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**Impact Evaluation of Merger Control Decisions**

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# Impact Evaluation of Merger Control Decisions

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**Abstract:** This paper provides a comparative analysis of methods for the empirical ex post evaluation of merger control decisions. It develops a competition-policy oriented framework of assessment criteria for the leading evaluation methods and applies them to structural modeling and simulation, differences-in-differences methods, event studies as well as survey-based methods. It concludes that a method-mix is recommendable, however, under the exclusion of event studies that fail to safeguard a minimum level of reliability of their results. Furthermore, the paper warns against overly optimistic expectations about the effects of systematic impact evaluations of merger decisions.

**Keywords:** empirical methods of industrial organization, merger control, competition policy, antitrust decisions, comparative analysis

**JEL:** C18, C54, L41, L40, K21

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## 1. The Impact of Merger Control Decisions

Competition is a self-organized, decentralized coordination process. It coordinates suppliers and customers on markets through price signals reflecting changing scarcities. Without requiring individual knowledge of overall allocation issues and without requiring the individuals to target the balance of supply and demand, competition sets incentives for both market sides to adjust the individual supply and demand plans according to the scarcity relations just by acting in a self-interested way (profit and utility maximization). Consequently, *allocative efficiency* is achieved through individual interaction in competition and without intervention or ex ante planning by any centralized authority (government, economic planning commission, etc.). Furthermore, competition provides incentives for producers and other suppliers to innovate. Only in competitive marketplaces, firms can benefit from being innovative by dragging customers away from competing firms and increasing their own market shares. At the same time, non-innovative firms must fear that more innovative competitors drag their customers away by providing innovative products or services better suited to the preferences of customers. This 'double incentive' supplements the intrinsic motivation to innovate because of engineering curiosity and, thus, considerably increases the incentives to innovate compared to non-competitive 'market'places. Another incentive from competition, the incentive to imitate innovators, turns this innovation effect of competition into a permanent force. This entails the procompetitive effect of allowing only temporary competitive advantages through innovation, maintaining the incentive to further innovate for hitherto successful innovators. Next to the allocation effect (*stationary efficiency*) and the innovation effect (*dynamic efficiency*), competition keeps markets flexible and creates and maintains a high ability of markets to adapt to changing market environments. Firms (and customers) in competitive markets are trained to adjust their business behavior creatively and adaptively to each other (strategic interdependency) and, thus, are better capable of coping with external shocks (changing market environment) than firms in non-competitive settings (*evolutionary efficiency*). Through all three avenues, competition serves the normative goal of increasing economic welfare.

In addition to these economic welfare-related competition effects, there is one more effect relating to societal goals. Competition is inevitably intertwined with economic freedom. Having competition among suppliers requires the freedom of choice on the side of the customers as well as the freedom to choose strategies (pricing, innovation, product design, service, industry, etc.) on the side of the enterprises. And, the other way around, economic freedom for enterprises and customers automatically and inevitably creates competition.

All these beneficial effects of competition are achieved in a decentralized and self-organized way in the absence of centralized, political planning or organization in

the economy. However, the notion of free markets unleashing the beneficial forces of competition is also misleading to some extent. Competitive markets require an institutional framework in order to be sustainable and workable and this turns them into a social construction. Among the institutional preconditions for competitive markets are property rights, commercial laws and many more. Furthermore, competition rules represent necessary institutions for the sustainable existence and functioning of competitive markets. Unfortunately, competition possesses an inherent tendency towards self-destruction. Instead of aiming to be better than its competitors, any enterprise can alternatively attempt to improve its market situation by eroding competition, for instance by colluding with its competitors (cartelization), predating and deterring competitors (abuse of market power and unfair competition) or by merging with its competitors into one entity (mergers and acquisitions). This incentive to circumvent and erode the forces of competition requires competition rules and their enforcement through competition policy. Therefore, the 'impact' of merger control decisions (as part of competition policy) should be to protect and maintain competition by preventing the occurrence of anticompetitive mergers. As such, merger control decisions should exercise a low degree of interventionism into markets by 'just' preventing anticompetitive combinations of enterprise ownership (negative intervention). In contrast, merger control decisions should not attempt to design or mould competitive market structures (positive, creative intervention).<sup>1</sup>

Now, in an imperfect world, merger control decisions can be mistaken. Although the task at hand might look easy at first sight – procompetitive or anticompetitive, harm to competition or not – it is made rather complicated by the multidimensional character of competition (allocation, innovation, diversity, etc.). Competition can be harmed in many ways: price increases and output reduction, slowing down innovation, making markets more sclerotic, etc. From an economic theory perspective, it is impossible to discriminate between the different dimensions of competition regarding their importance for overall welfare. No single dimension of competition can scientifically be said to be more important than another one. The fact that emphasis of analysis and policy is mostly put on prices and quantities (allocative efficiency) merely follows practical limitations regarding measurability and assessability of the other dimensions. In summary, the question when a merger has a negative impact on competition is far from being trivial!

Consequently, merger control decisions can be wrong in two different ways: (i) merger control decisions may erroneously prohibit procompetitive mergers (type I errors), or (ii) merger control decisions may erroneously allow anticompetitive mergers (type II errors). Both error types change the impact of merger control decisions

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<sup>1</sup> Drawing the borderline between these two types of intervention may at times be difficult in practice, for instance, when it comes to conditional approvals of mergers.

(compared to error-free decisions). In case of type II errors, the merger control decision fails to protect competition on the market in question. In case of type I errors, the merger control decision represents an unnecessary intervention into competition and efficiency effects of procompetitive mergers may be discarded.

## 2. Methods of Ex Post Impact Evaluation

### 2.1 Motivation, Incentives, and Categories of Impact Evaluation

Conducting ex post evaluation of merger control decisions obviously targets the 'correctness' and accuracy of the decisions in question. Fundamentally, it can be distinguished between judicial reviews, targeting the legal accuracy of a decision, and economic reviews, targeting an assessment in terms of decision errors in regard to welfare. While judicial reviews are typically institutionalized (appellation and revision courts) and effectively alter the (authority or first instance<sup>2</sup>) decision, economic reviews most often are not institutionalized and do not change the original decision. Furthermore, economic reviews may focus on the agency decision alone or include the judicial review process, i.e. assessing the final subject-matter decision. This paper will focus on economic reviews of the final decision, i.e. including alterations by judicial review procedures. Consequently, judicial reviews are not viewed to be an ex post impact evaluation but rather to be a part of the to-be-evaluated decision (discussions provide *Bergman* 2008: 389-391; *Budzinski* 2012b: 64-65).

Furthermore, economic ex post evaluation of merger control decisions can be motivated by three different purposes (see with somewhat differing denomination and systematics *Don et al.* 2008: 343 and *Davies & Ormosi* 2010: 4-6):

- I. *Regime accountability*: was the overall merger control regime worth the taxpayers' money? This can be subdivided into (a) absolute regime accountability, i.e. regime benefits exceeding regime costs (survey: *Bergman* 2008) and (b) comparative regime accountability, i.e. performance compared to other regimes (best practices; benchmarking). A regime may be beneficial in over-

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<sup>2</sup> Fundamentally, there are two stylized types of competition policy systems (*Budzinski* 2009: 372-374). The administration system centers around a competition agency with investigation and decision powers with courts acting as appellation and revision bodies. European competition policy may serve as a fitting example for this type. In the court system, on the other hand, competition agencies are limited to investigation power and must seek courtroom decisions for enforcement. Higher courts act as appellation and revision bodies. The U.S. antitrust system resembles important features of this type. Note that *de facto* the competition agency has some decision power in real-world court systems in merger control: clearance decisions can be done by the agency without asking the courts, whereas prohibition or remedy decisions require the approval of a court – or an amicable settlement.

all terms but create less net benefits than comparable regimes due to low efficiency.

- II. *Agency accountability*: did the agency investigate accurately and come to the correct decision given existing institutional and other constraints?<sup>3</sup>
- III. *Merger control improvement*: did the final decisions protect competition (minimize decision errors)?

The three different motivations imply different corresponding evaluation goals and, consequently, different approaches towards the evaluation process. The first one, *regime accountability*, does not refer so much to an evaluation of specified single decisions. Instead, it focuses on the overall (aggregated) welfare effects of a given merger control regime. Thus, empirical methods that are suitable to identify the merger control impact on macroeconomic variables like growth and social welfare need to be employed. Sometimes, such studies are conducted with the aim to assess whether the existence of a(ny) merger control regime is beneficial at all or if society would do better without one. For young regimes, such kind of impact evaluations might be decisive for their existence. However, there is an important obstacle to regime accountability evaluations: next to actually combating anticompetitive mergers, every merger control regime produces a deterrence effect. The sheer existence of merger control rules and minimum-effective enforcement activities induces rational firms to abandon anticompetitive merger plans and focus on procompetitive asset combinations (or other business strategies) instead. If it can be anticipated that a certain merger proposal will fail to pass merger control and will eventually be blocked by the authorities, then it is not rational to waste resources on conducting this merger project. If merger control rules and their application were crystal-clear, then rational firms would only propose mergers that comply with the rules. However, due to the complex nature of merger control – in particular in the case of an effects-based approach, deciding cases on a case-by-case evidence basis – decisions are not fully anticipatable in reality and self-assessment mistakes by firms are also possible. Notwithstanding, there is a real deterrence effect, albeit not a perfect one, and it is virtually impossible to measure it.<sup>4</sup>

In contrast to regime accountability, *agency accountability* targets an impact evaluation of specified single case decisions and attempts to detect decision errors (type I and II). Since agency accountability aims to identify mistakes committed by the authority in question, it has to consider all the limitations that were outside the competence of the authority but still influenced the (quality of the) decision. Such

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<sup>3</sup> See for an excellent and much more elaborated discussion of the basic fundamentals, motivations and processes of the agency accountability-type of ex post evaluation of competition authorities (but not so much of the evaluation methods) Kovacic (2006).

<sup>4</sup> See for a recent attempt Buccirossi et al. (2011). Despite their impressive and excellent effort, considerable uncertainties and problems remain.

limitations may include tight timeframes, budgetary limits, lack of staff or other resources as well as institutional limits and restrictions (like deficiencies of the law, inadequate standards of proof, political influence, etc.). Furthermore, the ex post impact evaluation must respect what information were available at the time of decision. If, for instance, a merger control decision turns out to represent a type II decision error (allowance of an anticompetitive merger) in hindsight based upon information that was not available at the time of decision (like post-merger market data), then the deciding agency or authority cannot be held accountable for this 'wrong' decision. Consequently, agency accountability implies a rather narrow scope for impact evaluations of merger decisions.

From an academic-economics perspective, this narrow scope is unfortunate because it excludes several causes for type I and type II errors, namely all causes that lie outside the competence of the acting competition agency. If, for instance, institutional flaws force the competition authority to let anticompetitive mergers through (for instance, as a consequence of prohibitive standards of proof burdened upon the authority) or to prohibit procompetitive mergers (for instance, because of an inappropriate prohibition standard), then agency accountability cannot identify decision errors. However, in terms of welfare and in terms of the protection of competition, severe decision errors may occur, just that the responsibility for these decision errors lies outside the competence of the competition authority. From an economic perspective, it would be valuable to use ex post impact evaluation of merger control decisions to identify all decision errors (irrespective of their causes) in order to allow for subsequent learning processes how to improve the merger control system (including, for instance, alleviating institutional flaws). Thus, motivation (III), *merger control improvement*, also targets specified single decisions, however, it does so with a broader scope and particularly in the light of new information that became available post-merger. Its goal, consequently, cannot be to call the deciding authority responsible for the mistake. Instead, it aims to create information about welfare-reducing and competition-reducing merger control decisions in order to initiate a forward-looking process to identify causes for decision errors and derive solutions in order to minimize them in the future.

According to the reports of 19 competition policy regimes to the 2011 OECD roundtable on Impact Evaluation of Merger Decisions, 62.1 per cent of the reported 29 ex post evaluations targeted agency accountability, 34.4 per cent merger control improvement and merely 3.5 per cent regime accountability.<sup>5</sup> Taking an economic perspective, however, this paper will focus on the merger control improvement motivation. Merger control decisions are ex ante decisions. They attempt to estimate

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<sup>5</sup> Approximately 30 jurisdictions were asked to submit reports about their experience with ex post impact evaluations of merger control decisions and 19 (Brazil, Belgium, Canada, Chile, Estonia, EU, Greece, Hungary, Indonesia, Japan, Korea, Netherlands, Norway, Poland, Romania, South Africa, Switzerland, UK, U.S.) actually submitted a written report (all reports on file with author).



the effect a notified merger will have on the relevant markets if it was cleared by the competition authority. If we assume that competition authorities aim to make correct merger decisions in the sense of avoiding both type I and type II errors but do so in an imperfect world, then an ex post evaluation of past merger control decisions represents an instrument to improve future decisions by learning from past mistakes. As soon as merger effects display sufficient regularities (i.e. mergers do not represent unique single events), such a *controlling* of merger policy possesses the potential of beneficial improvements of merger control decisions and, thus, welfare<sup>6</sup>.

However, conducting an ex post impact evaluation of merger control decisions is not automatically advantageous. A disadvantage occurs if many decisions of a competition authority are found to have been erroneous. Firstly, this may damage the reputation of the authority and, thereby, harm the (beneficial) deterrence effect of competition rules and policies as well as reduce the norm addressees' acceptance of future merger decisions. Secondly, the question of potential damage claims by enterprises (type I errors) or by customers and competitors (type II errors) following up the ex post identification of a decision error must be taken into consideration (depending on the jurisdiction in question). Furthermore, it must be considered that the evaluation results themselves set incentives for competition authorities regarding the future selection of cases, possibly inducing a selection bias: rational agencies experience incentives to go for easy options, i.e. cases with a high probability of receiving enforcement success and positive ex post evaluation (Davies & Ormosi 2010: 40). More problematic cases with less-anticipatable evaluation prospects may be neglected. Instead of aiming for the protection of competition or for improving welfare, competition authorities may target to receive favorable evaluation results. If ex post evaluation worked perfectly, however, this would not necessarily constitute a considerable problem.

However, in an imperfect world, ex post impact evaluation may also be subject to errors. Another important disadvantage occurs if agencies rely on unreliable evaluation methods, systematically displaying erroneous results regarding the accuracy of past merger control decisions. Then, the decision quality could actually deteriorate as a consequence of learning from the deficient ex post evaluation. In contrast to science in general, the rule of thumb that 'bad or weak information is still better than no information' does not hold here since the 'bad' information triggers a behavioral response (Neven & Zenger 2008) by the competition authorities. Therefore, any ex post impact evaluation must guarantee a sufficient reliability of its results. In other words, reliability becomes a knock-out criterion for the usability of any given

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<sup>6</sup> Note that although competition authorities usually follow some type of welfare goal, the specification of the welfare goal can differ, for instance and most famously between a consumer welfare standard and a total welfare standard. Also, goals like public interest or freedom of competition at least implicitly target a welfare goal, albeit through intermediate goals.

evaluation method. Given a sufficient minimum reliability, additional criteria can be applied to comparatively evaluate the usefulness of ex post evaluation methods for competition authorities wanting to engage in systematic ex post evaluations of their merger control decisions.

#### Method Evaluation Categories

- *Reliability* of results: competence of the method to identify decision errors. This is a prior category (knock-out criterion); any method that fails to meet a minimum reliability cannot be recommended.
- *Applicability*: range of the application in terms of competition effects (stationary, dynamic, evolutionary), types of cases, markets & industries.
- *Agency resource intensity*: the resource and competency requirements ('costs') of applying the method.

In contrast to those employed in other studies, these evaluation categories partly possess a hierarchical structure. *Buccirossi et al. (2008: 464)* argue that ex post evaluation "techniques cannot be ranked, as each has its advantages and drawbacks"; "they are not mutually exclusive, and it is possible, or even advisable, to use more than one simultaneously in order to minimize the probability of errors in the evaluation" (465). However, if a technique does not comply with minimum reliability standards, it cannot contribute to better evaluation – even within a mix of instruments. Quite the contrary, it actually jeopardizes any beneficial effect of an ex post impact evaluation and might even generate harmful effects (increase of type I and type II errors). A systematically false evaluation can easily lead to an endogenous deterioration of merger control through the considerable incentives for the competition authority to produce decisions that pass the (flawed, defective) evaluation test. This danger is particularly great if additionally a feasibility bias comes into play. A comparatively unreliable but cheap and easy-to-do technique is likely to get an inappropriately high weight in practice because of the economics of administration. Just because it is easily feasible, it is likely to get frequently employed. For these reasons, reliability receives the accentuated position of being the knock-out criterion: a failure in reliability cannot be compensated by a good performance in one of the other categories. For instance, it does not help that any given method can be easily applied with minimal resources if the results are not sufficiently reliable! As a consequence of this difference in approach, the results of this paper differ from those of the few older studies (*Buccirossi et al. 2008; Davies & Ormosi 2010*).

The main methods that are available for conducting ex post impact evaluations of merger decisions can be categorized into the following types:

- structural models and simulations (section 2.2),
- difference-in-differences (DiD) approaches (section 2.3),
- event studies (section 2.4),
- surveys (section 2.5), and
- case studies (section 2.6).

These methods are analyzed in the following sections according to the evaluation criteria developed in this section.

## ***2.2 Structural Models and Simulations***

This method of ex post impact evaluation is based on (i) an explicit formal model of the nature of competition in the relevant market(s) of the merger, (ii) calibrating this model with real world data, and (iii) an assessment of how the actual equilibrium would change in the counterfactual scenario (e.g. merger vs. no merger; remedy x vs. remedy y, etc.) on the basis of simulation results (*Davies & Ormosi 2010: 12*).<sup>7</sup>

### ***Reliability***

The main advantage of this method is its reliance on a sound foundation on modern state-of-the-art game-theoretical industrial economics (*Buccirossi et al. 2008: 465; Davies & Ormosi 2010: 14; Budzinski 2011*). Furthermore, the accuracy of the underlying model can be tested through calibration with real market data. This is in particular true for an ex post analysis. Only a sufficiently fine-tuned calibration of the estimated model to the characteristics of the underlying market will reproduce the actual market development (*Buccirossi et al. 2008: 465*). In contrast to ex ante simulation where the extrapolation of the pre-merger market model to the – at the time of the decision – hypothetical post-merger equilibrium generates several shortcomings regarding the predictive power of simulation models (*Budzinski & Ruhmer 2010; Budzinski 2011*), ex post simulation alleviates many of these limitations. Insofar, criticism that this method requires a large set of assumptions whose fit to the actual market is sensitive for the reliability of the results (*Buccirossi et al. 2008: 466; Davies & Ormosi 2010: 14*) appears to be more appropriate for ex ante simulations than for ex post simulations. The fit can actually be controlled rather well. Furthermore, the accuracy of the assumptions made at the time of the deci-

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<sup>7</sup> Overviews are presented by *Buccirossi et al. (2008: 465-466); Budzinski & Ruhmer (2010: 312-314); Davies & Ormosi (2010: 12-15)*. Examples of applications include *Nevo (2000); Pinske & Slade (2004); Peters (2006); Weinberg & Hosken (2008)*. Merger simulations may also be used by the competition authority when deciding upon a merger (overview: *Budzinski & Ruhmer 2010*). These ex ante simulations serve to predict the post-merger equilibrium, whereas ex post simulation compares the actual post-merger decision market equilibrium with counterfactual equilibria.

sion/intervention by the competition authority can be evaluated through this method (*Davies & Ormosi 2010: 14*).

However, this is strictly true only for the actual market development. In order to assess whether the merger decision has been correct, the actual post-merger development must be compared to a counterfactual. It is one of the advantages of this method that it allows for simulating alternative scenarios (counterfactuals), corresponding to different changes in the underlying market environment (*Buccirosi et al. 2008: 465*). To some limited extent, the pre-merger market may provide guidance for the counterfactuals, however, more accurately, the model should be used to simulate alternative post-decision scenarios. These simulations, then, rely on the assumption that the underlying competition model would have been the same if the counterfactual scenarios actually happened. While this assumption may be true for many cases, it is well possible that a big merger impacts a market to an extent that it changes the fundamental nature of competition (*Budzinski 2011*). If done seriously and with a view to the limitations, however, structural models and ex post simulation produce reliable results, providing valuable insights into the accuracy of merger control decisions from an ex post perspective.

### *Applicability*

Structural models and simulations enjoy the advantage that in theory they can be applied to all kinds of mergers and all types of merger control decisions (prohibitions, clearances, remedies). However, their applicability to real-world markets is limited by, firstly, limits to feasibility of modeling the market and, secondly, by the availability of data.

Typically, the ability to model the relevant market requires the underlying market to match one of the popular standard models of modern oligopoly economics, in particular the game-theoretic homogeneous Cournot oligopoly model (quantity competition with rather homogenous goods) or the game-theoretic heterogeneous Bertrand oligopoly model (price competition with differentiated products). If real-market competition cannot be adequately described with one of the available standard models (in their most modern and comprehensive versions), this method can hardly be used for impact evaluation purposes. Furthermore and therefore, ex post evaluation of merger control decisions through structural models and simulations typically focuses on price and quantity effects. It tends to neglect other dimensions of competition, like innovation, repositioning, structural breaks, market entry, diversity, etc. (*Davies & Ormosi 2010: 14; Budzinski & Ruhmer 2010*). Next to some more stationary elements of competition, it is particularly the dimensions of dynamic and evolutionary competition that run the danger of being neglected in such models. Even though it is possible to include stylized (and simplified) elements of non-price effects in merger simulations in special cases (see exemplary *Froeb et al.*

2007), the inclusion of several of these dimensions and, in particular, the interaction between the dimensions represent a near-to-impossible task (*Budzinski* 2011: 116-118). As a result, the simulation method is skewed towards certain types of markets that are feasible to modeling and, thus, is likely to suffer from a sample selection bias (*Davies & Ormosi* 2010: 14).

Secondly, the extensive and ambitious data requirements regarding both quantity and quality of the data further narrow down the number of markets where this method can be applied for ex post impact evaluations (*Buccirossi et al.* 2008: 466; *Davies & Ormosi* 2010: 14). Furthermore, some authors claim that this method is not applicable to cases involving behavioral remedies as a special type of merger clearances under conditions or with commitments (*Buccirossi et al.* 2008: 465-466). In summary, the restrictions regarding applicability are considerable.

### *Resource Intensity*

Structural modeling and simulation probably represents the most sophisticated method to assess competitive impacts. Moreover, the evaluation must be done on a case-by-case level. Consequently, it requires extensive agency resources to either engage in producing this type of ex post evaluations or commission respective studies. A full-blown ex post merger control decision impact analysis involves high-end economic expertise (both regarding theoretical economics and empirical methods/econometrics), time-intensive data collection and generation as well as in most cases comprehensive cooperation from companies within the relevant market. While the latter can normally be enforced in the context of a merger control decision without considerable problems, any cooperation of companies regarding ex post analyses is voluntary and may require some compensation.<sup>8</sup> Notwithstanding, simplified simulation approaches have been and are being developed ('back-of-the-envelope simulations') in order to reduce the resource intensity and data requirements. However, there is trade-off between ease of applicability and precision of estimated results (*Buccirossi et al.* 2008: 465).

## **2.3 Difference-in-Differences**

Difference-in-Differences (DiD) methods encompass roughly all methods that evaluate a merger control decision by comparing the post-decision performance of fundamental market data (like prices or market shares) with (i) the pre-decision market development and (ii) a control market, which is sufficiently similar to the relevant market but unaffected by the event (the merger control decision).<sup>9</sup> Many studies

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<sup>8</sup> This is different, of course, if a competition policy regime can mandate companies to cooperate in ex post analyses.

<sup>9</sup> Overviews are presented by *Bergman* (2008: 394-396); *Buccirossi et al.* (2008: 466-467); *Weinberg* (2008); *Davies & Ormosi* (2010: 20-24). Recent examples of applications include *Ashenfelter & Hosken* (2011); *Ashenfelter et al.* (2011); *Dobson & Piga* (2011); *Tenn & Yunn* (2011); *Jiménez*

belonging to this method are direct econometric analysis of price and market share evolution with the control market serving to isolate the impact of the merger control decision from other influences on prices and market shares (often called 'external shocks'). Put simply, the underlying concept is the assumption that decision-independent influences on the market development are also present in the control market whereas the decision-dependent influences are only present in the relevant market of the merger control decision.

### *Reliability*

The charm of DiD methods is that they analyze *actually observed* data from the relevant product market. Thus, they represent an analysis of what actually happened on the post-decision market. Moreover, the counterfactual is also real and does not depend on non-testable and restrictive (or even heroic) theoretical assumptions (Davies & Ormosi 2010: 22). However, the sensitive problem is to find a suitable control market that is (i) close enough to the relevant market in order to display the same 'external' influences but (ii) sufficiently far away not to be influenced by the event (the merger control decision). Furthermore, the same 'external' influences must also exert the same impact on prices (etc.) in the relevant market and in the control market (Simpson & Schmidt 2008; Davies & Ormosi 2010: 21-22). While this is often challenging, modern econometric techniques provide suitable instruments to address these problems – albeit, not erasing them.

Another issue with DiD methods is that they are inherently atheoretical (Davies & Ormosi 2010: 22-23) in the sense that they neither provide nor rely on explicit causes-consequences theories about the underlying competition dynamics and mechanisms. If a DiD study finds a price increase due to the merger, for instance, then it does not tell anything about why the merger increased prices.<sup>10</sup> While this may be a disadvantage in terms of understanding and learning from the evaluation results, it represents an advantage to the extent that complex competition dimensions that are rarely incorporated into modeling and simulation are implicitly accounted for by 'just' measuring the actual effects. However, this is only true to the extent that these competition dimensions (dynamic and evolutionary efficiencies of the competitive process) are reflected in measurable variables, like prices, elasticities, measures for the number and variety of products, etc.

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& *Perdiguero* (2012). *Kwoka & Greenfield* (2011: 15) report that they have found "well over one hundred such studies" with one of the earliest being *Barton & Sherman* (1984).

<sup>10</sup> Admitted, this is conceptualized from the perspective of theoretical economics. Of course, there is an underlying theory in the sense that it is hypothesized that the price increase is caused by the merger (in the sense of a correlation).

## *Applicability*

The applicability is firstly constrained by the requirement of the existence of a sufficiently appropriate control group, which is often difficult to find (*Simpson & Schmidt* 2008; *Davies & Ormosi* 2010: 21-23). Secondly, it is much more difficult to ex post evaluate merger prohibitions with this method compared to cleared mergers which is why a selection bias towards analyzing clearances is likely to occur. Counterfactuals can be more easily constructed with cleared mergers because the market development prior and after the merger provides guidance for evaluation (prior to the merger the counterfactual actually existed, albeit at a different point in time). In contrast, in the case of prohibited mergers, the market development does not provide much guidance. How the market would have looked with the completed merger cannot be inferred from any real situation, neither from the pre-decision period, nor from a control market (*Neven & Zenger* 2008: 478). Consequently, there might be a bias towards merger clearance decisions and, thus, towards detecting type-II errors (false allowances). From a data availability perspective, however, the range of applicability is rather comprehensive since the required data should be comparatively easily collectable for most markets.

## *Resource Intensity*

Like structural modeling and simulations, DiD methods must be done on a case-by-case level and require sophisticated econometric knowledge. However, DiD analyses enjoy the advantage that they require comparatively fewer resources than simulations because of their atheoretical character (no sophisticated modeling is required) and the laxer data requirements. Furthermore, cooperation with companies in the market is usually not needed.

## **2.4 Event Studies**

The basic concept behind event studies is the assumption that welfare effects of horizontal mergers can be evaluated by looking at the stock price reactions (abnormal returns) of the willing-to-merge companies (*Ellert* 1976) and, in particular, of the rivals of the merging firms (*Eckbo* 1983).<sup>11</sup> More precisely, the stock market reaction to special 'events', like the announcement of a merger by the companies and the announcement of the merger control decision by the competition authority,<sup>12</sup> is isolated and interpreted in terms of conclusions about prospective competi-

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<sup>11</sup> Overviews are provided by *Bergman* (2008: 392-394); *Buccirossi et al.* (2008: 467-469); *Davies & Ormosi* (2010: 15-20). Examples of applications are presented by *Ellert* (1976); *Eckbo* (1983, 1992); *Stillman* (1983); *Eckbo & Wier* (1985); *Aktas, Bodt & Roll* (2007); *Duso, Neven & Röller* (2007); *Diepold et al.* (2008); *Serdarević & Teplý* (2009); *Duso, Gugler & Szücs* (2010); *Duso, Gugler & Yurtoglu* (2011).

<sup>12</sup> Other relevant events in this context could be the announcement of the competition authority that it intends to challenge a merger (EU: initiation of phase-II proceedings, statement of objections; U.S.: initiation of an in-depth investigation or announced intention to go to the courts).

tive effects of the merger. In a nutshell, an increase in rivals' share prices implies an anticompetitive merger (price-increasing), a decrease implies a procompetitive merger (efficiency-enhancing).

### *Reliability*

Event studies that serve as an instrument for ex post impact evaluation of merger control decisions represent a rather specific version of event studies that depart to a relevant extent from 'ordinary' event studies. While ordinary event studies try to explain influence factors on stock prices, event studies as evaluation instruments employ the stock price reactions as an evaluation standard. This yields a most important difference: event studies for evaluation purposes assign a normative value to stock price reactions; they act as referees or judges on policy decisions, here: merger control decisions. In contrast, 'ordinary' event studies do not connect any normative value to stock price reactions. Instead, in ordinary event studies, stock price movements represent the dependent variable (that gets explained by the events), whereas event studies for evaluation purposes turn the stock price movements into something that has an explanatory power on the (competitive) quality of a merger and, subsequently, on the related merger control decision.

This remarkable difference is important because turning event studies (explaining stock price reactions) into a referee (judging about economic effects) inevitably introduces several problematic assumptions. The reliability of event studies as an evaluation method sensitively relies on these assumptions which are both theoretically and empirically questionable.<sup>13</sup>

First of all, the event study method for evaluation purposes crucially relies on the efficient financial markets hypothesis (EFMH): if financial markets work perfectly and all actors on these markets act perfectly rational (actually: hyper-rational) under perfect information (or at least in full knowledge of all relevant information), then share prices instantly reflect the 'true' value of these shares to investors. Thus, changes in stock prices that occur as a reaction to merger decision-related events (merger announcement, announcement of investigation by competition authority, merger control decision) reveal the respective market assessment, which under the condition of the EFMH can be thought to reflect the unbiased and superior information of 'insiders'. In the case of perfect information and hyper-rationality, insider knowledge includes information about future effects on competition from the respective event. Thus, under these conditions – and sensitively and exclusively under these conditions (!) – stock price reactions could serve as an evaluation standard for the appropriateness of merger control decisions (because the stock market actors

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<sup>13</sup> See for critical reflections, inter alia, McAfee & Williams (1988); Eckbo (1989); Werden & Williams (1989); Hopkins & Connor (1992); Davies & Ormosi (2010: 19); Reynolds (2008); Fridolfsson & Stennek (2010); Beigi & Budzinski (2012).



know and reveal 'true and complete' information that the competition authority does not have). This is exactly what is done by several of the studies cited at the beginning of this subchapter.

However, the plausibility of the EFMH is questionable at best. Perfect information is empirically not available. Neither do agents on financial markets act hyper-rational, nor do the markets in total reflect superior knowledge about competitive effects that, furthermore, at the time of the stock market reaction lie in the future. The implausibility and fundamental flaws of the EFMH, which are actually well-accepted in modern financial economics, render this method inappropriate to evaluate policy decisions in an imperfect world with imperfect actors and markets.

Still, the reliability is further put into doubt by a couple of additional problems that would still occur even if the EFMH held true. For instance, the literature refers to ambiguities in interpreting the observed stock price changes (*Davies & Ormosi* 2010: 18 with an impressive overview) and the unclear causal relationship of stock market movements with merger announcements and control decisions (*Neven & Zenger* 2008: 487). The fields of business activity that are affected by the merger control decision must have a sufficiently high importance within the merging companies, which are often multi-product and multi-subsidiary-companies (i.e. groups of companies or concerns). Usually, non-prohibition merger control decisions (inter alia, conditional approvals) merely affect just few of the markets involved. These few markets, then, must exert an outstanding influence on the business prospects of the companies and their main rivals (which usually also are multi-product and multi-subsidiary concerns), so that their (non-) regulation dominates the stock price reactions.

Furthermore, several studies need to assume a price-umbrella effect in order to interpret the evaluation through the stock markets. Rivals' profits benefit from an anticompetitive merger because of the 'rule of one price': the price for all companies in the market increases. In contrast, rivals' profits suffer from a procompetitive merger because the merged entity is more efficient now. However, this refers to a specific oligopoly model (horizontal effects in quantity competition with homogeneous goods) that (i) hardly reflects the nature of competition in many merger markets (heterogeneous product markets; mixtures of horizontal, vertical and conglomerate effects) and (ii) may not be the way that financial markets' agents think about competitive effects from mergers<sup>14</sup>. More advanced industrial economics models analyzing heterogeneous markets, price competition, variants of non-price competition, dynamic settings or vertical and conglomerate effects do not find

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<sup>14</sup> I am not aware of any empirical research that validates that stock market actors actually believe in anticompetitive mergers being good for rivals and procompetitive mergers being bad for rivals. Doing this empirical study would be a precondition for providing interpretations and policy recommendations resting on this assumption, though.

strict price-umbrella effects and effects on rivals may actually differ in one and the same (heterogeneous) market. While these models picture (elements of) real-world competition more appropriately, they can easily render any clear-cut and unambiguous interpretation of stock market signals impossible. Relying on inappropriate assumptions about the nature of competition and its understanding by stock market agents (who may have other ideas about competitive effects than those derived from the simplified homogeneous Cournot case) entails the danger of systematic evaluation errors because of the event study evaluation method. As a consequence, a competition authority could be driven into deteriorating the quality of its merger control decisions by relying on ex post impact evaluation by event studies.

Consequently, a sound theoretical foundation, rooted in modern competition economics, is missing in most of the available event studies. Even furthermore, inextricable feedback loops occur in particular if the EFMH would hold. If financial markets are efficient, then they will anticipate (i) merger control decisions and (ii) their own influence on ex post evaluation and decisions – and reflect this in the stock prices! Eventually, stock price reactions to merger announcements do not actually represent an ex post evaluation as they happen before or at the time of the merger (control) decision. With the exception of the stock market reactions to the final merger control decision, the information is actually available to competition authorities during the decision process and might influence agency decisions.<sup>15</sup>

In summary, the event study method fails to meet the knock-out criterion of providing a sufficient minimum reliability. There is no indication that financial market reactions represent an accurate prediction of the competitive effects<sup>16</sup>, however, there is ample indication to the contrary.

### *Applicability*

Due to easy-to-access data (stock market prices), event studies can basically be performed on all types of mergers. If one believes in the appropriateness of the underlying assumptions, then event studies anticipate all types of competitive effects as

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<sup>15</sup> However, competition authorities enjoy comprehensive investigation powers and, therefore, possess additional information (internal documents, etc.) that the stock market actors are not aware of. This casts doubt on the 'superior insider information' assumption since competition authorities may actually be better informed than the stock market. Thus, they may decide deliberately and for a reason not to follow stock market reactions (*Neven & Zenger 2008: 487*).

<sup>16</sup> Even *Duso, Gugler & Yurtoglu (2010)* – with a research design driven by the purpose to demonstrate the usefulness of the event study – do not find convincing evidence when correlating ex ante stock market predictions with ex post balance sheet data for carefully selected cases. Only under rather exceptional conditions do the stock markets work as a somewhat good predictor (inter alia, specific pre-announcement event windows need to be defined and among all the possible constellations, merely some work and it remains theoretically unclear why). And even this does not alleviate most of the concerns with using event studies as evaluators. See for more critical discussion *McAfee & Williams (1988)*, *Werden & Williams (1989)*, *Reynolds (2008)* and *Fridolfsson & Stennek (2010)*.

long as these influence profitability. However, the interpretation of the stock market price signals limits the application to horizontal mergers since non-horizontal mergers are difficult to assess because of the many and ambiguous ways that anti-competitive or procompetitive effects can affect the relevant markets. Problems also arise for horizontal mergers involving differentiated product markets. An obvious – but also practically relevant – limitation is that merging companies and their rivals need to be stock market companies with a sufficient trade volume and frequency (Davies & Ormosi 2010: 20). This entails the danger of a sample selection bias.

### *Resource Intensity*

The easy accessibility of the data implies comparatively low resource intensity for conducting these type of studies. Furthermore, even though event studies can be done on large samples of mergers and without looking into many case details they can still provide results about type I and type II errors on a case level. The event study method does require advanced econometric expertise in order to carefully isolate the event influence on observed stock prices movements from other influences. Theoretical expertise is merely required for the interpretation of the stock market signals. Cooperation with companies in the market is not needed.

## **2.5 Surveys**

Survey-based ex post impact evaluations are merger control decision reviews based on follow-up questionnaires and/or interviews.<sup>17</sup> Two types can be distinguished. Firstly, the opinions and perceptions of market participants (merging parties, competitors, suppliers, customers, etc.) are collected. Secondly, surveys among experts, peers and/or among practitioners can be conducted, for instance targeting pertinently specialized academics (economists, legal scientists), relevantly specialized lawyers and judges, or (non-involved) managers. The common underlying concept is to benefit from asymmetric information. In the case of market participants, superior insider knowledge is targeted, whereas in the second case superior (academic) expertise and experience is expected to yield a beneficial ex post evaluation.

### *Reliability*

The economics rationale behind conducting survey-based impact evaluations is rooted in information asymmetries. If market participants in the first type or experts in the second type have superior explicit and/or tacit (ex post) knowledge about the impact of a merger control decision on the underlying competitive process, then questionnaires and interviews serve to collect and reveal this knowledge to the evaluators. The nature of the asymmetric information implies an atheoretical

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<sup>17</sup> Overviews are provided by Buccirosi et al. (2008: 469-470); Davies & Ormosi (2010: 24-25). Examples of applications are presented by PricewaterhouseCoopers (2005); Deloitte (2009).

character of this method (apart from the conceptual information-economics background), which at the same time means that all types of competitive effects, whether quantitatively measurable or not, can potentially be captured.

On the downside, surveys depend on the assumption that insiders and/or experts (i) actually have superior information and (ii) are willing to share this information without strategic distortions. The danger of a respondent bias is particularly high in the case of market participants because they will rationally anticipate that their information influences future merger control decisions. At first sight, expert commentaries should be less prone to respondent biases, however, this is only true when the expert has no party interest and is not looking for future assignments either from norm addressees or the competition authority.

Another issue refers to the number of potential survey participants. Since individual opinions are rather likely to suffer from strategic or cognitive perception biases, a sufficiently large number of potential respondents is required. Regarding expert commentaries, this implies that case reviews by single experts are less valuable than surveys among a larger number of experts.

### *Applicability*

This method probably represents the only available method to capture all competition dimensions and effects and is applicable to all types of merger cases. It demands virtually no data requirements and can be employed to generate qualitative empirical data about non-quantifiable competition dimensions. Thus, this method can also be applied when virtually no 'hard' data is available (Buccirossi et al. 2008: 469), which is a problem in a considerable number of markets. The applicability may be limited because of low respondent rates, however. Although this method has so far predominantly been chosen to assess the total performance of competition authorities (benchmarking, best practices) and not to evaluate merger decisions on a case level (Davies & Ormosi 2010: 25), both types (insider-based and experts-based surveys) can also be applied to evaluate single cases. Once the relevant questionnaires are available, it is comparatively easy to repeat the survey, so that this method is also realistically dynamically applicable in order to capture more long-run effects and changes.

### *Resource Intensity*

Developing questionnaires, conducting interviews, motivating respondents and professionally analyzing the responses require manpower and statistical expert knowledge. Furthermore, cooperation of market participants (and/or experts) is unavoidable. Notwithstanding, the resource intensity should be comparatively low.

## 2.6 Expert Case Studies

Another type of ex post reviews of merger control decisions is represented by case studies conducted by (economic) experts.<sup>18</sup> They provide a single expert opinion based upon a comprehensive review of the case decision. Despite similarities regarding the underlying information asymmetry rationale, case studies are distinct from surveys among experts. They represent the opinion of one (team of) expert(s) as opposed to a representative number of interviewed experts and provide an independent analysis of the case instead of answers to questions phrased by the surveying agency. However, case studies are not perfectly distinct from the other methods discussed in the preceding paragraphs as they may embrace mixtures of those methods as a part of the comprehensive case analysis. Existing expert case studies are partly presented by independent experts, following scientific curiosity, or by experts that have been involved in the merger control process (as party experts either for involved companies or for the competition authority).

### *Reliability*

Similar to surveys, the reliability of case studies depends on the existence of superior knowledge on the side of the academic expert and her willingness to offer this knowledge in an unbiased way. The first points to the competence of the expert, whereas the second refers to the independence of the expert. For a case study to represent a minimum reliable instrument, the expert must not have any party interest in the case. This implies that he has not acted as an expert consultant or expert witness during the merger control process – neither for the merging companies, their rivals or suppliers and customers, nor for the competition authority. Moreover, and much more complicated to safeguard, he must not be looking for positioning himself as a candidate for lucrative future experts mandates and appointments. The question of biases may play a considerably more important role here compared to the other methods since the evaluation result merely relies on one (team of) experts.

### *Applicability*

In addition to the possible party interest bias, affecting the reliability of case studies, the existing case studies display a considerable sample selection bias towards few popular and controversial cases and hardly represent systematic ex post impact evaluations. However, this might be due to a lack of more systematic assignments for case studies called for by the competition authority (or any competent review-

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<sup>18</sup> Overviews are provided by *Bergman* (2008: 393-394); *Davies & Ormosi* (2010: 25). Examples of applications are presented, inter alia, by the chapters in *Kwoka & White* (2008); *Lyons* (2009) as well as by *Reynolds & Ordover* (2002); *Aigner et al.* (2006); *Budzinski & Christiansen* (2007); *Budzinski & Wacker* (2007); *Budzinski* (2012a); *Budzinski & Larsen* (2012). In addition to economic case studies, there are many legal-sciences case studies which are neglected in this paper due to its economic focus.

ing body). Case studies do possess the prospects of providing insightful 'holistic' reviews of merger control decisions, weighing different angles and considering all types of competitive effects including non-quantifiable and non-measurable effects in the review.

### *Resource Intensity*

Employed as a more systematic evaluation method, expert case studies obviously require the recruitment and funding of competent and independent experts. Each single case study project, if done seriously, may be rather comprehensive with resource intensity also depending on the use of other methods during the case study by the expert. Cooperation with market participants may not be necessary, but, depending on the case in question, might be desirable.

## **3. Comparing the Evaluation Methods**

The first – and probably not surprising – conclusion from the analysis of the evaluation methods is that there is no perfect method available. Instead, each method has its strengths and weaknesses. Structural models and sophisticated simulation models probably represent the most reliable method and certainly the method that is best rooted in modern economic theory. However, the advanced sophistication of the models and the high degree of complexity of this method is attended by considerable limitations regarding its applicability as well as by extraordinary resource intensity. Although maybe desirable from a scientific point of view, a comprehensive and systematic employment of this method for ex post impact evaluations of merger control decisions appears to be persistently unrealistic. DiD methods are considerably less sophisticated and demanding regarding theoretical modeling (of the competitive process) and data requirements. However, they still represent serious quantitative analyses soundly rooted in economics. Furthermore, they require medium resource intensity. Surveys may lag behind structural modeling, simulations and DiDs in terms of providing economics-based quantitative analyses, however, the survey method displays its strengths in particular in the blind spot of the advanced quantitative methods – namely capturing markets with insufficient data availability (for the other methods) as well as non-quantifiable competition dimensions. Similar to case studies, surveys serve to provide a context for the interpretation (and selection) of simulation scenarios or econometric results. Thus, they represent a natural complement to structural models, simulations and DiDs.<sup>19</sup> However, the results of surveys and case studies always require critical reflection due to

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<sup>19</sup> "Whenever feasible, a survey should always be carried out to add insights and help the interpretation of the results obtained through other techniques, as well as to investigate some aspects of the development of a market that are difficult to understand from hard data" (Buccirossi et al. 2008: 469).

several potential biases.<sup>20</sup> Case studies may be more sensitive to these biases due to relying on fewer experts. In summary, all these four methods display sufficient reliability to be (conditionally) used for evaluation purposes (but see the note of caution in the upcoming section 4).

The concerns regarding an employment of insufficiently reliable methods highlight the accentuated importance of minimum reliability standards for employed methods compared to applicability and resource intensity arguments. Obviously, studies based on each method can be designed and executed in inaccurate and insufficient fashion. Therefore, this is not the issue at hand. Instead, the question is whether any method in question produces minimum reliable results *given* a serious and accurate employment. While four of the five analyzed methods meet this knock-out criterion, the event study method fails to do so (see section 2.4).<sup>21</sup> Moreover, the lack of minimum reliability – even if employed in a most serious and advanced way – goes along with a strong feasibility bias. Event studies are comparatively ‘easy to do’ (in particular because of data availability) and, therefore, they are likely to receive an over-proportional weight in impact evaluations of merger control decisions in the real world – which is characterized by various resource restrictions. Already the impressive number of event studies among the existing impact evaluation literature is telling in this regard. The combination of lack of minimum reliability and feasibility bias is particularly dangerous because it entails a considerable probability of systematic evaluation errors (i.e. correct decisions are found to be wrong and wrong decisions are found to be correct during the evaluation). The systematically deficient evaluation results then in turn provide incentives for competition authorities to adapt their merger control decision practice to the deficient evaluation (in order to maximize positive reviews; agency accountability). As a consequence, the impact evaluation systematically deteriorates the quality of merger control. Therefore, event studies cannot be recommended for evaluation purposes.

This has considerable implications for the common call for employing a method-mix for impact evaluation. Since all described methods display strengths and weaknesses, the literature consequently favors employing a method-mix (*Buccirossi et al. 2008; Davies & Ormosi 2010: 25-26*). While *Davies and Ormosi (2010)* emphasize the benefits of employing alternative methods to the same cases in order to learn from differences in the assessment, *Buccirossi et al. (2008)* put a stronger focus on relating the methods to case types that suit their individual strengths and weaknesses. While principally agreeing to advocate methods-mixes, my analysis deviates from the results of the previous literature by rejecting the event study method due to a lack of reliability (see the preceding paragraph and section 2.4). Since the technique entails the danger of systematic evaluation errors, it cannot contribute to

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<sup>20</sup> Notwithstanding, all evaluation results from all methods should be met with critical reflection!

<sup>21</sup> It must be emphasized that this does not refer to the event study method per se but only to its (mis-)application as an evaluation method for policy decisions (see section 2.4).

better evaluation within any method-mix. Instead, there is a considerable likelihood that it generates harmful effects (increase in type I and type II errors) due to the feasibility bias (increasing the probability of an over-proportional influence in practice).

In the context of the 2011 OECD roundtable on competition policy, more specifically on “Impact Evaluation of Merger Decisions”, 19 jurisdictions submitted written notes about their experiences with ex post impact evaluation of merger control decisions, reporting a total of 29 cases.<sup>22</sup> Within this sample, 44.9 per cent of all evaluations were predominantly based on surveys, 24.1 per cent on DiDs, 20.7 per cent on structural/simulation models, as well as 10.3 per cent on event studies. No commissioned or in-house expert case studies were reported. All ex post reviews were commissioned by competition authorities except in Norway where the government mandates the evaluation. 48.3 per cent of the studies were done by external consultants, whereas 55.2 per cent were conducted in-house.<sup>23</sup> Virtually all studies represented stand-alone analyses and no systematic review of representative samples of merger control decisions. Furthermore, the employment of a combination of methods was the exception rather than the rule. Even though this sample is certainly not representative, the figures hint towards a bias in favor of methods with comparatively low resource intensity (feasibility bias), in particular as a considerable share of the structural modeling and simulations employed simplified ‘back-of-the envelope’ simulations rather than full-blown, sophisticated models. This is not surprising since resource restrictions play an important role in the everyday business of real-world competition authorities. At the same time, competition authorities seem to possess a healthy skepticism towards event studies.

#### 4. Conclusion: A Note of Caution

Ex post impact evaluation of merger control decisions should be shy to be confronted with excessive expectations from and/or interpretations of the evaluation results. Since neither perfect methods nor a perfect method-mix are available, a cautious approach towards ex post evaluation of merger decisions seems appropriate.<sup>24</sup> A systematic and comprehensive ex post impact evaluation of merger control decisions does not appear to be realistically feasible for the foreseeable future

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<sup>22</sup> Approximately 30 jurisdictions were asked to submit reports about their experience with ex post impact evaluations of merger control decisions and 19 (Brazil, Belgium, Canada, Chile, Estonia, EU, Greece, Hungary, Indonesia, Japan, Korea, Netherlands, Norway, Poland, Romania, South Africa, Switzerland, UK, U.S.) actually submitted a written report (all reports on file with author).

<sup>23</sup> Apparently, a couple of studies were done both in-house and externally, which is why the percentages add up to more than 100 here.

<sup>24</sup> Much in the same spirit, *Davies and Ormosi* (2010: 26) emphasize the problems, shortcomings and limitations of all available evaluation methods rather than the merits and demand further research.



against the background of both the (reliability- and applicability-) limitations of available methods and resource restrictions of competition authorities. Therefore, it is very important that competition authorities conducting and responding to impact evaluations are aware of the limits and deficiencies of the different empirical methods. In line with this, it is essential to link empirical results to economic theory about competition and feedback their interpretation with theoretical knowledge and insights about the competitive process. Empirical results, irrespective of their econometric sophistication, always need to be put into context against the background of sound theory. Any pure empiricism that blindly relies on 'numbers' and adjusts competition policy to it without referring back to a sound theoretical framework runs the danger of deteriorating merger control instead of improving it. However, if the inherent limitations are respected and if the empirical results are put into context by competition economics theory, then ex post impact evaluations can contribute to improving merger control and generating welfare effects.

From an economic perspective, ex post impact evaluation should focus on generating knowledge and learning about actual effects of merger control decisions. However, the focus should be not so much on counting mistakes or successes of competition authorities (*accountability motives*). Instead, it should focus on how both the merger control framework and the decision practices can be improved for future decisions (*merger control improvement*). The reason for this shift in focus is threefold. Firstly, attempting to record the past mistake-success-balance of competition authorities requires to strictly acknowledge the original constraints for the decision (timeframes, available resources, available information, institutional flaws, standard of proofs, etc.). If an 'erroneous' decision was due to such constraints, the competition authority cannot really be blamed. However, secondly, such an approach overburdens the available methods and, moreover, limits the learning potential from ex post evaluations. Thirdly, if ex post evaluation is driven by the desire of external accountability of the competition authority, then a rational behavioral response of the authority would be to maximize evaluation success instead of consumer or social welfare (see 2.1).

It is more beneficial to conduct ex post merger decision impact evaluations with a focus on broad learning about all the effects of these decisions (irrespective of contemporary decision constraints for the authority) in order to generate knowledge about improving the merger control framework *and* the actual decision practice. As this implies 'learning from many cases for general policy' instead of attempting to 'conclude from single cases to other single cases'. Such an approach is also better fitted to the capacities of the available evaluation methods. For instance, if a result of many case studies is that anticompetitive mergers are allowed because the standard of proof and the allocation of the burden to proof are too ambitious for the competition authority to succeed in blocking such mergers, then consequences

for the rules about proof standards and burdens should be drawn. It would be dissatisfying 'only' to conclude that the competition authority committed no mistakes because it had no choice but to allow the anticompetitive merger due to institutional flaws outside its competence.

Eventually, an important overall conclusion can be derived. Ex post impact evaluation of competition policy decisions is most beneficial if it is a scientific task performed with a view to generate knowledge about the effects of mergers and merger control decisions on competition and welfare. Knowledge that then can be embodied in better competition rules, provisions, or assessment practices in order to improve future decisions. The available methods for impact evaluation are much more suitable to provide knowledge for a 'better-rules-'based competition policy than to draw conclusions on case-by-case basis. As such, the competencies of ex post impact evaluation methods fit to recent calls for rooting competition policy more firmly on economics-based *rebuttable presumptions* (Baker & Shapiro 2008; Farrell & Shapiro 2008; Budzinski 2010) that enjoy more of a rule character than purely case-by-case effects-based decisions – but without preaching the way of rigid *per se* rules.

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