Cartel Organization: an Excel Coding Manual

May 16, 2007

This digression is a synthesis of the two last cartel group meetings held on the 13th and the 24th of April. The first meeting ruminated primarily over Levenstein and Suslow, where as the second meeting conjectured on and above Harrington. Although there is significant overlap I feel that two items that did not overlap should be brought over from Levenstein and Suslow and incorporated into our new framework. In order to place structure onto the ensuing discussion this draft is organized into three parts. Part I considers the results from our meeting on the 24th of April that were primarily motivated by Harrington. Part II translates discussion from the same meeting that was not covered by the Harrington framework and part III discusses two results based on the meeting on the 13th of April that I feel should be incorporated into the present framework.

A recurring problem in designing an excel counterpart to this digression is the type of marker. There are multiple logical markers, but if we were to add a descriptive marker to complement each of these logical markers, it may very well lead to over loading the contract reader/ excel coder. So I suggest you look at these logical markers and consider which of these would provide the most added value given a descriptive marker. All of the markers are provided on sheet 2 dubbed "markers" for easy reading and fruitful conception. The meaning of these markers becomes clearer later on.

Part I
Quantifying Harrington

I Properties of the collusive outcome: price and quantity

The collusive outcome is characterized by agreement on prices and/or quantity. Concerning the precedence of quantity over price:

““The importance of a quantity agreement was clearly stated by an executive connected to the copper plumbing tubes cartel. When asked why cartel members chose to fix market shares rather than price, the executive replied if there was allocation of * volumes, prices would follow.”” [Harrington page 42]

(i) Price

According to Harrington the concept of price in a cartel framework is not self evident. For instance in the case of two homogeneous good cartels the lysine cartel agreed on one price, where as the citric acid cartel chose to define a regular and a discounted price. In a differentiated good cartel such as the graphite cartel the members agreed on a pricing rule dependent on product and consumer characteristics.

The fantastic thing is that we have already mapped Harrington's price variable in the cartel database

- **Excel marker: price** (logical) becomes validated if the cartel database has 1 in the column “*hinta*.”
- **Excel marker: pricing rule** (logical) becomes validated if the cartel database has 1 in the column “*hinnoitteluperusteet*.”
- **Excel marker: discounts** (logical) becomes validated if the cartel database has 1 in the column “*alennukset*.”
- **Excel marker: terms of delivery and payment** (logical) becomes validated if the cartel database has 1 in the column “*toimitus- ja maksuehdot*.”

The work on price has therefore already been done.

Many of the cartels agreed on measures to curb competition along non-price dimensions (auxiliary dimensions). The problem is that there may be many auxiliary dimensions to consider and it is difficult to capture/anticipate these dimensions. Auxiliary dimensions are encoded:

- **Excel marker: non-price;** (logical) becomes validated if the contract specifies restrictions on any form of non-price competition the column takes the value 1.
- **Excel marker: non-price description;** (descriptive) if non-price takes the value 1 this cell will include description on what that other restricted non-price competition constitutes. Possibilities include quality, product traits, add on services, bundling, ancillary services, variation in prices according to consumer.

(ii) Allocation(Quantity)

Note that I have opted to use term allocation instead of the more restrictive term quantity. Harrington lays out three allocation schemes that are not mutually exclusive:

1. sales quota: division of sales and/or market share
2. exclusive territories or the home market principle: the home market principle refers to a situation where cartel members agree to reduce supply in each others' home territory.
3. customer allocation: any reference made to an allocation of a specific client or types of client (large, small,etc).

Once again we utilize the cartel database. The database includes the columns "*Tuotantokiintiöt tai osuusluvut*," "*Alueellinen tai asiakaskohtainen markkinajako*," "*Erikoistuminen*," "*Kotimarkkinasuoja*", and "*Selektiivinen myynti ja yksinmyyntisopimukset*." We can match Harrington's subsections to the cartel database in the following manner:

- **Excel marker: sales quota;** (logical) becomes validated if the cartel database has 1 in the column "*Tuotantokiintiöt tai osuusluvut*."[1]
- **Excel marker: territories;** (logical) becomes validated if the cartel database has 1 in the column "*Alueellinen tai asiakaskohtainen markkinajako*" and if the encoder is able to determine that allocation was conducted on a territorial basis.
- **Excel marker: customer;** (logical) becomes validated if the cartel database has 1 in the column "*Alueellinen tai asiakaskohtainen markkinajako*" and if the encoder is able to determine that allocation was conducted on a customer basis.[2]

A couple of points. Firstly, it is convenient that Harrington and the competition authority define sales quota in exactly the same way. Harrington (competition authority) includes both sales ("*tuotantokiintiöt*") and shares ("*osuusluvut*") in the definition of a sales quota. Secondly, note that Harrington lumps together exclusive territories and the home market principle where as the competition authorities distinguishes between the two ("*Kotimarkkinasuoja*").

- **Excel marker: home market principle;** (logical) becomes validated if the cartel database has 1 in the column "*Kotimarkkinasuoja*."

[1] Harrington notes that the majority of the cartels employ sales quotas. Maybe this is not the case with legal cartels? It is better to consider such questions at a later date.

[2] Customer allocation is likely to be a non-starter as I recall.

There is a type of allocation scheme that Harrington does not consider[3], but which the competition authority has encoded. The competition authority registers competition restriction which have the property of "*Erikoistuminen*." It consists of two firms agreeing on a division of markets according to product or product variant. Firm 1 sells/produces only 1a, 2 sells only 1b, etc. In principle this type of arrangement could be considered a sales quota with a 100/0 division. However, in reality this type of contract is different given its one shot nature. There is very little motivation for monitoring or incentives. It is advisable to segregate these contracts from those defined above.

- **Excel marker: Specialization[4];** (logical) becomes validated if the cartel database has 1 in the column "*Erikoistuminen*."

Often firms also agree on simply not competing at all in a given market/industry, which we label

- **Excel marker: Non-competition clause[5];** (logical) becomes validated if the cartel database has 1 in the column "*Kilpailukieltolauseke*."

(iii) Technology and Efficiency

It was suggested that columns should be included to capture technological and efficiency issues in cartel contracts.

- **Excel marker: technology;** (logical) becomes validated if there is any mention in the cartel contract concerning patents, blueprints and/or transfer of know-how between cartel members (for instance experts from one firm assisting another).
- **Excel marker: technology decription;** (descriptive:keyword) if technology takes the value 1 this cell will include keywords pertaining to the nature of agreement on technology.
- **Excel marker: efficiency;** (logical) becomes validated if there is any mention of the distribution of sales/markets/products according to efficiency. For instance if the contract stipulates orders being awarded according to geographic proximity.
- **Excel marker: efficiency decription;** (descriptive:keyword) if efficiency takes the value 1 this cell will include keywords pertaining to the nature of agreement on efficiency.

[3] The reason Harrington does not consider this two possibility probably stems from the one shot nature of the contractual outcome. That is upon agreement the parties no longer have any reason to interact.

[4] A somewhat ad hoc clumsy term.

[5] Again a somewhat ad hoc clumsy term. I chose product, because division is based on the product or product variants.

II Enforcement of the collusive outcome

(i) Monitoring

Concerning monitoring the following points were written down during the meeting held on the 24th of April:

- monitoring of {price, sales, structure of reporting, level of aggregation, accuracy of reported sales, frequency of reporting}, Ari (price,sales,other) eli kolme (0,1) kategoriaa.
- onko kartellisopimuksessa mainintaa "formaalista sanktiosta": eli rangaistussakko tai erottaminen?

The second point is encoded by

- **Excel marker: <u>sanction</u>;** (categoric) becomes:

$$\text{sanction} = \begin{cases} 0 & \text{if no formal mechanism exists} \\ \$\$\$\$ & \text{if the contract defines a fine} \\ E & \text{if the contract defines a mechanism for expelling a member} \\ E\$\$\$\$ & \text{if the contract defines a mechanism for expelling a member and a fine} \\ 1 & \text{any other formal mechanism} \end{cases}$$

- **Excel marker: <u>sanction decr</u>iption;** (descriptive) if sanction takes the value 1 this cell will include description on what that other formal mechanism constitutes.

Given the number of ways that monitoring can be enforced I find it difficult to list specific alternatives. Currently I am thinking that

- **Excel marker: <u>monitoring;</u>** (logical) becomes validated if the contract mentions a monitoring scheme.
- **Excel marker: <u>monitoring description</u>;** (descriptive) if monitoring takes the value 1 this cell will include description on what that monitoring scheme constitutes.
- **Excel marker: <u>fine</u> <u>proportionate</u>;** (logical) becomes validated if the contract stipulates a fine that is proportionate to the outcome resulting from a breach of contract.
- **Excel marker: <u>fine</u> <u>percentage</u>;** (logical) becomes validated if the contract stipulates a fine that is defined as a percentage of some measurable activity.
- **Excel marker: <u>fine</u> <u>minimum</u>;** (logical) becomes validated if the contract stipulates a minimum monetary level to the fine.

(ii) Enforcement

Below is what was written down during the meeting.

- buy-backs and compensation
- price wars and retaliation

These are again drawn directly from Harrington's paper. He lists three examples where buy-backs were implemented either through inter firm purchases or client rotation (Teknos). Note that buy backs cannot be deemed punishment since compensation is one-to-one. The threat of price wars such as

> "... said quite expressly that he would not tolerate any failure to follow this price increase and that he would personally look after anyone who did not play the game...[Carbonless paper]"

My worry again backed by reading contracts is the lack of mention to either regime. However given the possibility that something might be found I suggest another descriptive column:

- **Excel marker:** **<u>enforcement;</u>** (logical) becomes validated if the contract contains any mention of buy backs, compensation, possible price wars, retaliation and/or any other enforcement mechanism.
- **Excel marker:** **<u>enforcement</u> <u>description;</u>** (descriptive) if enforcement takes the value 1 this cell will include description such as buy backs, compensation, possible price wars and or retaliation.

(iii) Non-member Policy

Harrington divides disruptive sources into (i) firms who purchase from the cartels and then sell the product directly or after modification, and (ii) firms not belonging to the cartel with productive capacity. Either way, firms not belonging to the cartel, but supplying the market. Our intention should be one of capturing contractual features facilitating policy towards non-member suppliers.

- **Excel marker:** **<u>Entry;</u>** (logical) becomes validated if the contract mentions anything concerning entry or potential entry.
- **Excel marker:** **<u>Non-cartel Supply;</u>** (logical) becomes validated if the contract mentions anything concerning non-cartel supply.
- **Excel marker:** **<u>New member criteria;</u>** (logical) becomes validated if the contract specifies a criteria for new members.

(iv) Over-zealous sales representatives

There is little possibility that any of our legal cartels will have anything in their contracts against such a contingency. Unless there is public insistence this part is not implemented.

III Structure and Organization of Cartel Meetings

I was initially quite skeptical about the importance of this section. I thought that issues such as frequency would be more important when inspecting illegal cartels. However, with proper care this section may turn out to be quite important as becomes implicitly clear from Harrington

> "Though we've spoken of a cartel member as some monolithic entity, in fact it is represented by a firm's employees who are engaged in collusion. this raises a the question of how duties in running the cartel are allocated across employees. Who decides on price and the allocation? Who implements the allocation.... ....All of these questions pertain to the organizational structure of the cartel. **While it is not clear what are the implications of organizational form for firm behavior, it does seem relevant** and so we report the information here though without an associated analysis." [Harrington p. 73]

On to the list drafted during the meeting that follows the Harrington subtitles.

(i) Meeting

Cartel members hold meetings to modify and implement the collusionary outcome. The frequency and type of meetings is motivated by both stability and efficiency considerations. As Levenstein and Suslow point out the success of a cartel is primarily dependent on the ability of the mechanism to cope and adjust to external change. Harrington divides frequency into the (i) frequency of meetings to decide on allocation (bargaining) and (ii) the frequency of meetings for monitoring a given allocation. The frequency of meetings for monitoring as opposed to deciding an allocation is typically greater and subject to the allocation scheme. Harrington notes that the frequency of allocation meetings is highest for customer allocation and lowest for exclusive territories.

The analysis above is encoded in the following way:

- **Excel marker: <u>meeting</u>;** (logical) becomes validated if the contract contains references as to the meetings held between cartel members or their representatives.
- **Excel marker: <u>frequency</u>;** (logical) becomes validated if the contract contains references as to the frequency of meetings held between cartel members or their representatives.
- **Excel marker: <u>meeting</u> <u>description</u>;** (descriptive) if either meeting and or frequency take the value 1 this cell will include description concerning the type (allocation/monitoring/both) and frequency of meetings held between cartel members or their representatives.

(ii) Organizational structure of the cartel

Harrington opts to interpret organizational structure as modeling hierarchy. I.e. what level of employees handled pricing, monitoring, etc or did one group handle all levels? The primary motivation is surely insulation from the competition authorities, although there are probably efficiency considerations as well. I think the best way is to use our previous approach namely the column hierarchy:

- **Excel marker: <u>hierarchy</u>;** (logical) becomes validated if the contract specifies anything the division of operations among different groups of employees.

Note that the we may alternatively use a descriptive marker as opposed to a logical marker.

Part II
Beyond Harrington

(iii) Dispute resolution

The external dispute resolution device of appealing to courts of law is obviously specific to legal cartels. There may be other external devices. However, legal or illegal cartels maintained internal dispute resolution devices.

- **Excel marker: <u>dispute resolution</u>;** (categoric) becomes I if the contract stipulates a within cartel (internal) dispute resolution mechanism, becomes E if the contract stipulates an external dispute resolution mechanism and becomes IE if the contract stipulates both.

Again, note that the we may alternatively use a descriptive marker as opposed to a categoric marker.

(iv) Formal Structure

Firstly, is there a formal structure defined in or alluded to in the cartel contract. Secondly, given a formal structure is it an "osakeyhtiö," "yhdistys" or something else?

- **Excel marker: <u>formal structure</u>;** (categoric) given that the cartel contract specifies a formal structure the cell becomes *Oy* if the structure referred to is an "osakeyhtiö", or Y if the structure referred to is an "yhdistys" or *Other* if the structure referred to is neither an "osakeyhtiö" or "yhdistys."

The next column specified will capture decision making by characterizing the possible voting rule. Since we do not know what kind of pricing rules to expect I suggest employing method 1.

- **Excel marker: <u>voting;</u>** (categoric) becomes:

$$\text{voting} = \begin{cases} 0 & \text{if no voting scheme is specified} \\ 1 & \text{if all members have the same voting power} \\ 2 & \text{if voting power is not distributed equally} \end{cases}$$

- **Excel marker: <u>voting decription;</u>** (descriptive) if voting takes the value 2 this cell will include description concerning the dimension according to which voting power is distributed.

IV Miscellaneous

- **Excel marker: <u>Duration;</u>** (logical numeric) becomes validated if the contract mentions the duration of the contract. Print T if "toistaiseksi" or the the number of years if the contract is "määräaikainen." Print TM if "toistaiseksi" and a a minimum number of years is stipulated.
- **Excel marker: <u>Number of members;</u>** (numeric) number of cartel members.
- **Excel marker: <u>Length;</u>** (numeric) the length in pages of summary provided by the cartel institute concerning the competition restriction.

Part III

Incorporating Levenstein and Suslow

I don't find much to add, except the part pertaining to institutions set up or used by cartel members.

- **Excel marker: <u>institution;</u>** (categoric) given that the cartel contract specifies an institution to be set up or an existing institution to be used the cell becomes *sales* if the institution referred to is a joint sales agency, or *trade* if the institution referred to is an trade/industry association or *production* if the institution referred to handles joint production and *other* if there is an institution referred to that is neither of the above.

Additionally I think we should maintain an indicator for entry, if for no other reason than to later document that we actively looked for an entry clause, but did not find one.

A Note to the Chiefs

A recurring problem in designing an excel counterpart to this digression is the type of marker. There are multiple logical markers, but if we were to add a descriptive marker to complement each of these logical markers, it may very well lead to over loading the contract reader/ excel coder. So I suggest you look at these logical markers and consider which of these would provide the most added value given a descriptive marker. All of the markers are provided on sheet 2 dubbed “markers” for easy reading and fruitful conception.

References

[1] Joseph E. Harrington, Jr, 2006. "How Do Cartels Operate?," Economics Working Paper Archive 531, The Johns Hopkins University,Department of Economics.

[2] Margaret C. Levenstein & Valerie Y. Suslow, 2002. "What Determines Cartel Success?," Working Papers 2002-01, University of Massachusetts Amherst, Department of Economics.