cartel agreements exactly were
    - Yes, and I knew a bit about what cartel agreements were
    - Yes, and I knew well what cartel agreements were
- 

2. Do you feel positive or negative about cartel agreements?
  - Negative
  - Positive
  - Don't know / no opinion

#### *If negative*

- 2a. To what extent do you feel negative about cartel agreements?
  - Not so negative
  - A little negative
  - Pretty negative
  - Very negative
  - Extremely negative

#### *If positive*

- 2b. To what extent do you feel positive about cartel agreements?
    - Not so positive
    - A little positive
    - Pretty positive
    - Very positive
    - Extremely positive
- 

3. To what extent do you think it is good behavior or bad behavior of firms when they make cartel agreements?
    - 1 Extremely bad behavior | | 7 Extremely good behavior
    - Don't know / no opinion
- 

4. Which statement applies to you?
  - I am sure that cartels are prohibited
  - I think that cartels are prohibited

- I think that cartels are allowed
  - I am sure that cartels are allowed
  - Don't know
- 

Cartel agreements between firms might reduce competition. This have several consequences for, for example:

- The firms that make the agreements
- Other firms that sell the same product or service
- Firms that are customers of the firms that make agreements
- Consumers
- The Dutch economy
- The products that are made

In the following questions, we will at each time show you two reasons that indicate why cartel agreements are bad. Please indicate which of these two personally convinces you the most that cartel agreements are bad?

---

5. We will now successively show you sets of two different reasons why cartels are bad. Please indicate which of the two reasons personally convinces you the most that cartel agreements are bad?

*<Show 14 sets of 2 arguments per screen. Arguments are randomly selected. Order of sets are random.>*

---

Next, we will again show you 7 of the reasons why cartel agreements are bad. Please indicate for each reason to what extent it convinces you personally that cartel agreements are bad?

---

6. Please indicate to what extent it convinces you personally that cartel agreements are bad?

*<Randomly select 7 arguments.>*

- 1 Not convincing at all | | 7 Very convincing
  - I don't understand this argument very well / I don't know
- 

7. You indicated that the following reason does not convince you that cartel agreements are bad. Could you explain why?

*<Open answer box>*

- Don't know

*<Randomly select one of the arguments that were rated 1 or 2 in question 6.>*

---

8. Cartel agreements between firms can have negative consequences for various parties. Which of the following negative consequences is most important for your opinion on cartel agreements?

- The negative impact to other firms that sell the same product or service
- The negative impact to firms that are customers of the firms that make the agreements
- The negative impact to consumers
- The negative impact to the Dutch economy
- All equally important
- Don't know / no opinion

9. Do you feel positive or negative about cartel agreements?

- Negative
- Positive
- Don't know / no opinion

*If negative*

9a. To what extent do you feel negative about cartel agreements?

- Not so negative
- A little negative
- Pretty negative
- Very negative
- Extremely negative

10a. Can you explain why you feel cartel agreements are *<insert answer 9a>*?

*<Open answer box>*

- Don't know

*If positive*

9b. To what extent do you feel positive about cartel agreements?

- Not so positive
- A little positive
- Pretty positive
- Very positive
- Extremely positive

10b. Can you explain why you feel cartel agreements are *<insert answer 9b>*?

*<Open answer box>*

- Don't know
- 

11. To what extent do you think it is good behavior or bad behavior of firms when they make cartel agreements?

- 1 Extremely bad behavior | | 7 Extremely good behavior
- Don't know / no opinion

## 2 Survey "Texts"

Questionnaire:

*<Control group:>* Before we start the questionnaire, we would like to ask you to attentively read the text below. Cartel agreements are agreements between firms that sell the same product or offer the same service. These firms agree not to compete with each other and thus form a cartel.

*<Treatment groups:>* We start this study with a text on the next screen. We would like to ask you to completely and attentively read this text, and to only start the questionnaire afterwards. A number of questions in the questionnaire are about this text.

Before we start the questionnaire, we would like to ask you to read the text below completely and carefully. A number of questions in the questionnaire are about this text.

*<Show text>*

1. Have you ever heard about cartel agreements / competition fraud?
  - No, I had never heard of them/it
  - Yes, but I did not yet know exactly what cartel agreements were / competition fraud was
  - Yes, and I somewhat knew what cartel agreements are / competition fraud is
  - Yes, and I knew well what cartel agreements are / competition fraud is
2. Do you feel positive or negative about cartel agreements / competition fraud?
  - Negative
  - Positive
  - Do not know / no opinion

*If negative*

- 2a. To what extent do you feel negative towards cartel agreements / competition fraud?
  - Not so negative
  - A little negative
  - Fairly negative
  - Very negative
  - Extremely negative

*If positive*

- 2b. To what extent do you feel positive towards cartel agreements / competition fraud?
  - Not so positive
  - A little positive
  - Fairly positive
  - Very positive
  - Extremely positive
3. To what extent do you agree or disagree with the following statements?
  - Someone who makes cartel agreements / commits competition fraud is a bad person
  - Firms that make cartel agreements / commit competition fraud are bad firms
  - Making cartel agreements / Competition fraud is bad behavior
  - You cannot blame someone for making cartel agreements / if they commit competition fraud
  - You cannot blame firms for making cartel agreements / if they commit competition fraud
  - If I were in charge of a firm, I might make cartel agreements / commit competition fraud myself
  - 1 Disagree entirely || 7 Agree entirely
  - Do not know / no opinion

4. In your opinion, to what extent do cartel agreements have / do competition fraud have positive or negative consequences for:
  - Consumers
  - Other firms ( which are not in the cartel) / ( which do not commit competition fraud)
  - The Dutch economy
  - 1 Extremely negative consequences || 7 Extremely positive consequences
  - Do not know / no opinion

5. To what extent do you agree or disagree with the following statements?



- The government should devote a lot of attention to detecting cartels / firms that commit competition fraud
  - Firms that make cartel agreements / commit competition fraud must be severely punished
  - It is right that cartel agreements are / competition fraud is prohibited
- 1 Disagree entirely || 7 Agree entirely
- Do not know / no opinion

6. In the Netherlands, the Authority for Consumers & Markets (ACM) supervises that firms do not enter into cartel agreements / do not commit competition fraud.

Suppose you find out that the firm you work for makes cartel agreements / commits competition fraud.

Would you report this to the ACM?

- Certainly not
- Probably not
- Perhaps
- Probably
- Certainly
- I do not know

7. According to you, are the following statements true or false?

- A cartel / Competition fraud is an agreement between firms not to compete with each other
  - Firms that compete with each other may discuss product prices with each other
  - Firms that compete with each other are allowed to divide up orders of customers among themselves
- Not true
- True
- Do not know

*<Following questions only for treatment groups>*

8. Below is the text you read prior to this study. We would like to ask you to read the text again.

*<Show text>*

9. To what extent does the text convince you that cartel agreements are bad / competition fraud is bad?

- 1 Not convincing at all || 7 Very convincing
- Do not know / no opinion

10. To what extent is it clear to you what a cartel / competition fraud is after reading the text?

- 1 Not clear at all || 7 Very clear

11. To what extent do you find this text interesting?

- 1 Not interesting at all || 7 Very interesting
- Do not know / no opinion

12. Below you will find a part of the text. Which passages (e.g. sentences or words) convince you the most that cartel agreements are bad / competition fraud is bad?

*Mark the parts of the text that you find convincing in green and the parts that do not convince in red.*

13. Did you have any questions after reading the text?

- No

- Yes, namely: ...

## Appendix D. Translated texts

### 1 Control

Cartel agreements are agreements between businesses that sell the same product or offer the same service. These businesses agree not to compete with each other and in doing so form a cartel together.

### 2 Explanation (cartels)

Businesses that offer the same products or the same services compete with each other for customers. That's why most businesses do their best to be as appealing as possible. They can attract customers for example by offering lower prices or higher quality than their competitors. However, some businesses agree not to compete with each other. These businesses form a cartel.

There are several ways to form a cartel. Businesses can fix prices for example. Price-fixing means a mutual agreement about the level of prices for customers. Another type of agreement is market division. In this case businesses jointly decide who may sell to which customers or in which area. Price fixing and market sharing are just a few examples of cartel agreements.

### 3 Explanation (competition fraud)

Businesses that offer the same products or the same services compete with each other for customers. That's why most businesses do their best to be as appealing as possible. They can attract customers for example by offering lower prices or higher quality than their competitors. However, some businesses agree not to compete with each other. These businesses commit competition fraud.

There are several ways to commit competition fraud. Businesses can fix prices for example. Price-fixing means a mutual agreement about the level of prices for customers. Another type of agreement is market division. In this case businesses jointly decide who may sell to which customers or in which area. Price fixing and market sharing are just a few examples of competition fraud.

### 4 Deception (cartels)

Cartel agreements are prohibited because businesses in a cartel do not have to do their best to deliver a good product for a fair price.

Cartels are bad for consumers. Due to cartel agreements, businesses can casually increase their prices. After all, they don't have to worry about their competitors. In addition, cartels are formed in secret. The businesses hide their mutual agreements about prices and customers. Businesses in a cartel do not want their customers to know that they are overpaying. In this way, consumers are deliberately misled.

### 5 Deception (competition fraud)

Competition fraud is prohibited because it ensures that businesses do not have to do their best to deliver a good product for a fair price.

Competition fraud is bad for consumers. Due to competition fraud, businesses can casually increase their prices. After all, they don't have to worry about their competitors. In addition, competition fraud is committed in secret. The businesses hide their mutual agreements about prices and customers. Businesses who commit competition fraud do not want their customers to know that they are overpaying. In this way, consumers are deliberately misled.

#### 6 Overpricing (cartels)

Cartel agreements are prohibited because businesses in a cartel do not have to do their best to deliver a good product for a low price.

Cartels are bad for consumers. Due to cartel agreements, businesses can sell their product or service for more than its actual worth. That's because businesses in the cartel can easily, jointly raise their prices. They don't have to worry about a customer going to a cheaper competitor, because they've set their prices together. Ultimately, consumers are the victims of the cartel. They overpay without knowing it.

#### 7 Overpricing (competition fraud)

Competition fraud is prohibited because it ensures that businesses do not have to do their best to deliver a good product for a low price.

Competition fraud is bad for consumers. Due to competition fraud, businesses can sell their product or service for more than its actual worth. That's because businesses that commit competition fraud can easily, jointly raise their prices. They don't have to worry about a customer going to a cheaper competitor, because they've set their prices together. Ultimately, consumers are the victims of competition fraud. They overpay without knowing it.

#### 8 Conformism (cartels)

Cartel agreements are prohibited by law in the Netherlands because businesses in a cartel do not have to do their best to deliver a good product for a fair price.

In the Netherlands, the Authority for Consumers & Markets (ACM) supervises the cartel prohibition. This means that the ACM detects and investigates cartels. An investigation could lead to the ACM carrying out a dawn raid at the suspicious businesses. If it turns out that the businesses have indeed made cartel agreements, the ACM may impose a fine. Fines for companies can amount to millions of euros. Responsible managers can also receive a personal fine. After all, cartels are a serious offense.

#### 9 Conformism (competition fraud)

Competition fraud is prohibited by law in the Netherlands because it ensures that businesses do not have to do their best to deliver a good product for a fair price.

In the Netherlands, the Authority for Consumers & Markets (ACM) supervises the prohibition of competition fraud. This means that the ACM detects and investigates competition fraud. An investigation could lead to the ACM carrying out a dawn raid at the suspicious businesses. If it turns out that the businesses have indeed committed competition fraud, the ACM may impose a fine. Fines for companies can amount to millions of euros. Responsible managers can also receive a personal fine. After all, competition fraud is a serious offense.

#### 10 Hurting the economy (cartels)

Cartel agreements are prohibited because businesses in a cartel do not have to do their best to deliver a good product for the best possible price.

Cartels are bad for the economy. Due to cartel agreements, businesses can casually increase their prices. Businesses in a cartel don't have to worry about their competitors being cheaper or offering better products. Because of this it is not necessary for these businesses to work smarter or better. Their prices keep rising and they are less likely to develop new or better products. In this way cartels slow down progress and harm the Dutch economy.

#### 11 Hurting the economy (competition fraud)

Competition fraud is prohibited because it ensures that businesses do not have to do their best to provide a good product at the best possible price.

Competition fraud is bad for the economy. Due to competition fraud, businesses can casually increase their prices. Businesses that commit competition fraud don't have to worry about their competitors being cheaper or offering better products. Because of this it is not necessary for these businesses to work smarter or better. Their prices keep rising and they are less likely to develop new or better products. In this way competition fraud slows down progress and harms the Dutch economy.

#### 12 Disadvantage to other firms (cartels)

Cartel agreements are prohibited because businesses in a cartel do not have to do their best to deliver a good product for a low price.

Cartel agreements are bad for honest businesses that do compete. Due to cartels, honest businesses incur more costs. That's because cartels lead to higher prices. The honest businesses then pay too much for the products they need for their business. Cartels also want to avoid having to compete with other businesses. They try to stop starting entrepreneurs or try to hinder competitors outside the cartel. In this way cartels harm honest companies with high prices and exclusion.

#### 13 Disadvantage to other firms (cartels)

Cartel agreements are prohibited because businesses in a cartel do not have to do their best to deliver a good product for a low price.

Cartel agreements are bad for honest businesses that do compete. Due to cartels, honest businesses incur more costs. That's because cartels lead to higher prices. The honest businesses then pay too much for the products they need for their business. Cartels also want to avoid having to compete with other businesses. They try to stop starting entrepreneurs or try to hinder competitors outside the cartel. In this way cartels harm honest companies with high prices and exclusion.