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Impact evaluation of merger decisions: lessons from the Greek experience

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During the last decade, the importance of a thorough and coherent ex-post merger review by competition authorities and courts has been increasing. Although it is widely acknowledged that addressing the competition concerns, which stem from consummated mergers, is a costly and time-consuming process, and that remedies (e.g. either structural or behavioural), when adopted, are often imperfect at best, sophisticated quantitative techniques are now available for competition agencies, attorneys and courts to help them assess the impact of a merger and the efficacy of related enforcement decisions, thus leading to improved decision-making. This article aims to cast light on the role of economic analysis in the merger case decisions. For this reason, I focus on the main quantitative techniques used in merger analysis in the Greek jurisdiction. In this way, I try to offer some suggestions to other competition agencies derived from the Hellenic Competition Commission experiences in assessing selected merger cases. Finally, I also delve into discussions of Greek competition law matters, as an example of emerging merger regime model, with respect to certain aspects of the European Union Merger Regulation.

Keywords: Merger Regulation; competition law; remedies; economic analysis
JEL Classification: L40; L44; G34; K21

1. Introduction

Economic analysis plays a central role in competition law enforcement. Economics as a discipline provides a framework to think about the way in which each particular market operates and how competitive interactions take place. This framework further allows formulating the possible consequences of the practices under review, whether a merger, an agreement between firms, or single firm conduct. It also provides tools to identify the direction and magnitude of these effects empirically. In a number of cases, economic analysis may involve the

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production, handling and assessment of very voluminous sets of quantitative data,[1] including, when appropriate, the development of econometric models. These elements have a growing importance as a result of the gradual move towards a more effects-based approach across the different instruments of competition policy of the European Union (EU).[2]

Economic analysis can involve technically advanced reasoning and tools both in the formulation of a theory of harm or in its empirical validation, which may not be easily accessible for those without economic training. To be taken into account, economic analysis needs to be framed in such a way that decisions makers can evaluate its quality and relevance. Furthermore, as an administrative authority the Commission is required to take a decision within an appropriate or sometimes a statutory time limit. It is therefore necessary to (i) ensure that economic analysis meets certain minimum standards at the outset (ii) facilitate the efficient gathering and exchange of relevant evidence, in particular any underlying quantitative data and (iii) use all reliable and relevant evidence obtained during the administrative procedure, whether quantitative or qualitative.

To evaluate the impact of merger review, that is, to assess whether the enforcement action was consistent with the consumer welfare goal and whether it was the best available option, competition authorities employ various techniques. This paper aims at shedding light on the role of such evaluation studies employed in the context of merger decisions, and, to this aim, it focuses on the main relevant quantitative techniques (merger simulation models (MSM), event studies (ESs), structural models, etc.) used in merger review in the USA and the EU.

Quantitative analysis of proposed mergers provides crucial information about structural demand characteristics (i.e. substitutability or complementarity of products, elasticity of demand, etc.). Assessing whether the products of the merging firms are close demand substitutes can be critical to the application of the localized competition theory of unilateral competitive effects of mergers among sellers of differentiated products. Accordingly, econometric estimates of demand elasticities, are typically much more informative than descriptive economic facts (i.e. market shares, barriers to entry, cost structure, etc.) in helping make inferences about whether such mergers will likely enhance Significant Market Power. However, in modern econometric techniques, a large set of assumptions has to be made, in order to estimate the appropriate model. Hence, it is important to perform serious and robust checks, since these models can be quite sensitive to changes in the main assumptions. It is also worth mentioning that these models are usually data-demanding.

[1]Quantitative data means, generally, observations or measurements, expressed as numbers. For the purposes of these Best Practices, this concept is used to refer to large sets of quantitative data submitted and/or obtained for the purposes of the conduct of an assessment of an economic (and often econometric) nature.

[2]While there are certain infringements "by object", such as cartels, which generally do not require any substantive economic analysis, the investigation of potential infringements "by effect" normally requires a complex economic assessment by the Commission.

The scope of this article is twofold. On the one hand it aims to cast light on the role of economic analysis in the merger case decisions by introducing the main quantitative techniques used in merger analysis. On the other hand, it delves into discussions of Greek competition law matters, as an example of emerging merger regime model.

The rest of this paper is organized as follows. Section 2, critically discusses the four main quantitative techniques in assessing ex-post merger control in the EU jurisdictions. Section 3 provides insights into the merger control in the OECD and the EU, while Section 4 presents the merger control procedures under the auspices of the Hellenic Competition Commission (HCC). Section 5 discusses the empirical findings of two of the most important Greek merger cases, while Section 6 concludes the paper.

2. Types of evaluation methods

Quantitative merger analysis broadly falls under two main categories, namely ex-post and ex-ante merger analysis. In an ex-ante quantitative analysis, economists evaluate in advance possible anti-competitive effects of a proposed merger, consisting either in the creation or strengthening of a dominant position in a relevant market and/or in the substantial lessening of competition by unilateral or coordinated conduct. On the other hand, the ex-post quantitative investigation of merger decisions usually serves two fundamental goals[3]: (a) to establish whether competition authorities have reached the right enforcement decision, namely whether the market structure arising from the decision is more suitable to pursue the economic goal of the EU Merger Regulation than the market structure which could have arisen from alternative decisions available to the competent authorities, and (b) to assess whether the analysis adopted by the competent authorities to reach the decision was correct (absence of Type I or II errors).

According to Figure 1, the main techniques used for the purposes of merger review involve: (a) structural models and simulations, (b) ESs, (c) difference-in-differences models (D-in-D) and (d) evaluation methods. Such techniques are not mutually exclusive; on the contrary, it would often be preferable to use a combination thereof in order to mitigate the risk of evaluation errors. The majority of these techniques seek to assess the price effects of a merger in the relevant market (s) concerned. However, it is important to note that prices are not the only competitive variable which may be affected by a merger. The competitive effects of a merger may well extend to product improvements, new product introduction, advertising and promotion, research and development, etc.

[3]Except from quantitative techniques, there are descriptive studies (often qualitative) which investigate if the conclusions or assumptions made as part of the merger review were correct. Analysis of such methods is though far beyond the scope of this paper.

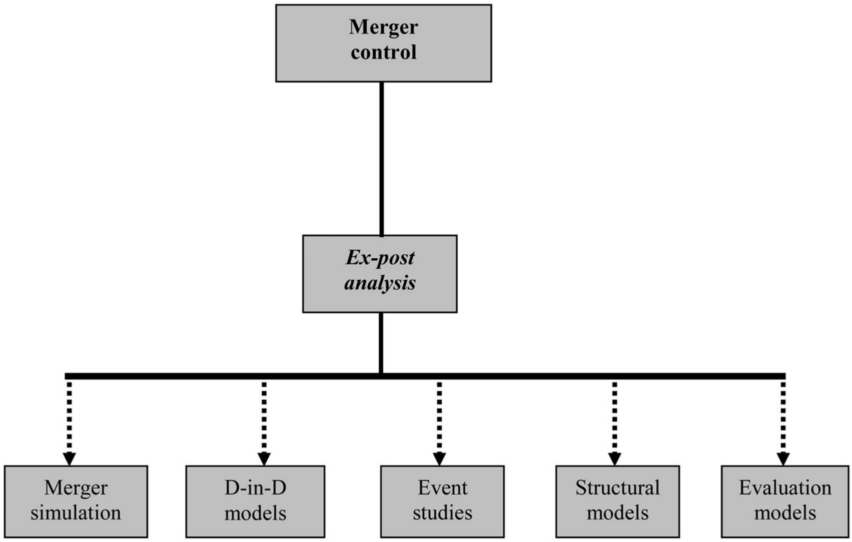

Figure 1. Employed models in ex-post merger control.

2.1. *Merger simulation models*

MSM, which are based on the theory of industrial organization, are used to predict the effect of a proposed merger on prices and product quantities through the application of modern econometric techniques (such as "almost ideal demand system" (AIDS), log-linear model, multilevel demand analysis, etc.), thus, allowing researchers to assess whether a merger may lead to a substantial lessening of competition in one or more relevant markets. In order to predict the post-merger price evolution, simulation models use pre-merger market data (e.g. prices, product quantities, cost evolution, etc.) to make different assumptions with regard to the post-merger conduct and interaction of the merging firms and their rivals.

MSM have been generally employed by antitrust authorities and merging entities as well as by courts to assess the pro- or anti-competitive effects of mergers under scrutiny.[4] Analysis based on MSM is appealing to competition agencies throughout the world for various reasons. More specifically, the development of sophisticated econometric techniques used in the context of economic analysis, during the last decade has allowed researchers to apply even more complex simulation models based on real market data. Furthermore, simulation-based techniques are quite flexible and able to integrate the traditional focus on factors

[4]See, generally, O Budzinski and I Ruhmer, 'Merger Simulation in Competition Policy: A Survey' (2009) 6 Journal of Competition Law and Economics 277, 278; J Baker and D Rubinfeld, 'Empirical Methods in Antitrust Litigation: Review and Critique' (1999) 6 American Law and Economics Review 386, 388.

such as market definition, efficiencies and potential competition. Moreover, MSM can evaluate the impact of a divestiture, which constitutes a significant structural remedy. Finally, simulation models allow the simplest counterfactuals to be considered.[5]

The use of MSM in markets of diversified products involves a dynamic four-stage process. In stage one, consumer demand is estimated through econometric methods applied to data on actual transactions, if such data is available. The most commonly used econometric models include AIDS, the linear model, the log-linear model, the probability models, such as logit or probit, and the multi-level demand estimation. Depending on the specifications of the demand equation, own- and cross-price elasticities are estimated. In this respect, it should be noted that, according to economic theory, possession of large shares by the merging entities or the existence of relatively high cross-price elasticities between their products tend to result in large (unilateral) price effects. On the other hand, small shares, low cross-price elasticities, and/or large efficiencies tend to produce small or even negative (unilateral) price effects.[6]

In stage two, the model is calibrated (i.e. through price selection for the model parameters) in order to check if its results are in alignment with the statistical data of the relevant market under scrutiny. The calibrated parameters are set in a way that estimated elasticities can yield the prices and market shares actually observed in the pre-merger market. In order to ensure the validity of MSM, the estimated own-price demand elasticities must have a negative sign, while the cross-price elasticities can be either positive (substitutes) or negative (complements).

In stage three, supply is estimated through the application of an oligopoly model which best describes the conditions of competition between the rivals. The most common oligopoly model used in this context is the so called "Bertrand" model. The classic Bertrand model assumes that firms compete purely on price, while ignoring non-price competition. Each firm decides independently the prices to be charged for its products. Both firms stand ready to deliver any quantity of the product. Therefore, in the Bertrand Oligopoly, even with only two firms, there is a competitive equilibrium price, whereas in other equivalent models, such as the so-called "Cournot" Oligopoly, increases in output lead to gradually lower prices, and firms get to have extra-competitive profits. The Bertrand model can be extended to include product or location differentiation, however, in such cases, the main conclusion – that is, that price is driven down to marginal cost – is no longer valid.

[5]A situation in which the merger is blocked or in which the merger is unconditionally cleared. See LEAR, *Ex-post Review of Merger Control Decisions*, *A Study for the European Commission*, December 2006, para. 2.23.

[6]O Ashenfelter, D Hosken and M Weinberg, 'Generating Evidence to Guide Merger Enforcement' (March 2009) NBER Working Paper No. 14798.

Finally in stage four, the new (post-merger) equilibrium can be simulated using the model calibrated with pre-merger empirical data, but adjusting market shares to the post-merger situation.

In view of the aforementioned, it is obvious that the MSM methodology has high data requirements, a fact which constitutes one of the method's major drawbacks. The data usually required to perform MSM includes: a) prices and quantities, b) input factor prices, c) demand and consumers characteristics (i.e. income, education, age, sex, employment, etc.) and d) data on the main observable product characteristics (i.e. brand recognition, customer loyalty, etc.).

2.2. *Event studies*

ES rank among the most successful tools of econometrics in competition policy analysis. They evaluate the welfare implications of private and public actions[7] through the assessment of the reactions of stock markets to an event (i.e. merger announcement, phase II decision or derogation from suspension of concentration, decisions of antitrust enforcement agencies).

One approach to ES investigates the effect of the announcement of mergers and the suspension of derogation from concentrations (Article 7 of Regulation 139/2004) on shareholder value both in the target firm and in the bidder. The main result of this approach is that the announcement of the event increases the value of the acquired firm and decreases (or at least does not affect) the value of the acquiring firm, thus, offering the shareholders of target firms gains, whereas the shareholders of the bidding firms "do not gain".[8]

Another ES approach evaluates the competitive effects of merger announcements on the merging entities and their competitors in the relevant product market in which the merger occurs, by analysing the price of the merging and non-merging firms' shares around the announcement date of the event.[9]

ES rely on two assumptions, that is, that financial markets are efficient and that the agents' expectations are rational, therefore, a firm's stock price should always represent the discounted value of its flow of profits, and when an event is announced, which is expected to affect a firm's profits, the stock price should

[7]F Wenston, S Kwang and S Juan, *Takeovers, Restructuring, and Corporate Governance* (Prentice Hall 1998), 93–106.
[8]E Maynes and J Ramsey, 'Conducting Event Studies with Thinly Traded Stocks' (1993) 17 Journal of Banking and Finance 147; P Fotis, M Polemis and N Zevgolis, 'Robust Event Studies for Derogation from Suspension of Concentrations in Greece during the Period 1995–2008' (2011) 11 Journal of Industry Competition and Trade 67, 72; P Fotis, M Polemis and N Zevgolis, 'Stock Price Performance as an Argument for Derogation from Suspension of Concentrations: Reality or Myth?' (2009) 30 European Competition Law Review 219.
[9]See, *inter alia*, L Beverley, 'Stock Market Event Studies and Competition Commission Inquiries' (2007) Centre for Competition Policy Working Paper No. 08-16.

adapt to reflect this expectation. Any change in the stock prices of the firms operating in the affected markets, relative to the value which would have been observed had the event not occurred, is referred to as "abnormal results".

There are several methods to estimate abnormal results, that is, the trade-to-trade method, the "single" method, or the so-called "lumped" or "uniform" method, the first one being the most commonly used approach.

More specifically, the trade-to-trade approach[10]

> uses all available information about total stock and market returns over time and no bias is introduced by attempting to estimate unobserved daily stock returns as occurs with the lumped or uniform techniques. However, since trade to trade returns ignore information about daily market returns over non-trading periods, it is not clear that it is theoretically superior to the lumped method.

For instance, let us assume that daily continuously compound stock return for firm j is calculated as follows:

$$R_{j,t} = \ln(P_{j,t}) - \ln(P_{j,t-1}). \tag{1}$$

By assuming one day stationarity in the return generating process, the multi-period return for firm j ending on date t is:

$$R_t = \ln\left[\frac{P_{j,t}\hat{P}_{j,t-1}\,\ldots\ldots.\hat{P}_{j,t\ldots\ldots\ldots n_t+1}}{\hat{P}_{j,t-1}\hat{P}_{j,t-2}\,\ldots..\hat{P}_{j,t\ldots\ldots\ldots.n_t}}\right], \tag{2}$$

where n_t is the length of the interval of non-trading dates (the period of trading dates between the trade in period t and the previously successful traded date) ending on date t and $\hat{P}_{j,t-u}$ is the unobserved stock price of firm $j$for date $t-u$ ($u = 1\ldots\ldots.n_t - 1$). Therefore, the trade-to-trade return equals the sum of n_t unobserved one day returns. Following Equation (1), the adjusted trade-to-trade return is as follows:

$$R_{j,t} = \frac{\ln(P_{j,t}) - \ln(P_{j,t-u})}{n_t}. \tag{3}$$

In all cases, in such situations, analysts should decide whether to use daily, weekly or monthly returns so as to reliably conduct ESs.[11] Conclusively, even though ESs are well developed, and the data required to apply this methodology is quite limited and easy to acquire, there is some concern regarding its

[10]Maynes and Rumsey (n 8) 145; J Barthodly, D Olson and P Peare, 'Conducting Event Studies on a Small Stock Exchange' (2007) 13 European Journal of Finance 227.
[11]Fotis, Polemis and Zevgolis (n 8) 67, 74.

effectiveness for small stock exchanges with thinly traded stocks (infrequent trading or lumped returns phenomenon).[12] Moreover, not all affected agents are firms and that not all firms' stock is traded on the market, therefore such data shall not always be available. This constitutes the main limitation of this methodology.

2.3. *Difference in differences models*

The D-in-D methodology is a non-experimental technique which measures the effect of a treatment at a given period in time. D-in-D constitutes the most common technique of evaluating merger price effects.

More specifically, the price effect of the merger is isolated through the comparison of price fluctuations in the market affected by the merger as against prices in a competing market ("control" product or geographic area), in which price is affected by economic factors other than the merger. Thus, pre- and post-merger changes in price in the "control" product or area provide an indication of the effect of such other economic factors. Price changes in the "control" product or area are subtracted from price changes in the affected product or area, and one can, thus, assess the merger impact. The D-in-D method is useful, so long as the following three conditions be satisfied:

(a) The "control" product or area must be unaffected by the merger,
(b) Economic factors, other than the merger, must have a similar impact on both the "control" and affected products or areas, and
(c) Any other factors affecting price, which are unique to the affected or control products or areas, cannot be correlated with the merger.

One of the main advantages of this method is that competition authorities and courts do not have to estimate the cost and demand factors which affect the pricing mechanism. In other words, the researcher assumes that changes in those factors equally and identically affect the merger market and the comparison market. However, the key difficulty in these studies is to identify a suitable proxy variable (i.e. a comparison market) for the merger market. While this approach has been frequently used by competition authorities, the number of court cases remains relatively small.[13]

[12]The infrequent trading phenomenon appears when some stocks do not trade daily in the stock exchange. In such a case, the estimated variance and co-variance of the stock performance will positively correlate with their trade frequency.
[13]D-in-D analysis has been used in the USA in order to analyse the effect of airline alliances (Continental/America West and Northwest/Alaska) on airline fares. The main result of this study was the decrease of the average fares by 5–7% due to the existence of the alliances. See D Rubinfeld, 'Econometric Issues in Antitrust Analysis' (2010) 166 Journal of Institutional and Theoretical Economics 62.

The great appeal of the D-in-D estimation derives from its simplicity as well as its potential to circumvent many of the endogeneity problems which typically arise when making comparisons between heterogeneous individuals.[14] However, there are some serious drawbacks involved, mainly consisting in the fact that the D-in-D estimation uses many years of data and focuses on serially correlated outcomes, but it ignores that the resulting standard errors are inconsistent, leading to serious over-estimation of t-statistics and significance levels,[15] and that the selection of "control" variables entered in the regression model can matter. To be more specific, the inclusion of more covariates (such as controls) in the regression can improve the accuracy of the model if movements of the control variables are correlated with the treatment group. Finally, D-in-D models may be subject to certain biases (mean reversion bias etc.).

2.4. *Evaluation methods*

The evaluation methods, which encompass various estimation techniques, consist in the comparison between the behaviour of two groups of agents: the control group and the experimental group. The basic principle is that, on condition that all other factors are equal, the policy effect, namely the effect of the competition authority's decision, consists in the difference in performance between the two groups.[16] This methodology evaluates merger effects on several competitive variables, and not just price effects.

The data requirements of this set of methods can be summarized as follows: a) data on the merging firms and their competitors (i.e. market shares, pricing policy, discounts, etc.), b) data on one outcome variable (i.e. prices, profits, R&D expenditure); c) data on the exogenous covariates (i.e. demand and cost shifters, such as income, population density and input prices) and d) data on other exogenous variables.

Even though the academic literature on the use of evaluation methods in merger control is quite limited, the logic of this instrument is extensively used (*ex ante*) by antitrust authorities, since it appears to be quite simple to use, at least in its most basic form.[17]

3. Merger review in the OECD and the EU

In 2005, the OECD Recommendation on Merger Review was adopted. The Recommendation instructs the Competition Committee to review periodically the

[14] M Bertrand, E Duflo and S Mullainathan, 'How Much Should We Trust Differences-in-Differences Estimates?' (2003) MIT Working Paper 01-34, 2.
[15] ibid 3.
[16] LEAR (n 5) para 2.26.
[17] ibid para 2.28.

experiences of Member countries and of non-member economies that have associated themselves with this Recommendation and to report to the OECD Council as appropriate on any further action needed to improve merger laws, to achieve greater convergence towards recognized best practices, and to strengthen co-operation and co-ordination in the review of transnational mergers. To date the Committee has not yet reported to the Council on the Recommendation. The Recommendation covers four areas: (i) the notification and review procedures; (ii) the co-ordination and co-operation with respect to transnational mergers; (iii) the resources and powers of competition authorities and (iv) the periodic review of merger laws and practices.

In the area of notification and review procedures, it is recommended that the review procedure is effective, efficient and timely, that the procedural fairness is guaranteed, that third parties with a legitimate interest in the merger under review have an opportunity to express their views, that business secrets and other confidential information are protected and that foreign firms are treated no less favourably than domestic ones. The decisions on the merger should be made within a reasonable and determinable time frame. Competition authorities should be provided with sufficient information to assess the competitive effects of a merger; at the same time, unnecessary costs and burdens on merging parties and third parties ought to be avoided. Merging parties should be provided with a reasonable degree of flexibility in determining when they can notify a proposed merger; they should also be given an opportunity to consult with competition authorities any significant legal or practical issues that may arise during the course of the investigation. The merging parties should be able to obtain timely and sufficient information about material competitive concerns raised by a merger, a meaningful opportunity to respond to such concerns and the right to seek review of final adverse enforcement decisions on the legality of a merger by a separate adjudicative body within reasonable time periods. Only those mergers which have an appropriate nexus with the country in question should be notified (or qualify for review in countries without mandatory notification requirements); the notification criteria (or the criteria for review) should be objective and clear. Mergers that do not raise material competitive concerns are to be subject to expedited review and clearance. The rules, policies, practices and procedures involved in the merger review process should be transparent and publicly available; reasoned explanations for decisions to challenge, block or formally condition the clearance of a merger should be published as well.

In the area of co-ordination and co-operation concerning transnational mergers, Member countries should encourage such co-ordination and co-operation and eliminate or reduce impediments to it. Merging parties may facilitate this co-operation and co-ordination, in particular with respect to the timing of notifications and provision of voluntary waivers to confidentiality rights. Safeguards concerning treatment of confidential information obtained from another competition authority should be established. While reviewing a transnational merger, every Member country should only aim at the resolution of domestic competitive problems arising from such a merger and should avoid inconsistencies with remedies sought in other reviewing jurisdictions.

In the area of resources and powers of competition authorities, the Member countries are encouraged to ensure that competition authorities have sufficient powers to conduct efficient and effective merger review and to effectively co-operate and co-ordinate with other competition authorities in the review of trans-national mergers. Finally, it was recommended that the Member countries should review their merger laws and practices on a regular basis in order to seek improvement and convergence towards recognized best practices.

Pursuant to Article 18 of Regulation 1/2003 and Article 11 of the EC Merger Regulation, the European Commission is empowered, in order to carry out its duties, to require undertakings and associations of undertakings to provide it with all necessary information. It is Directorate General (DG) Competition that defines the scope and the format of requests for information. Any antitrust or merger investigation involves methods for (1) collecting data, (2) analysing data and (3) drawing inferences from data. This document provides guidance to comply with a request for quantitative data. However, many of the principles here identified apply, more generally, to responses to any request for economic information, quantitative or qualitative.

Quantitative data may help DG Competition to conduct statistical analysis to define markets, establish a counterfactual, assess the potential anti-competitive effects of a notified merger, validate efficiency claims or predict the impact of remedies. In order to do that DG Competition needs to get accurate data, with sufficient time to analyse it. DG Competition is aware of the costs an antitrust or merger review process may impose on undertakings. The purpose of this section is to provide recommendations to reduce the burden on the involved parties and DG Competition posed by the production and processing of quantitative data, while at the same time ensuring and enhancing the effectiveness of DG Competition's substantive review. These best practices are intended as guidance and do not supersede instructions in any formal data request issued by DG Competition.

4. Assessment of Greek merger control

Merger review proceedings by the HCC resemble those before the European Commission. Following the introduction of the new Greek Competition Act (L. 3959/2011) in particular, the procedural and substantive framework for conducting a merger review process in Greece essentially mirrors the EU paradigm under the EU Merger Regulation (Regulation. 139/2004).

4.1. *Merger control under the Hellenic Competition Act*

The Hellenic Competition Act sets out strict deadlines as to the approval or prohibition of notified concentrations. Concentrations that do not raise serious doubts as to their ability to seriously restrict competition are approved, within one month from the date of the duly made notification (phase I concentrations). In case of competition concerns arising from the notified transaction, the HCC-DG notifies the HCC Chairman, who the issues a decision launching an in-depth investigation (Phase II). A Phase II merger hearing before the HCC would then be held usually within 2 months of the initiation of the in-depth notification, while the HCC's final decision is reached within 90 days thereof.

Whereas the vast majority of mergers notified to the HCC are cleared in Phase I, there have recently been a number of Phase II merger decisions concerning complex competition issues (i.e. vertical restraints, unilateral and coordination effects, etc.), some of which warranted the submission of commitments by the notifying parties.

The Greek Competition Act (L. 3959/2011) streamlined the merger-review deadlines, while reflecting more closely the corresponding provisions of Regulation (EC) 139/2004 (EU Merger Regulation). According to Article 6 of the Competition Act (L. 3959/2011), the jurisdictional thresholds for notifying mergers before the HCC are as follows:

> All concentrations of undertakings (mergers and acquisitions) shall be notified to the Hellenic Competition Commission (HCC) within thirty (30) days of the conclusion of the agreement or the announcement of the bid or acquisition of a controlling interest, where turnover by all undertakings in a concentration within the meaning of Article 10 totals at least EUR one hundred and fifty million (150,000,000) on the global market and each of at least two of the undertakings involved generate turnover totalling over EUR fifteen million (15,000,000) on the Greek market. It is worth mentioning that, the period of thirty (30) days shall commence on the date of the first of the acts referred to in the previous paragraph.

The HCC examines the notified merger as soon as the relevant notification is submitted. At the end of the Phase I process, the HCC decides one of the following:

(a) If it is established that the notified concentration does not fall into the scope of jurisdiction of the Hellenic Competition Act, the Chairman of the HCC issues an act to that effect, within one month from the notification.
(b) If it is established that the notified concentration, although falling into the scope of jurisdiction of the HCC, does not raise serious doubts as to whether it restricts competition in the relevant markets concerned, the HCC clears the concentration, by decision issued within one month from the notification.
(c) If it is established that the notified concentration falls into the scope of jurisdiction of the present law and raises serious doubts about the concentration's compatibility with the requirements of the functioning of proper competition in the relevant markets concerned, the Chairman of

the HCC initiates an in-depth investigation (Phase II), by decision issued within one month from the notification.

The information that the notifying parties are required to submit to allow the HCC to assess the effects on competition of the notified concentration relates to certain economic and legal aspects, which essentially mirror the information required under the Form CO at EU level.

During the merger review process, the case team (i.e. economists and lawyers) of the Directorate General of Competition (HCC-DG) collect the relevant data, conduct the economic analysis and legal assessment, perform possible econometric techniques, participate in the oral hearing, etc.). Depending on the availability, reliability and the time span until the clearness of the case (nearly three months from the merger notification), the HHC-DG uses published data or data that is provided from the parties in order to support the statement of objection (SO), or more specifically to delineate the relative product market and to assess the effect of the proposed merger.

If it is established that the notified transaction, although subject to prior notification before the HCC, does not raise serious competition concerns, the HCC clears the notified transaction in Phase I, that is, by decision issued within one month from the notification.

During the investigation, based on Article 6 para 6 of the Hellenic Competition Act,

> The persons with a duty of notification must report the notified concentration in a national financial newspaper at their own expense immediately after notification. The text of the report shall be notified immediately to the Competition Commission, which shall post it on its website. Any interested party may submit comments or provide information on the notified concentration. The Competition Commission shall take account of the reasonable legitimate interests of undertakings in the concentration in the protection of their business secrets. The precise content of the report shall be stipulated by decision of the Competition Commission, which shall also regulate all other related matters.

In addition, third parties may ask to intervene in the Oral Hearing process before the HCC and express orally their views. It is at the discretion of the HCC whether to hear third parties at the stage of the Oral Hearing. According to Article 27 of the Competition Act, the decisions of the HCC, which must be reasoned, are published in the Government Gazette and also posted on the Internet. Furthermore, the HCC publishes all merger-related laws, notices and other guidelines on its website (http://www.epant.gr).

Article 41 of the Greek Competition Act, regulates the protection of business secrets and other confidential information. More specifically, the notifying parties may characterize to the notification form such data separately as "Business secret", provided that these data or information required submitting to the HCC are confidential business secrets and an imminent publication may harm their rights. The undertakings concerned must justify their confidentiality request. The HCC Rules of Procedure provide further details on the process.

On the other hand, the case handlers of the HCC who obtain knowledge of confidential information on undertakings shall keep such information in confidence. There are not any specific rules concerning mergers of foreign as opposed to domestic firms. The determining factor for jurisdictional purposes is the anticipated effect in the territory of Greece, regardless of whether the merging entities are foreign or not. The current fee associated with the prior notification of a concentration is 1040 Euro.

During the course of the investigation, the merging parties do have the opportunity to actively interact with the case team (e.g. responding to questionnaires, meetings with the merger team, telephone calls, exchange of information via e-mail, etc.). The HCC-DG responds positively to requests for state-of-play meetings, particularly during Phase II investigations. Guidance in the course of pre-notification discussions is also increasingly pursued by notifying parties and the HCC-DG attempts to accommodate any such requests, albeit on an informal basis.

The HCC is required to demonstrate to the merged parties that the proposed concentration raises competition concerns. As soon as the case team provisionally reaches the conclusion that the notified transaction may lead to a substantial lessening of competition, it communicates to the parties a Statement of Objections (SO). The SO (or positive recommendation for clearance) must be issued within 45 days following the initiation of Phase II.

The SO contains an analysis of the facts of the case, a legal assessment and recommendations. It is signed by the Commissioners – Rapporteurs[18] in charge of the case and by the officials of the HCC-DG[19] that have been assigned to work on the case. The purpose of the document is to inform the notifying parties of the preliminary conclusions of the investigations, with a view to enabling them to exercise their rights of defence in writing and orally at a hearing before the HCC Board. It sets out in a detailed manner the results of the in-depth investigation, that is, the factual, economic and legal analysis of the DG and the Commissioner – Rapporteur concerning the alleged application (or non-application) of the competition rules. The SO is not binding on the HCC Board.

Undertakings that have notified a merger have a right of access to the non-confidential data of the file following the notification of the SO and the summons to attend the hearing before the HCC Board (access-to-file). Provided that access to documents containing confidential information or business secrets is indispensable, in order for the subject of the investigation, to exercise its right of defence, the HCC President may by reasoned decision, at the request of the party concerned, grant access in whole or partially to the documents in question.

[18]There are four Commissioners-Rapporteurs (who are also Members of the HCC Board, which is the decision-making arm of the Authority) and each mature case is assigned to one of them following a lottery.

[19]The Directorate-General of the HCC (HCC-DG) is the investigative arm of the Authority.

In this case, the HCC President exercises powers similar to those of the European Commission's Hearing Officer[20]; this constitutes an additional procedural safeguard.

The parties may then submit a written memorandum, which shall contain their views, a statement of whether they wish to exercise their right to an oral hearing, the name of their legal representative, the number of witnesses they wish to call and the topics, on which the latter will be questioned, including a specific justification of the need for their examination. In their written memorandum (Reply to the So) and at the Oral Hearing, the parties are expected to formulate appropriate and corresponding remedy proposals that would effectively address the above concerns with regard to the risk of a significant lessening of competition and the resulting adverse effects. In practice, the HCC-DG will also gather information on possible remedies and consider relevant options as a starting point for the rigorous discussions with the parties that follow the communication of the HCC-DG's concerns, which take place in order to clarify the competition problems arising and to assist the parties in formulating their proposed remedies. Moreover, during the Oral Hearing, following a presentation of the SO by the Commissioner – Rapporteur, the notifying parties are heard. They may present their arguments and rebut the arguments put forward by the SO and/or by any third parties-interveners. The number of witnesses may not exceed three for each party. The HCC Board may limit the number of witnesses at its discretion by decision reached during the hearing. The party, against which the procedure before the HCC has been launched, is entitled to be heard last. The HCC Board Members and the Commissioner – Rapporteur may with the permission of the President examine the parties or their legal representative and their witnesses and experts. Contrary to the EU system, cross-examination may also be used.Based on the SO, the parties' submissions, and further to any possible commitments given by the parties in order to address the HCC's competition concerns, the HCC Board eventually reaches a decision, either clearing the merger unconditionally, or accepting the parties' commitments (on the condition that they are proportionate to the competition problem they purport to address), or prohibiting the merger.

Finally, the HCC's decisions (including merger decisions) are subject to an appeal on substance (full review) before the Athens Administrative Court of Appeal, as well as subject to further review on legality grounds before the Supreme Administrative Court. There is no specific time frame for the judicial review, but usually a procedure before the Athens Administrative Court of Appeal may last up to 18–24 months.

[20]Commission Decision 2001/462 of 23 May 2001 on the terms of reference of hearing officers in certain competition proceedings, OJ [2001] L 162/24.

4.2. *Co-ordination and co-operation*

Co-ordination and Co-operation among National Competition Authorities (NCAs) of the European Union concerning merger control takes place through the “Best Practices on Cooperation between EU National Competition Authorities in Merger Review”.[21] According to the manual of cooperation, the objectives of the Best Practices are:

(1) To improve the degree of information sharing and cooperation between NCAs with regard to multijurisdictional mergers
(2) To provide a non-binding reference framework for cooperation between NCAs
(3) To apply the principles set out in the Best Practices when NCAs review the same merger
(4) To achieve greater efficiency and effectiveness with regard to parallel merger review proceedings.

There are no specific rules concerning coordination of the timing of notifications. However, the HCC takes into account requests by the parties concerning the timing of notifications in other jurisdictions. As regards the protection of confidential information and the treatment of confidentiality requests, the same rules apply as in antitrust proceedings.

5. Merger case studies

As already discussed, the evaluation of merger decisions through ESs may, inter alia, be performed either by an ex ante estimation of the announcement effects of mergers on the merging and rival entities or by an ex post evaluation of the balance sheet profit effects of mergers on the merging and rival entities for a certain period of time, post-merger.[22] The latter methodology has been employed by the HCC on several occasions.

In the two cases summarized further below, that is, the *PPC–Halyvourgiki* joint venture and the *Delta–Chipita* merger, the HCC-DG conducted ex post merger evaluation studies through the application of ES analysis on the basis of publicly available data (i.e. stock prices, general market index), in order to investigate the impact of the respective HCC decisions (and the effectiveness of the behavioural remedies imposed by the HCC in the first case).

[21] See <http://ec.europa.eu/competition/ecn/nca_best_practices_merger_review_en.pdf> as well as <http://europa.eu/rapid/pressReleasesAction.do?reference=IP/11/1326&format=HTML&aged=0&language=EN&guiLanguage=en>.
[22] T Duso, K Gugler and B Yurtoglu, ‘Is the Event Study Methodology Useful for Merger Analysis? A Comparison of Stock Data and Accounting Data’, GESY Discussion Paper No. 163, September 2006.

More specifically, the analysis conducted in these two cases evaluated the statistical (market) model

$$AR_\tau = R_{j,\tau} - E\left(\frac{R_{j,\tau}}{X_\tau}\right), \tag{4}$$

where AR_τ is the Abnormal Return, $R_{j,}$ is the actual return of firm j on day τ and $E(R_{j,}/X_\tau)$ is the expected or conditional return given event on day τ under normal conditions.

The assumptions of *efficient market hypothesis* and *rational expectations* imply that the market model forecasts that firm j's stock return at time τ (normal return) is proportional to a market return. That is,

$$E\left(\frac{R_{j\tau}}{R_{m,\tau}}\right) = \alpha + \beta R_{m\tau} + \varepsilon_{j\tau}, \tag{5}$$

where $R_{m\tau}$ is the return on the market index for day τ in the event window. The estimated values of the model's parameters[23] were set to predict what firm j's stock return would have been, had the merger not been announced ($\hat{R}_{j\tau}$). Therefore,

$$\hat{E}\left(R_{j\tau}/R_{m,\tau}\right) = \hat{\alpha} + \hat{\beta}\, R_{m\tau} + \varepsilon_{j\tau}. \tag{6}$$

Subtracting the predicted return of firm j on day τ from Equation (4), we get the Abnormal Return/Residual around the merger announcement day τ ($AR_{j\tau}$). The factual background of the cases concerned was as follows:

5.1. *The PPC–Halyvourgiki joint venture*

On 16 February 2009, companies PPC S.A. and Halyvourgiki S.A. notified the formation of a joint venture to the HCC, pursuant to Article 4b of the Competition Act. The joint venture would undertake the construction and operation of two power plants with a total capacity of 880MW, within the facilities of Halyvourgiki S.A. Halyvourgiki S.A. would own 51% of the joint venture share capital, whereas PPC would own the remaining 49%. The formation of the joint venture was announced on 12 February 2009, and a Phase-II referral took place on 12 March 2009. On 29 May 2009, the HCC cleared the notified concentration imposing certain remedies intended to ensure an effective level of competition in the relevant market of production of electricity.

[23]The Greek parameters α and β of Equation (5).

The following conclusions were drawn in the context of the ES analysis conducted by the HCC-DG:

(a) The stock price of PPC indicated a significant positive abnormal return of approx. 0.34% prior to the announcement date of the formation of the joint venture. Moreover, PPC shares experienced a cumulative abnormal positive return of 0.98% around the announcement date,
(b) It took the stock market two days to fully absorb the impact of the announcement, with the merging entities' stock prices increasing by around 0.26% on the announcement date, whereas a further increase of 0.38% was noted on the following day,
(c) The rival entities' stock prices (Terna and Mytilinaios) experienced negative abnormal results at a rate of -5.26% on the day following the announcement date.

As the above analysis suggests, the fact that the share prices of the merging entities' competitors illustrated negative significant abnormal returns indicates that investors expected the merger to be profitable for the merging companies, and not for the rivals, and, thus, it was unlikely that such merger would induce adverse effects on competition in the post-merger oligopolistic relevant market (production of electricity).

It is worth mentioning that, according to economic theory, insignificant or negative abnormal returns for the merging entities' rivals around the announcement date suffice to conclude that the market expects the merger to be cost-reducing, and not price-increasing. A decrease in the market value of the merging entities' rivals, as in the case of the PPC–Halyvourgiki joint venture, strongly suggests that concentration in the relevant market is unaffected, since it may be due to a relevant decrease in the ability of firms to coordinate production and pricing decisions, which in turn generates a positive impact on competition in the relevant market. Such positive impact might be due to the absence of horizontal and vertical effects (conglomerate merger).

5.2. *The Delta–Chipita merger*

On 17 April 2006, Delta Holdings S.A. (Delta) and Chipita International S.A. (Chipita), both active in several segments of the food sector, notified their merger to the HCC. Upon fulfilment of the conditions provided for in the share purchase agreement, Delta would fully absorb Chipita's subsidiaries (i.e. Goody's S.A., General Foods S.A. and Delta Foods S.A.) and acquire full control of Chipita. Following completion of the merger, the acquiring company would change its name to Vivartia S.A. On 17 May 2006, the HCC initiated a Phase-II investigation on the basis that the transaction could raise serious competition concerns in certain affected relevant markets. Based on the evidence gathered during investigation, the HCC concluded that the notified transaction could not potentially impede effective competition through the creation or a strengthening of a dominant position in the relevant markets concerned. The concentration was cleared by the HCC on 10 July 2006.

In this context, the ES analysis conducted by the HCC-DG evidenced that the HCC did not commit a Type II error. In other words, the HCC allowed a merger, which the stock market considered pro-competitive (i.e. a merger which did not reduce consumer surplus).

Again, as in the case of the PPC–Halyvourgiki joint venture analysed above, in this conglomerate merger case, a statistically significant negative cumulative average abnormal return (CAAR) in the market value of the merging entities' competitors on the day after the announcement of the merger evidenced that competition in the relevant market remained unaffected.

6. Conclusions

The use of economic analysis in merger cases has become more common in the competition law and enforcement. On the one hand, generally improvement in the quantitative techniques in tandem with the availability of data made application of empirical methods used in economic analysis feasible. On the other hand, reliable economic analysis is useful for national competition authorities and judges in their decisions.

Despite the fact that economic analysis can play many useful roles in antitrust, it is important to have accurate data and correct techniques at hand. However, the need for economic analysis and especially econometric techniques increases as the restriction of effective competition in the relative product market in which the merger takes place becomes a serious issue. At the majority of merger cases the data provided by the parties is not reliable and in some cases biased in favour of clearness of the merger. Therefore, national competition authorities should not rely on the data sets submitted by the parties unless their reliability is verified by other economic sources.

Proceedings in merger review by the HCC resemble the ones before the European Commission. Within a month of the notification, the HCC estimates whether the merger under review may be expected to result in a substantial lessening of competition in the relevant markets affected. In case of such concerns, the HCC notifies the HCC Chairman, who issues a decision launching an in-depth investigation (Phase II). A Phase II merger hearing before the HCC would then be held within two months of the notification, while the HCC's decision is reached within 90 days thereof. Whereas the vast majority of mergers notified to the HCC have been cleared in Phase I, it is Phase II merger decisions that concern complex competition issues.

In the course of recent years, the HCC has increasingly been using quantitative research techniques (such as econometrics) coupled with extensive qualitative market research in Phase II merger control, in order to assess pre-merger market conditions, as well as to forecast, as precisely as possible, the post-merger environment. By way of increasing scrutiny, accountability and consistency, the HCC is more than ever capable of identifying the competition issues arising from a particular merger. Better understanding of market forces has in turn led to more certainty in assessing whether a merger should be allowed or whether action should be taken to prevent it or mitigate its negative consequences.

Disclosure statement

No potential conflict of interest was reported by the author.