

# Anatomy of Cartel Contracts

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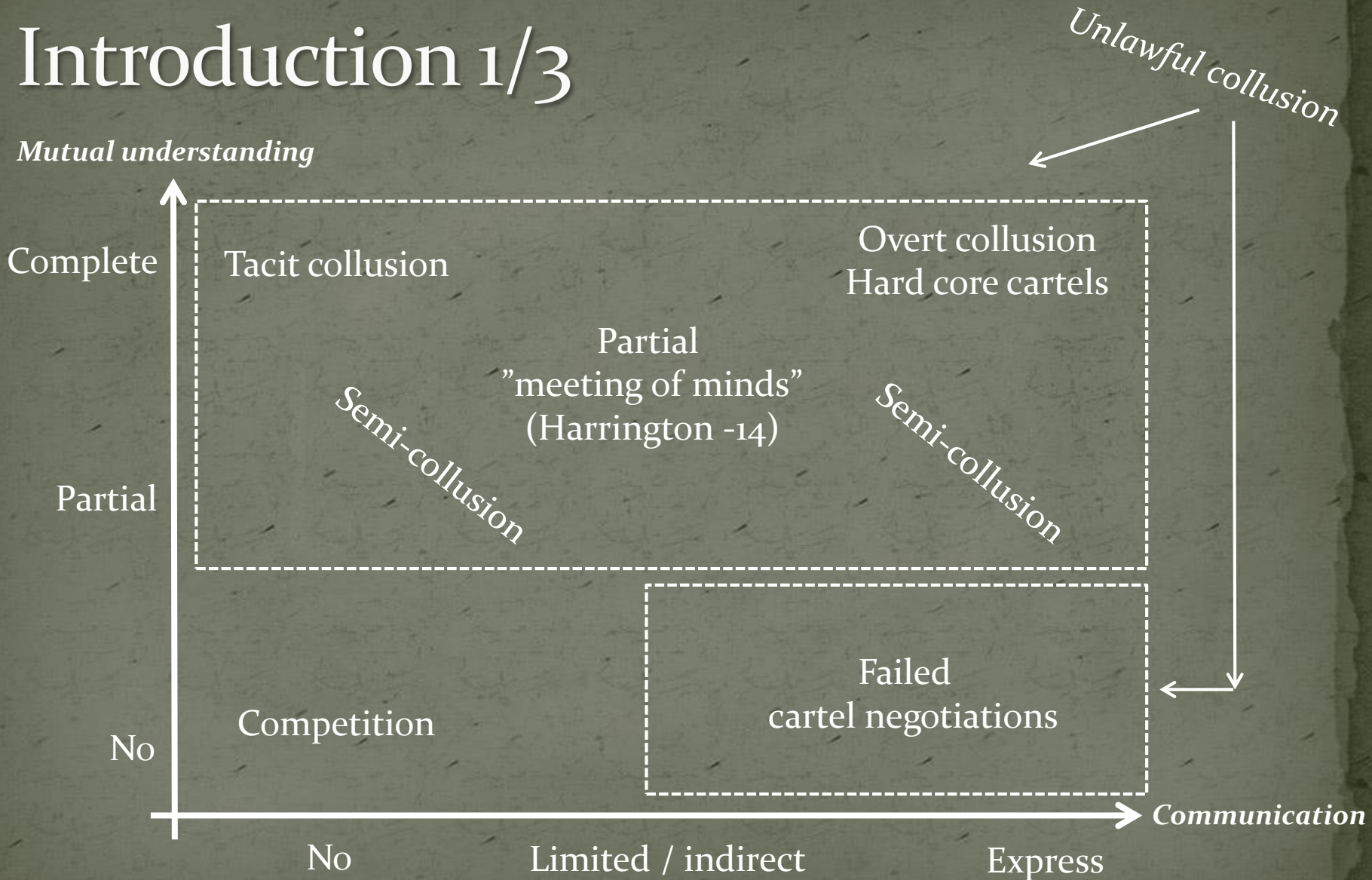
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# Introduction 1/3



# Introduction 2/3

- Experimental evidence: Unrestricted communication
  - ... is effective in producing collusion (see, e.g., Fonseca and Normann -12, Cooper and Kuhn -14),
  - ... also with asymmetric firms and varying number of firms (Harrington, Hernan-Gonzalez and Kujal -14)
- Limited empirical (field) evidence on what cartels want to agree and are capable agreeing on (and how they are organized),
  - ... when there are *no restrictions on express communication*

# Introduction 3/3

Questions that need more complete answers:

- How do cartel 'contracts' look like?
  - E.g., are cartels that restrict pricing more common than cartels that allocate markets?
- Which contracting features are used to pursue stability and appear together?
- Are certain contracting features associated with duration of cartels?

# Related literature 1/2

- The prior work portrays somewhat incomplete picture of how cartel contracts look like:
- Pre-2005 studies (Levenstein and Suslow -06):
  - ...cover a heterogeneous set of episodes and institutional environments
  - ...often refer to either prosecuted or (possibly quite peculiar, large) international cartels
  - ...have limited information on what the cartels have tried to agree on

# Related literature 2/2

- More recent literature:
- Harrington (-06): Detailed qualitative account of 20 case studies, based on detected cartels in EU.
- Taylor (-07): Data on 66 industries and the agreements that were registered 1933-1935 in the US due to the NIRA.
  - Seven contract clauses, but selection due to the cartels not being allowed to contract on prices or on certain types of market allocation.
- Levenstein and Suslow (-11): Information on six features of cartel contracts for 81 illegal international cartels
  - Used to predict cartel duration, but no detailed analysis of how the cartel contracts look like

# ... and this paper:

- We use a large data set of *legal* cartels
  - ...from the Finnish Competition Authority's (FCA) archive of cartels
  - ...that operated in a similar institutional environment
- **Our goal:** To provide a better understanding how cartel contract look like

⇒ *An anatomy of cartel contracts:*

- ...describe quantitatively the patterns by which collusion is achieved
- ...characterize the ways in which cartels have pursued stability
- ...explore which contracts and cartels are stable by linking the contract features to the changes of cartel contracts and duration of cartels

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- Unlike illegal cartels, legal cartels do not have to worry
  - ... about the consequences of explicitly writing down their agreements.
- In a sense, we observe an “unobservable”, i.e., what illegal cartels would like to write down,
  - ... if they were free to communicate and if openly revealing the *achieved level of mutual understanding* had no adverse legal consequences
- If illegal => endogenous incompleteness of cartel contracts
  - ... due to incentive to reduce the ability of a court to verify the contracted actions and to make unverifiable what is observable.



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- Bar for this difference, legal and illegal cartels have an incentive to coordinate and meet the incentive compatibility constraint (ICC).
- Issue: legal, thus enforceable contracts? Why any incentive problems?
  - The legal status was, in our understanding, reminiscent of the U.S Sugar Institute
    - Genesove and Mullin (-98)
  - Ex ante uncertainty as to the enforceability of the contracts in court:
    - Suing seems to have carried the risk of affecting the legal environment
    - Indeed, only one known prosecution case in early 1980s => the plaintiff won damages => law change of 1988 partly a result of this case

# Rest of the talk

1. Introduction ✓
2. Related literature ...and this paper ✓
3. The institutional environment and data
4. How do cartels raise profits?
5. How do cartels pursue stability?
6. Which contracts and cartels are stable?
7. Case studies
8. Conclusions

# Institutional environment and data

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# Institutional environment

- Pre-1958: No competition law
- 1958: Cartel registry established => cartels (still) legal, registration on initiative of the authorities
- 1962: Cartels with an organization need to register
- 1973: Responsibility to register further enlarged
- 1988: FCA established => right to abolish harmful cartels + fines in cartel contracts no more legally binding
- 1993: Cartels illegal

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- The Registry/CA began registrations in March 1959
  - The Registry was active:
    - sent out thousands of inquiries
    - registered several hundred cartels
- .... already during the first three years of its operation
- The law stipulated that firms had an obligation to respond and inform the Registry if a competition restriction existed

Pre-1988 era:

*“Time was such that there seemed no need to intervene even in clear-cut cases, especially if they had been registered.*

*Registration had been transformed into a sign of acceptability of the [cartel] agreement, at least for the parties involved [in the cartel].”*

Purasjoki and Jokinen (2001)

# Data

- We have information on:
  1. a number of clauses of the registered cartel contracts
  2. stability of the contracts (contract changes) and of the cartels (duration),
  3. a (small) set of variables characterizing the cartels and their operating environment (used as controls).

# Data – archive work

- **Registry's cartel list:** The Registry maintained a listing of cartels
  - Allows us to identify whether a given cartel tried to collude by agreeing on prices, whether it allocated markets in one way or another, or whether it did both => “**5 main clauses**”
- **Registry's folders:** The Registry has a folder for each cartel => description of the cartel, correspondence, and actual cartel contract (if available)
  - provide more detailed information => we concentrate on nationwide manufacturing cartels, the 1st cartel in each 3-digit industry:
    - Early on, the law was more lenient => the richest contracts
  - We went through the folders of 109 cartels in a very detailed manner (semi-structured approach) => “**14 additional contract clauses**”



# Data – sample summary

- Larger sample of 898 cartels for which the 5 main c-clauses observed
  - Manufacturing sample: 359 cartels
  - Non-manufacturing sample: 539 cartels.
- Smaller sample of 109 (nationwide manufacturing) cartels, for which the 14 additional c-clauses observed
- In addition, data on
  - Contract stability = how many times the registered contract was changed subsequently.
  - Cartel duration = approximate duration of cartels in years, based on entry and exit years

# Data – control variables

- Sector: manufacturing or non-manufacturing
- Dummy for being a nationwide cartel (or not)
- Number of members (crude proxy, not available to all)
- Dummies for competition law regimes
- GDP => construct a variable that captures whether the cartel was registered right after a positive or negative GDP shock
- Dummy for whether an industry primarily produces homogenous goods or not (crude proxy)

How do cartels raise profits?

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**Table 1: Main contract clauses used to raise profits**

Clause descriptions	
<b>Price -based</b>	
<i>Pricing</i>	= 1 if the contract refers to prices and/or pricing rules.
<i>Payment rules</i>	= 1 if the contract refers to discount rules and/or rules of delivery and payment.
<b>Market allocation -based</b>	
<i>Quotas</i>	= 1 if the contract refers to sales quotas or market shares.
<i>Area-based</i>	= 1 if the contract refers to exclusive territories or home market principle.
<i>Non-area -based</i>	= 1 if the contract refers to allocation of customers among the members or it stipulates that the members are to specialize in one way or the other, or agree to "not compete" in a given market.

## Five main contract clauses: *Price-based vs. Market allocation -based*

- based on what the prior work suggests
- see e.g. Stigler (-64), Levenstein and Suslow (-06), Harrington (-06) and Taylor (-07)

# Use of main contract clauses

- Table 2:
  - How common price-based vs. market allocation –based contracts are? How do they look like?
- Table 3:
  - Out of the 32 possible combinations of the main clauses, which combinations are most common?
- Table 4:
  - How are the five main clauses correlated?

Table 2: Characteristics of cartels

Panel A: Large sample, manufacturing	Count	Share	# of clauses	National	# of changes	Duration	Year of reg.	# of members
<b>Price-based</b>	<b>134</b>	<b>0.37</b>	<b>1.87</b>	<b>0.87</b>	<b>0.72</b>	<b>14.14</b>	<b>1968</b>	<b>5.00</b>
Pricing	117	0.33	1.97	0.85	0.71	14.24	1968	4.00
Payment Rules	78	0.22	2.18	0.92	0.90	14.38	1967	5.00
<b>Market allocation-based</b>	<b>261</b>	<b>0.73</b>	<b>1.38</b>	<b>0.84</b>	<b>0.15</b>	<b>9.82</b>	<b>1976</b>	<b>2.00</b>
Quota	58	0.16	2.14	0.81	0.48	11.60	1971	3.00
Area-based	44	0.12	1.52	0.52	0.11	11.93	1972	2.00
Non-area-based	186	0.52	1.26	0.92	0.06	8.83	1977	2.00
	All	-	1.40	0.86	0.31	11.11	1973	2.00
None of the above	15	0.04	0.00	0.80	0.07	12.40	1973	3.00
	All	-	1.35	0.86	0.30	11.16	1973	2.00
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Panel B: Large sample, non-manufacturing	Count	Share	# of clauses	National	# of changes	Duration	Year of reg.	# of members
<b>Price-based</b>	<b>421</b>	<b>0.78</b>	<b>1.41</b>	<b>0.49</b>	<b>0.00</b>	<b>14.02</b>	<b>1971</b>	<b>26.00</b>
Pricing	367	0.68	1.46	0.47	0.00	14.59	1971	28.00
Payment Rules	126	0.23	1.65	0.61	0.00	11.47	1968	6.50
<b>Market allocation-based</b>	<b>148</b>	<b>0.27</b>	<b>1.74</b>	<b>0.46</b>	<b>0.00</b>	<b>12.67</b>	<b>1975</b>	<b>7.50</b>
Quota	15	0.03	2.27	0.73	0.00	8.87	1974	3.50
Area-based	28	0.05	2.39	0.00	1.00	0.68	1974	5.00
Non-area-based	121	0.22	1.69	0.40	0.00	12.98	1975	9.50
	All	-	1.37	0.53	0.00	13.65	1971	19.00
None of the above	59	0.11	0.00	0.71	0.00	13.10	1974	11.00

Finding #1: Price-based cartels are less (more) common than the market allocation –based cartels in (non)-manufacturing industries

Finding #2: Price-based cartels are larger

Note also that:

1. On average, cartels use 1.5 main contract clauses
  - To avoid semi-collusive outcomes? (cf. Lysine)
2. In manufacturing (non-manufacturing), 61% (12%) of the cartels agree only on prices and 24% (69%) allocate markets in one way (and use no price clause)
3. The single most popular clause is the non-area-based -clause

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Non-area -based are not textbook cartels:

- Members agree to **specialize** in some way; or
- simply agree "**not to compete**" in a given market
- Result: Only one firm remains active

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- Similarities to modern mergers and divestitures?

Table 3: Most popular combinations of main contract clauses

Panel A: Large sample, manufacturing				Price-based		Market allocation-based		
	Count	Share	Cum share	Pricing	Payment Rules	Quota	Area-based	Non-area-based
1st	151	0.42	0.42	0	0	0	0	1
2nd	38	0.11	0.53	1	1	0	0	0
3rd	32	0.09	0.62	1	0	0	0	0
4th	26	0.07	0.69	0	0	0	1	0
5th	18	0.05	0.74	1	0	1	0	0

Panel B: Large sample, non-manufacturing				Price-based		Market allocation-based		
	Count	Share	Cum share	Pricing	Payment Rules	Quota	Area-based	Non-area-based
1st	215	0.40	0.40	1	0	0	0	0
2nd	67	0.12	0.52	1	1	0	0	0
3rd	65	0.12	0.64	1	0	0	0	1
4th	50	0.09	0.74	0	1	0	0	0
5th	44	0.08	0.82	0	0	0	0	1

Most common combination of the main clauses:

In manufacturing: “Pure” non-area based cartel

In non-manufacturing: “Pure” pricing cartel

Concentration: 5 most common combinations account  $\frac{3}{4}$  or more of cartels



Table 4: Correlations of main contract clauses

Panel A: Large sample, manufacturing	Price-based		Market allocation-based		
	Pricing	Payment Rules	Quota	Area-based	Non-area-based
Pricing	1				
Payment Rules	0.527**	1			
Quota	0.276**	0.081	1		
Area-based	-0.169**	-0.156**	-0.141**	1	
Non-area-based	-0.590**	-0.398**	-0.273**	-0.133*	1

Panel B: Large sample, non-manufacturing	Price-based		Market allocation-based		
	Pricing	Payment Rules	Quota	Area-based	Non-area-based
Pricing	1				
Payment Rules	-0.130**	1			
Quota	-0.029	-0.067	1		
Area-based	-0.019	-0.031	0.367**	1	
Non-area-based	-0.118**	-0.255**	-0.064	0.034	1

Stronger correlations in manufacturing:

- Pricing and payment rules complementary
- In general, price-based and market allocation –based are substitutes, the exception is quota in the manufacturing
  - Quotas complement price-based clauses?

How do cartels pursue  
stability?

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# Measurement of additional c-clauses

**Table 5: Additional contract clauses**

Clause descriptions	
<b>Internal stability</b>	
<i>Monitoring</i>	= 1 if the contract has a clause on how the members monitor each other.
<i>Enforcement</i>	= 1 if the contract stipulates how to handle situations where a member has deviated or mentions price wars, retaliation, etc.
<i>Expel</i>	= 1 if the contract includes rules on how to expel a member if rules are broken.
<i>Fine</i>	= 1 if the contract includes clauses on monetary fines for a company that violates the contract.
<b>Organization</b>	
<i>Meeting</i>	= 1 if the contract stipulates whether, and if so, how often, the members are to meet.
<i>Dispute-resolution</i>	= 1 if the contract specifies a way in which disputes among members are to be resolved.
<i>Structure</i>	= 1 if the cartel has a formal structure, such as an association or a limited liability company to organize itself.
<i>Vote</i>	= 1 if the contract specifies a voting procedure.
<i>Sales office</i>	= 1 if the cartel has formed either a trade or a sales association.
<b>External threats</b>	
<i>New members</i>	= 1 if the contract specifies a policy on how to accept new members.
<i>Non-cartel supply</i>	= 1 if the contract specifies how to deal with supply from non-member rivals.
<i>Entry</i>	= 1 if the contract stipulates how to react to entrants into the industry.
<b>Production-related</b>	
<i>Efficiency</i>	= 1 if the contract stipulates, e.g., that sales and/or production should be allocated according to efficiency.
<i>Technology</i>	= 1 if the contract refers to sharing of technological knowledge such as patents or blueprints.

# Use of additional c-clauses

Table 6: Use of additional contract clauses

	Internal stability				Mean Intensity	External threats			Mean Intensity
	Monitoring	Enforcement	Expel	Fine		New members	Non-cart. Supply	Entry	
<b>Price-based</b>	<b>0.29</b>	<b>0.13</b>	<b>0.38</b>	<b>0.17</b>	<b>0.24</b>	<b>0.56</b>	<b>0.17</b>	<b>0.02</b>	<b>0.25</b>
Pricing	0.33	0.16	0.36	0.20	0.26	0.51	0.22	0.04	0.26
Payment Rules	0.34	0.17	0.32	0.22	0.26	0.51	0.22	0.02	0.25
<b>Market allocation-based</b>	<b>0.26</b>	<b>0.16</b>	<b>0.09</b>	<b>0.17</b>	<b>0.17</b>	<b>0.16</b>	<b>0.64</b>	<b>0.24</b>	<b>0.35</b>
Quota	0.63	0.53	0.16	0.47	0.45	0.37	0.47	0.00	0.28
Area-based	0.36	0.09	0.27	0.00	0.18	0.18	0.73	0.36	0.42
Non-area-based	0.10	0.05	0.05	0.07	0.07	0.07	0.76	0.33	0.39
All	0.24	0.12	0.27	0.15	0.20	0.38	0.41	0.15	0.31

Compared to the market allocation –based cartels, price-based cartels have

- ... more often clauses for expelling and accepting new members
- ... less often clauses related to non-cartel supply and entry

# Use of additional c-clauses

	Meeting	Disp. Resol.	Organization Structure	Vote	Sales office	Mean Intensity	Production-related Technology	Efficiency	Mean Intensity
<b>Price-based</b>	<b>0.08</b>	<b>0.48</b>	<b>0.70</b>	<b>0.62</b>	<b>0.73</b>	<b>0.52</b>	<b>0.06</b>	<b>0.03</b>	<b>0.05</b>
Pricing	0.07	0.51	0.67	0.60	0.71	0.51	0.09	0.04	0.07
Payment Rules	0.07	0.51	0.66	0.59	0.73	0.51	0.07	0.02	0.05
<b>Market allocation-based</b>	<b>0.09</b>	<b>0.79</b>	<b>0.31</b>	<b>0.29</b>	<b>0.31</b>	<b>0.36</b>	<b>0.48</b>	<b>0.16</b>	<b>0.32</b>
Quota	0.11	0.89	0.63	0.58	0.74	0.59	0.26	0.32	0.29
Area-based	0.18	0.91	0.36	0.36	0.27	0.42	0.45	0.09	0.27
Non-area-based	0.10	0.81	0.19	0.17	0.17	0.29	0.60	0.19	0.40
All	0.08	0.62	0.50	0.44	0.52	0.43	0.28	0.08	0.18

Moreover, price-based cartels have

- ... more often a formal organization (e.g. sales offices, voting procedure)
- ... less often clauses related to dispute resolution and technology/efficiency

Which contracts and cartels  
are stable?

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# Contract stability - results

- Regression:
  - Dependent variable:
    - $\ln(\# \text{ of contract changes} + 1)$
  - Key RHS:
    - Five main contract clauses +  $\ln(\text{members})$
  - Controls:
    - Dummy for nationwide, pos. and neg. GDP shocks, dummies for competition law regimes, dummy for large cartels
- Results:
  1. Price-based cartels have more contract changes
    - Need to readjust pricing over time?
  2. Number of members positively associated with contract changes
    - Larger cartels => more stability issues that call for adjustments

# Contract stability - table

Table 9: Contract stability,  $\ln(1 + \# \text{contract changes})$

	(1)	(2)	(3)	(4)	(5)	(6)
Pricing	0.080** (0.022)	0.045* (0.021)	0.067 (0.040)	0.102 (0.086)	0.044 (0.065)	0.050 (0.107)
Payment Rules	0.101** (0.024)	0.078** (0.024)	0.136* (0.063)	0.224* (0.083)	0.149* (0.071)	0.183 (0.124)
Quota	0.048 (0.047)	0.063 (0.042)	0.093 (0.050)	0.008 (0.059)	0.063 (0.044)	0.088 (0.053)
Area-based	-0.041 (0.028)	-0.029 (0.023)	-0.031 (0.028)	-0.058 (0.055)	-0.029 (0.068)	-0.019 (0.074)
Non-area-based	-0.060 (0.030)	-0.027 (0.026)	-0.020 (0.027)	-0.121 (0.081)	0.015 (0.056)	-0.003 (0.067)
Ln(# of members)		0.060** (0.022)	0.065** (0.022)		0.173** (0.054)	0.147** (0.053)
Control variables	No	Yes	Yes	No	Yes	Yes
Observations	898	898	520	359	359	295
R2	0.175	0.275	0.363	0.177	0.432	0.441
Joint-test for price-based	0.000	0.001	0.002	0.000	0.022	0.057
Joint-test for mkt-based	0.067	0.134	0.175	0.279	0.322	0.346

NOTES: The control vector includes a dummy for nationwide cartels, the absolute values of positive and negative GDP shocks, dummies for the different competition law regimes, a dummy for cartels with more than 50 members, and a dummy for cartels for which we do not observe the number of members (columns 2&5). In columns 3&6 we exclude those cartels for whom we do not observe the number of members. Columns 1-3 include a dummy for non-manufacturing industries.



# Cartel stability - results

- Discrete time hazard rate modelling:
  - Dependent variable:
    - Duration, in years
  - Key RHS:
    - Five main contract clauses +  $\ln(\text{members})$
  - Controls:
    - Dummy for nationwide, pos. and neg. GDP shocks, dummies for competition law regimes, dummy for large cartels
- Results:
  1. Survival negatively related to Pricing, but positively with Payment rules
    - Competition in many dimensions, semi-collusive outcome?
  2. Larger cartels longer lived
    - Larger and more stable when collusion is easier?
  3. Increasing hazard rates
    - Probability that a cartels stops increases over time (negative duration dependence)

# Cartel stability - table

Table 10: Discrete time hazard rate regressions

	All			Manufacturing		
	(1)	(2)	(3)	(4)	(5)	(6)
Pricing	-0.459** (0.096)	-0.214 (0.109)	-0.395* (0.163)	-0.295 (0.170)	-0.275 (0.177)	-0.111 (0.204)
Payment Rules	0.416** (0.101)	0.355** (0.102)	0.473** (0.182)	-0.022 (0.162)	-0.103 (0.171)	-0.180 (0.209)
Quota	0.304* (0.153)	0.239 (0.164)	0.137 (0.192)	0.304 (0.160)	0.270 (0.166)	0.058 (0.198)
Area-based	-0.284 (0.190)	-0.419* (0.214)	-0.107 (0.254)	-0.292 (0.244)	-0.209 (0.293)	-0.094 (0.323)
Non-area-based	0.138 (0.111)	-0.078 (0.125)	-0.183 (0.173)	0.322 (0.179)	-0.011 (0.203)	0.016 (0.249)
Log(# of members)		-0.334** (0.071)	-0.297** (0.077)		-0.180 (0.108)	-0.195 (0.117)
Baseline, ln(time)	0.404** (0.051)	0.519** (0.058)	0.469** (0.082)	0.438** (0.088)	0.487** (0.093)	0.494** (0.104)
Control variables	No	Yes	Yes	No	Yes	Yes
→ Constant hazard rate test	0.000	0.000	0.000	0.000	0.000	0.000
→ Joint test of all clauses	0.000	0.000	0.014	0.004	0.258	0.879
→ Joint test of price-based	0.000	0.000	0.006	0.211	0.236	0.576
Joint test of mkt-based	0.062	0.070	0.516	0.039	0.253	0.974

# Case studies

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# Three detailed case studies

## 1. The match producers cartel

- Consistent with Stigler (-64) and our general findings  $\Rightarrow$  used payment rules – clause to prevent a semi-collusive outcome (in rebate dimension)

## 2. The cement cartel

- Agreed on a geographic market allocation (high transportation costs)
- Consistent with our general findings  $\Rightarrow$  did not agree on prices (substitutes)

## 3. The plywood box cartel

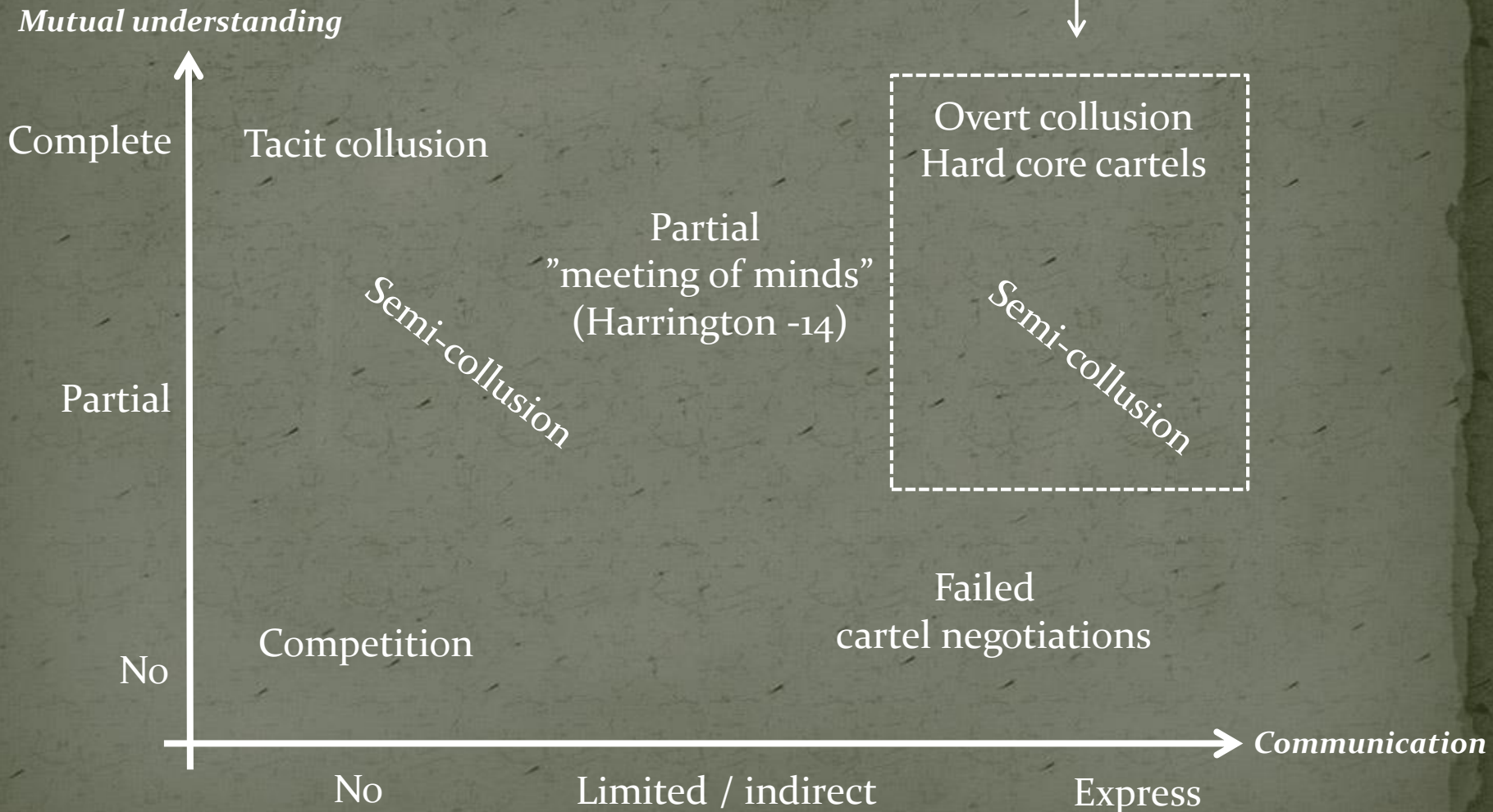
- An example of cartel that (just) agreed "not to compete"
- Consistent with our general findings  $\Rightarrow$  this cartel used clauses related to non-cartel supply and entry (which might destabilize the arrangement )

# Conclusions

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# What have done?

*How do cartel agreements (i.e., the level of achieved mutual understanding) look like here?*



# So, what's new?

*What's new:* How do cartels raise profits?

- In a similar institutional environment,
  - Price-based cartels are less (more) common in manufacturing (non-manufacturing)
  - Price-based cartels, in general, larger
  - Quota cartels relatively rare
  - Unconventional “specialize/no compete” –cartels common

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## *What's new:* How do cartels pursue stability?

- Compared to the market allocation –based cartels, price-based cartels have
  - ... more often clauses for expelling and accepting new members
  - ... more often formal organizational features
  - ... less often clauses related to non-cartel supply and entry
  - ... less often clauses related to dispute resolution and technology/efficiency



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*What's new:* Which contracts and cartels are stable?

- Contract stability
  - Price-based cartels have more contract changes
  - Number of members positively associated with contract changes
- Cartel stability
  - Survival negatively related to Pricing, but positively to Payment rules
  - Increasing hazard rates: Probability that a cartels stops increases over time

# So what?

Systematic differences in how collusion is organized in different industries, by cartels of different sizes, and by cartels agreeing on prices vs. allocation of markets

- Theoretical work:
  - E.g., the literature on harmful market practices has paid relatively little attention to why and when various schemes to specialize and avoid competition provide a substitute for price-fixing or market allocation
  - E.g., our results can be used to build new models that, in equilibrium, deliver one of the canonical types of cartel contracts observed in the data under the assumption of no CA:
    - The environment can thereafter be changed (by, e.g., introducing a CA) to study what type of collusion arises in the new equilibrium and how cartels adapt.

...

- Competition policy:
  - Our findings suggest regularities in terms of what types of concerted action or horizontal agreements to expect and to search for
    - What cartels agree on when explicit communication is allowed
  - The boundaries for unlawful and harmful practices remain unclear (e.g. Harrington -12, Kaplow -11a,b).
    - Empirical work of this type hopefully increases the likelihood of authorities and courts making proper decisions and rulings in cases involving price-fixing and other prohibited horizontal agreements

*Thank you!*

# Appendix

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# Correlations – main c-clauses

Table 7: Conditional and unconditional correlations of main contract clauses

	Price-based		Market allocation-based		
Unconditional correlations	Pricing	Payment Rules	Quota	Area-based	Non-area-based
Pricing	1	-	-	-	-
Payment Rules	0.466**	1	-	-	-
Quota	0.117	0.043	1	-	-
Area-based	-0.216*	-0.197*	-0.074	1	-
Non-area-based	-0.611**	-0.459**	-0.115	0.235*	1
Conditional correlations	Pricing	Payment Rules	Quota	Area-based	Non-area-based
Pricing	1	-	-	-	-
Payment Rules	0.287**	1	-	-	-
Quota	0.026	-0.049	1	-	-
Area-based	-0.274**	-0.231*	-0.141	1	-
Non-area-based	-0.394**	-0.259**	-0.074	0.299**	1

NOTES: The upper panel reports the unconditional correlations, replicating Panel C of Table 4. The lower panel reports the correlations of residuals from the LPM estimations.

# Correlations – additional c-clauses

Table 8: Unconditional and conditional pairwise correlations

Panel A:							
<i>Unconditional correlations</i>	Internal stability				External threats		
	Monitoring	Enforcement	Expel	Fine	New members	Non-cart. Supply	Entry
Pricing	0.076	0.074	-0.023	0.135	0.069	-0.216*	-0.193*
Payment Rules	0.158	0.087	0.028	0.154	0.141	-0.194*	-0.199*
Quotas	0.358**	0.533**	-0.212*	0.444**	-0.004	0.127	-0.227*
Area-based	0.086	-0.081	0.099	-0.134	-0.083	0.225*	0.150
Non-area-based	-0.094	-0.141	0.021	-0.122	-0.234*	0.405**	0.173

<i>Conditional correlations</i>	Internal stability				External threats		
	Monitoring	Enforcement	Expel	Fine	New members	Non-cart. Supply	Entry
Pricing	0.066	0.044	-0.103	0.117	0.047	-0.144	-0.076
Payment Rules	0.102	0.037	-0.045	0.125	0.140	-0.125	-0.046
Quota	0.379**	0.539**	-0.187	0.446**	-0.003	0.105	-0.214*
Area-based	0.060	-0.089	0.141	-0.141	-0.071	0.224*	0.183
Non-area-based	-0.123	-0.140	0.114	-0.118	-0.202*	0.304**	0.134

# Correlations – additional c-clauses

Table 8, continued

Panel B:	Organization					Production-related	
<i>Unconditional correlations</i>	Meeting	Disp. Resol.	Structure	Vote	Sales office	Technology	Efficiency
Pricing	-0.015	-0.223*	0.140	0.146	0.192*	-0.239*	-0.059
Payment Rules	-0.015	-0.163	0.137	0.131	0.231*	-0.201*	-0.074
Quota	0.049	0.248**	0.134	0.127	0.209*	0.099	0.487**
Area-based	0.087	0.171	-0.069	-0.009	-0.152	0.209*	0.032
Non-area-based	-0.011	0.242*	-0.294**	-0.200*	-0.405**	0.376**	0.210*

	Organization					Production-related	
<i>Conditional correlations</i>	Meeting	Disp. Resol.	Structure	Vote	Sales office	Technology	Efficiency
Pricing	0.047	-0.109	0.148	0.159	0.093	-0.184	-0.068
Payment Rules	0.054	-0.014	0.147	0.145	0.147	-0.182	-0.088
Quota	0.050	0.277**	0.159	0.161	0.228*	0.079	0.459**
Area-based	0.098	0.166	-0.031	0.008	-0.152	0.179	0.010
Non-area-based	-0.087	0.120	-0.267**	-0.183	-0.292**	0.269**	0.163

NOTES: The upper parts of both panels report the unconditional correlations; the lower parts report correlations of the residuals from the LPM estimations.