Screening for Cartels in Procurement Procedures – Lessons Learned

*Josef Ålander (Swedish Competition Authority)**

Last year the Swedish Competition Authority launched a pilot project with the aim of detecting cartels in public procurements by using proactive economic methods. Now, almost a year later, what lessons can be learned from the project?

Introduction

In recent years, economic methods in general and empirical screens in particular have become increasingly important as a means for competition authorities to detect cartel activity. Though increasingly popular, there is a large variation in the development and application of empirical screens worldwide. Many competition authorities remain skeptical and rely on other cartel detection methods, while others have large units solely devoted to developing and applying empirical screens.

The Swedish Competition Authority (SCA) has been developing economic methods to detect indications of cartels for many years, and has used different types of cartel screens on several different markets. The industries and markets we have chosen to analyze have in most cases been identified based on reactive detection through leniency applications and/or complaints and tip-offs. As a compliment to these reactive methods, the SCA launched a pilot project last year to examine if it is possible to identify cartels using proactive economic methods based solely on data from procurements, without prior indications such as tip-offs.

Why procurements? Public procurements present particular risks for the emergence of cartels. As procurements are clearly defined, it is often easy to anticipate which other firms are interested in the procurement. The transparent nature of public procurements also makes it possible for the members of a cartel to monitor other firms' compliance with an illicit agreement in a particular procurement.

Now, almost a year after the launch of the pilot project, what lessons can be learned? This article will describe the economic methods used in the screens and discuss the challenges and difficulties with these methods.

What is a screen?

A screen is a method to flag indications of collusive behavior in industries and markets through the use of economic theory and statistical analysis of data. The purpose can either be to confirm an existing suspicion of illegal collusive behavior in a certain industry or market, or to screen all markets when there is no prior suspicion of illegal behavior in order to get indications of cartel activity. Flags are generated if there are significant deviations from the expected outcome in the data. For example, there may be anomalies in the bidding structure in procurements or in the price patterns in certain markets. *

Most screens used for cartel detection employ one of two strategies (Abrantes-Metz, 2013).[1] The first strategy is to use a control group for comparison, for example by comparing against price patterns in other regions. If the outcome deviates significantly from the control group, this might indicate collusive behavior. The second strategy is to flag improbable events, such as patterns in the bidding structure in procurements or digit distributions in prices. Events that are unlikely to occur in the absence of coordination between firms will be flagged. The screens developed in the SCA project belong to the second category.

The success of a screen depends on many factors but, as Abrantes-Metz points out, there are two golden rules to bear in mind when designing and implementing screens. First, "one size does not fit all," and second, "if you put garbage in, you get garbage out." The first rule suggests that you need to understand the market at hand and tailor your screening model to the specific conditions on that market. The second rule implies that if you use bad quality data with incorrect and incomplete observations you will get a bad quality of results.

The Swedish screening project at a glance

The screened data in the pilot project includes published advertisements for some 97,000 contracts representing virtually all published procurements in Sweden during the period 2009-2013. Each procurement includes information about the procurer, date, type of product category (and CPV-code), selection procedure, participating firms, winning firms, bid prices and geographical region. Unfortunately a substantial proportion of the procurements in the database have incomplete or incorrect information, which requires improvement through manual adjustments.

To handle the quality problems of the data, the screening process contains two steps. The initial screen indicates markets or firms to focus on, and the second step analyzes the flagged industries and markets in more detail. In the first step the entire dataset, including all different markets and regions, is analyzed using a variety of broad screens. Due to the large amount of data to be analyzed, "cleaning" or complementing incorrect or incomplete data in the first step would be too time-consuming. The screens used in this part of the process need to be adapted to take into account the limited quality of the data at hand.

In the second step of the screening process the data for flagged markets and regions is "cleaned" and complemented manually in order to test if the results from the initial broad screens still hold. Those industries and markets that still display indications of collusive behavior may then generate pre-studies to which additional methods might be applied. A third step may involve other types of economic methods and acquisition of other types of data.

[1] Rosa M. Abrantes-Metz, "Ex officio cartel investigations and the use of screens to detect cartels" in DAF/COMP (2013)27, OECD Competition Policy Roundtables 2013, p.223.

Screening methods

The following screening methods have been tested in the project so far. Common to all the methods is that that they can be used in a very simple data set without access to information on company-specific factors, such as capacity and cost factors.

1. The first method examines the percentage differences between winning and losing bids. If bids are calculated independently of each other and the differences between bids on average are large enough (several percentage points), there should be no pattern identifiable in the first decimal place of the percentage differences between the winning bid and each respective losing bid. If a certain pattern in the first decimal place is repeated in a number of tenders, this might be an indication of coordinated bidding. Bidding coordination was allegedly used by a group of construction companies in Sweden.

2. The second method analyzes digit distribution in the bid prices in different regions and product categories using Benford's law. According to Benford's law, the leading digit in many types of data follows a certain distribution. For example, the digit 1 is most frequent and appears as the leading digit in approximately 30 % of the numbers in the data. If the digit distribution for bid prices in a certain region and product category deviates significantly from the expected distribution, this might be an indication of coordinated bidding. Unlike the previous method, this method flags product categories in certain regions instead of specific firms.

3. The third method is designed to detect indications of bid suppression, for example if one or more competitors agree not to submit a bid, so that a designated bidder will win instead. The relationship between bidders is analyzed for each product category in every region. Flags are generated if, for example, two frequent bidders in a certain market always avoid each other but submit bids against other firms in the same market.

4. The fourth method identifies and flags firms that repeatedly have identical bidding prices in the same procurement. This could be an indication of primitive bidding coordination between firms.

In addition to these four methods, there are several others under development such as methods for detection of bid rotation and regional division of markets.

Lessons learned

International examples such as the flagging of the LIBOR conspiracy and manipulation show that it is possible to find cartels using proactive screening and economic analysis. Although we see great potential in these methods, they do not always give a precise enough indication of collusion in that they alone can meet the legal requirements for granting a dawn raid. However, the screens used in this pilot project can point out which firms,

industries and regions display collusive behavior so that they can be investigated in more detail.

It is important to bear in mind that the screens may generate both false negatives and false positives. That is, they will fail to detect some cartels, and will probably also incorrectly flag some industries or markets that are not cartelized. However, successfully detecting a proportion of existing cartels is still preferable to not detecting any cartels at all.
The main challenge for the success of proactive screening identified so far in this project is to improve the quality of the data. A new screening project that builds on the lessons learned from this pilot is already underway; we aim to expand the database to include information from the private sector. The SCA will also continue its invaluable cooperation with competition authorities in other countries in the development and application of economic screens.

* Project manager, Cartels and Mergers Unit