

SUMMARY OF AGORA-MMS PROJECT

Objectives and Methodology

The AGORA-MMS project was initiated by the division Sector and Market Monitoring within the Federal Public Service Economy (FPS Economy in the sequel). The overall mission of the FPS Economy consists of creating the necessary conditions for the competitive, sustainable and balanced functioning of the goods and services markets. The division Sector and Market Monitoring plays a key role in achieving this mission in two ways. First, the division is in charge of the Price Observatory, i.e. the Belgian public price monitoring authority, within the Institute for National Accounts. Second, the monitoring division performs analyses at sector level for the FPS Economy. One of the strategies to achieve the mission is to “identify economic sectors and markets that show signals of suboptimal functioning, looking for the causes of these dysfunctions and suggesting solutions”. The term “suboptimal functioning” should be understood here in a very broad sense and is definitely broader than ensuring fair competition (in the narrow sense of competition policy) or monitoring price evolutions. The EU adopted a similar evidence-based sector monitoring strategy for its Single Market Review in 2007.

The AGORA-MMS project contributes to the sector monitoring objective of the division Sector and Market Monitoring of the FPS Economy by proposing and implementing several methodologies to analyze sectors from different perspectives, taking into account multiple indicators that are calculated on the basis of the rich datasets the FPS Economy has access to.

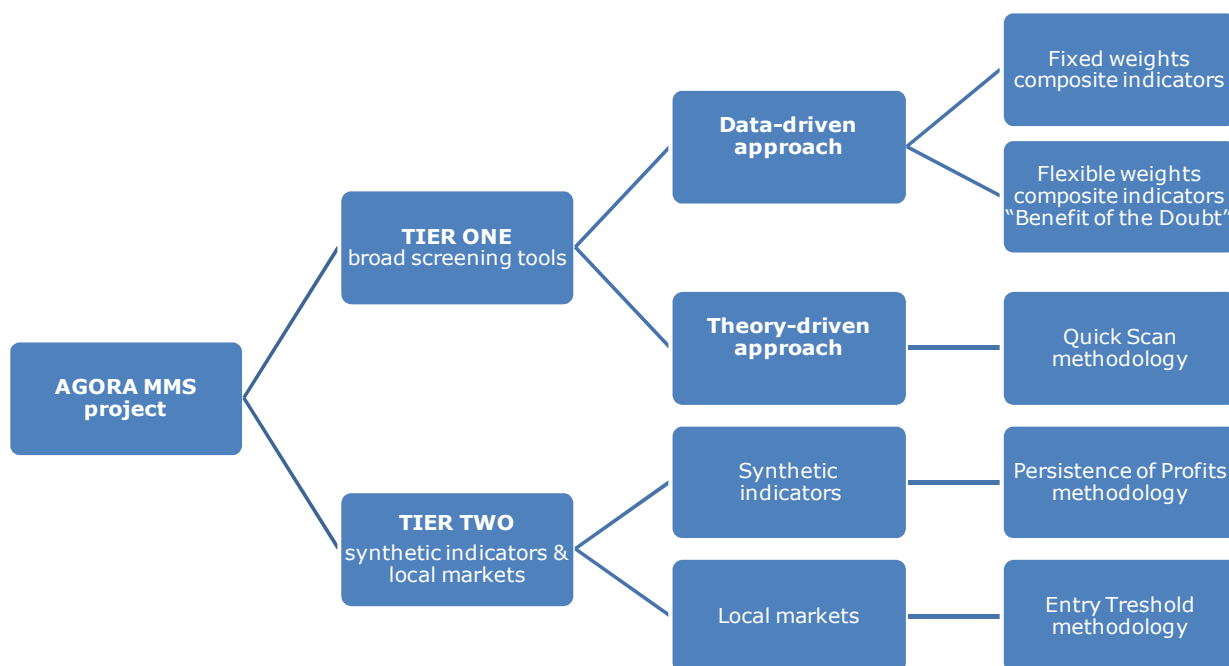
Being part of the overall AGORA program of the Belgian Federal Science Policy, the MMS project aims to leverage public data sources. These include data sources available through the Data Warehouse of the FPS Economy (via Statistics Belgium¹) coming either from own statistical surveys (like the Structural Business Survey and

¹ Statistics Belgium is the same as ADSEI (Algemene Directie Statistiek en Economische Informatie) or DGSEI (Direction Générale de la Statistique et de l'Information Economique) of the FPS Economy (<http://economie.fgov.be/en/statistics>). It was formerly known as NIS/INS (Nationaal Instituut voor de Statistiek or Institut National de la Statistique).

Prodcom) or from external sources like the annual company accounts and international trade data (both from the Belgian National Bank BNB), data on company turnover (from the VAT administration) and on employment (from the social security institutions). In addition, data on R&D expenditure were kindly provided by Federal Science Policy. Drawing upon this broad set of data sources that cover most of the Belgian economy, the MMS project has developed a range of different analysis techniques that can be applied on a recurring basis by the FPS Economy.

The main objectives of the AGORA-MMS project were (i) developing a methodological framework for the detection of market malfunctioning, (ii) identifying indicators to measure different aspects of market functioning, (iii) calculating these indicators using the rich set of databases the FPS Economy has access to, and (iv) constructing a composite indicator of market functioning based on these detailed indicators. The final product is a database which contains the individual indicator values and composite indicator scores for all the sectors, classified according to the NACE nomenclature.

In order to achieve these ambitious objectives, the AGORA-MMS researchers started with an extensive literature review and an analysis of sector screening tools that have been developed in other countries and at the level of the European Commission. In March 2010, the project team organized an international expert meeting in Brussels to learn from other experiences in this field and to propose its own concepts of market monitoring tools. One of the main lessons from this workshop was that a unique and generally accepted methodology for screening sectors on market functioning does not exist. Complex cause-and-effect relationships and detailed sector conditions matter and complicate the task of developing a broad screening tool in a "one size fits all" way. Taking into account the conclusions of the expert workshop, the AGORA-MMS project has developed a multi-tier approach. The approach and its results were presented at a second international expert meeting in May 2011 in Brussels.



In a first tier, two broad screening tools were developed that incorporate several indicators of market functioning. From the literature review, it was concluded that there is little theoretical guidance for this type of indicators and therefore we opted for two approaches in tier one. In a first approach, the project focused on data-driven methods that aggregate several indicators of market functioning into a single number: a composite indicator score. Two types of composite indicators were constructed. First, “traditional” composite indicators were constructed assuming, as is mostly done in the literature and policy research, equal weights for the indicators for all sectors. Second, a more sophisticated aggregation method was implemented that determines the indicators’ weight endogenously appealing to the idea of “benefit of the doubt”. For each sector, indicators’ weights are chosen as to maximize that sector score, provided the same weights are applied to all other sectors. This second methodology is particularly suited for a situation in which there is little guidance from economic theory about causal relations between indicators. Both of these composite indicators led to rankings of all sectors that can be analyzed in detail.

For the second approach in tier one, the AGORA-MMS project team opted for a more theory-driven approach. Of course, since theoretical evidence is mixed and very ambiguous, this could only be done by restricting attention to a more limited number of indicators and economic theories. This has resulted in a sector classification system that results in a subset of sectors that are labeled “require further investigation”, “require more investigation at the international level” and “low risk sectors”.

All of these approaches meet the demands of the original project objective of developing a screening tool for market functioning. But given the broad spectrum of available approaches in the literature, the project also provided a set of different and flexible screening tools that can be adapted to the specific needs of the users. Therefore, the project focused in a second tier on specific indicators and / or on detailed methodologies for particular markets. This resulted in two substantial case studies. The first case study focused on the inherent dynamic nature of markets and competition. The Persistence of Profits approach consists of investigating how profitability of companies in a sector evolves over time. The intuitive idea behind this approach is that in very competitive markets, the benefits of positive shocks in profitability erode more quickly than in less competitive markets. The dynamics of profitability serve as a synthetic indicator of all the underlying structural features that determine its functioning like for instance concentration, barriers to entry, international openness and so on. A second case study was developed to study local markets where the functioning is completely determined at the local level of a municipality or region as in the case of many service sectors (e.g. bakeries, travel agencies, ...). From the work on the first tier, it emerged that broad screening tools are ill adapted to capture market functioning of such local markets. Therefore, an approach was taken that assesses the impact on profitability of accession of additional competitors on the market. Intuitively, the central idea behind the “entry threshold” methodology is that if market size has to expand more than proportionally when a new entrant comes in, this is an indication of intense competition and good market functioning.

The multi-tier approach of the AGORA-MMS project has resulted in a set of tools that can be used in the future by the FPS Economy to address its objective of screening market functioning at sector level. Many of these tools have been implemented in the FPS Economy software platform (SAS EGuide) and were carefully documented in order to facilitate future use and possible extensions and adaptations. Some other methods have been implemented in specialized dedicated software programs. In those cases, we have developed extensive documentation and the FPS Economy team has been closely involved in validating the procedures in view of possible future incorporation in the FPS software environment. All final results of the detailed indicators and the composite indicators have been made available in the Sectoral Database of the FPS Economy and are therefore ready to be used by FPS Economy collaborators in the future.

Results

Compared to earlier experiences with sector screening tools in Belgium, in other EU member states and at the EU level, the AGORA-MMS project introduced at least three improvements. First, all the indicators (like for instance concentration or market share volatility) used in the AGORA-MMS project, were computed bottom-up using firm-level or product-level data with a very broad coverage over the companies active in the Belgian economy. Hence, the project went further than other exercises that relied only on data of stock market listed or publicly reporting firms. For many of the indicators, information for more than half a million Belgian firms was used. Secondly, the project was able to analyze market functioning at a finer level of resolution than the NACE 2 (rev 2: 71 sectors) that is often employed. The default level of analysis is NACE 3 (rev 2: 224 sectors) and for many sectors the analysis went further down to NACE 4 level (rev 2: 511 sectors). The advantage of this is that the sector classification matches more closely the concept of an economic market than exercises that stick to NACE 2 level. In order to assure the confidentiality of the microdata, the (external) output has been regrouped into 51, 127 and 378 sectors at NACE 2, NACE 3 and NACE 4 level. Thirdly, the project adopted an explicitly dynamic perspective. Composite indicator scores were

computed by year over the period 2001–2009 which allowed to study the evolution over time of market functioning. This makes it possible to assess the differential effect of for instance an economic crisis on different sectors or the effect of particular policies of market (de)regulation on the sector's performance over time. In addition, an explicitly dynamic methodology was implemented focusing on the persistence of profits over time and linking this to market functioning.

We now highlight the main findings of the project for each methodology focusing on juxtaposing the relative contribution of each methodology. For detailed results on sector level, we refer to the full text of the final report. As mentioned above, for the data-driven approach in tier one (economy wide screening tools) of the project, two composite indicator methodologies were developed and implemented under the AGORA-MMS project. The first one is a flexible arithmetic mean composite indicator based on a set of individual indicators. This tool was constructed allowing for maximal flexibility such that the user can adapt the indicators to be included and the weights to be attached to each indicator. It was implemented in the sectoral database software environment of the FPS Economy. The second composite indicator uses the same individual indicators but allows for endogenous weights that can differ across sectors according to the "benefit of the doubt" idea. Sectors are given more credit for the dimensions they are good at and less for dimensions they are lagging behind. This approach is computationally more demanding and has been programmed in a dedicated software package but the specific requirements to implement it in the FPS Economy IT environment are listed, well documented and discussed. Comparing the results of both composite indicator approaches, it was observed that they correlate strongly but at the same time, they do show some marked differences. Also it was observed that the results are often, but certainly not always, in line with intuition. For instance, many sectors that are characterized by "natural monopoly" characteristics (i.e. large economies of scale like in network industries) show up in the list of sectors that deserve further investigation.

For the more theory-driven approach in tier one, a quick scan or decision tree tool was developed that makes use of intuitive, but theoretically found, relationships between a limited set of indicators like entry rate, import penetration, concentration

and volatility of market shares. Compared to the composite indicators which are primarily data-driven, the quick scan screening device presents some advantages: it is based on theoretical insights, it requires only modest data input, and it is tractable. Its disadvantages are that it does not include all possible information that is available at the FPS Economy and that it leads only to a crude classification of sectors in terms of risk for market malfunctioning. This quick scan approach has also been implemented for the Belgian economy in the sector database software environment of the FPS Economy and the results are in line with the results derived with the broader composite indicator tools.

In tier two of the AGORA-MMS project, two specific methodologies were implemented. First, a specific methodology was developed for markets in which competition is local, like in the case of bakeries or architects, and for which the composite indicators are less appropriate. The methodology was applied to a limited set of local markets in the Belgian economy leading to the preliminary conclusion that the markets of bakeries and real estate agencies deserve further investigation in terms of market functioning. Computationally, this approach is very demanding and therefore, it was implemented in specialized software programs also available at the FPS Economy, and not directly in the FPS Economy sectoral database software environment.

Second, a dynamic perspective was adopted in the persistence of profits tool. The basic philosophy of this indicator is very different from the one that is behind the composite indicators. In the composite indicators, structural characteristics of markets or pre-conditions for competition and market functioning are included. The persistence of profits approach however, focuses solely on the outcome of the market functioning and competition process: profits and their evolution over time. Also this tool has been implemented in the FPS Economy sectoral database software environment ensuring reproducibility in the future.

Benefits for the FPS Economy

The tool box of analytical and screening methods that were developed by the AGORA-MMS-project, strengthens the capacity of the "Sector and Market Monitoring" division of the FPS Economy by both enlarging (e.g. the development and computation of new indicators at sector level) and deepening (e.g. at NACE 4 level) the existing framework for analysis. In general, the tools can be used for two main objectives. First they can be used for screening exercises that aim to identify sectors for which further analysis is needed. Second, when used in a flexible and intelligent way, the tools offer interesting possibilities to provide additional valuable "top-down" information, that complements the "bottom-up" and other information used by SMM in its sector analysis. These analysis cover a wide range of topics like price fluctuations and their causes, the degree of competition in particular sectors, the impact of regulation in specific markets or the valorization of statistics, developed by Statistics Belgium.

On a general level, the FPS Economy is well aware that there exists only a weak link between NACE sector classification and the economic concept of a market. For instance, bread is sold in independent bakeries, in large scale supermarkets and in large scale chains of bakery shops. Hence, it is very difficult, if not impossible, to delineate the market for bread using only NACE sector classifications. But the tools developed by the AGORA-MMS-project offer interesting perspectives to deal adequately with this issue. Ad hoc tailor made populations of companies and / or products can be built up that correspond better to the relevant market and for which market functioning indicators can be computed. One can expect that an intelligent combined use of these computed indicators with other relevant knowledge on the context provides interesting results.

Next Steps

In spite of the improvements over many other market monitoring exercises, several problems remain unsolved, many of which are discussed in the main text of the final report. The principle remaining issues are the following.

First, all of the methodologies are based on internal benchmarking within the Belgian economy. The performance of sectors is assessed by comparing it to performance of other sectors in the Belgian economy. This might cause a problem in the sense that a sector is doing well in class but that the entire class is underperforming when comparing it internationally. Theoretically, this problem could be resolved, for instance, by normalizing indicators to the average performance of all EU member states. Practically however, there is a lack of comparable data on the international level, at least at more detailed level than NACE 2. Therefore, developments at the EU level should be followed up closely such that Belgian data series can be benchmarked when comparable international information becomes available.

Second, most of the project resources were spent on data work to construct the individual indicators. One should realize that this time consuming data work is part of the process of building up sector knowledge. Only by using the data one acquires a good feeling for its quality and limitations. In the AGORA-MMS project a set of indicators was chosen based on data availability and reproducibility. In the section on the indicators in this report, alternative measures and indicators that are available in the literature are discussed and it is strongly advisable to continue working on additional indicators and refining existing ones. In particular, much more can be done with the existing data on international trade (used for import penetration and openness indicators). The product data are very detailed but also challenging to use. In addition, much work is to be done on measuring productivity and on the importance of R&D as a crucial aspect of market functioning. Intensive collaboration with other federal institutions that are working on specific datasets, for instance the National Bank for international trade data, the Federal Planning Bureau for productivity and Federal Science Policy for R&D data is a *conditio sine qua non* for further progress.

Third, many more market functioning screening tools and indicators exist than the ones we have chosen to implement. Some of these are relatively easy to implement, others are more sophisticated and challenging. In the first place, one might think of alternative synthetic indicators of market functioning like the Boone

indicator. This type of indicator has low data requirements and could be implemented relatively easily using the software procedures developed for the persistence of profits analysis. A second candidate is the econometric estimation of productivity and mark ups. Very strong progress has been made in this field, both in the theoretical and more applied literature, and some relevant references were listed in the section on price cost margins. The implementation of this methodology for a broad set of sectors is however technically very demanding and will probably require a dedicated additional research project.

To conclude, the AGORA-MMS project has been a very fruitful exercise in making use of databases accessible by the FPS Economy to construct quantitative tools for monitoring market functioning. But this project's results should not be seen as a final products or an end point. On the contrary, they should serve as starting points for additional research projects and more in depth data analyses. For this type of work, the analysis process is as important as the end product. In the course of the project, a lot of knowledge was built up and plenty of interesting routes for further research remained unexplored. The project team is confident that the division "Sector and market Monitoring" of the FPS Economy will build further on the expertise developed during the collaboration within the AGORA-MMS project, in order to serve its general mission "to identify economic sectors and markets that do show signals of suboptimal functioning, to look for the causes of these dysfunctions and to suggest solutions."