Modern Industrial Economics and Competition Policy: Open Problems and Possible Limits

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Abstract

Naturally, competition policy is based on competition economics made applicable in terms of law and its enforcement. Within the different branches of competition economics, modern industrial economics, or more precisely game-theoretic oligopoly theory, has become the dominating paradigm both in the U.S. (since the 1990s Post-Chicago movement) and in the EU (so-called more economic approach in the 2000s). This contribution reviews the state of the art in antitrust-oriented modern industrial economics and, in particular, critically discusses open questions and possible limits of basing antitrust on modern industrial economics. In doing so, it provides some hints how to escape current enforcement problems in industrial economics-based competition policy on both sides of the Atlantic. In particular, the paper advocates a change of the way modern industrial economics is used in competition policy: instead of more and more case-by-cases analyses, the insights from modern industrial economics should be used to design better competition rules.

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JEL-Codes: L40, K21, L00, M21, B52

Contents

1. Introduction

The advantages and disadvantages of an economic approach to competition law are currently discussed remarkably vividly among economists, legal scholar and also political scientists. It can hardly be doubted that the design and application of competition law must be informed by up-to-date knowledge about the underlying economics of competition. Similarly, however, it should also be clear that competition policy inherently represents a multidisciplinary issue and legal as well as political arguments cannot be neglected either. In this complex situation, the new controversy about an economic approach to competition law actually does not refer do the question of using economics at all. Instead, a specific branch of economic thinking, the current mainstream of industrial economics, characterizes this debate. In other words, the question is whether competition policy should embrace more strongly modern industrial economics as its sole or dominant economic influence.

In this context, the conference organisers and editors of this volume asked me to prepare an analysis for a panel in which the following questions should be discussed in order “to critically assess the current and future capabilities of this approach and its performance in specific case analysis” (from the conference outline):

- How sure can we be of the assumptions and criteria that this line of thinking has established?

- What are the deficits and shortcomings of this approach to competition policy?

- What contributions can we expect in the future from this approach?

- What are the open questions that deserve more research?

- How reliable are the analyses of economic effects in specific cases (e.g. merger simulation models)?

In other words, emphasis is put on the remaining open problems and on possible limits, while recognizing the widely accepted merits of this approach. Therefore, this paper critically addresses open problems and possible limits as they have been raised in the literature and the underlying case practice. In doing so, it scrutinizes each issue as to whether (i) it hits this specific economic approach at all, (ii) represents a teething problem or (iii) has to be considered as a serious limitation. However, let me start with a disclaimer. The focus on the problems and limits rather than on the merits does by no means imply that the merits are disregarded! However, a serious industrial economics based competition policy strategy must pay attention and be aware of not yet solved problems and principal limitations.

2. The State of Modern Industrial Economics

Let me start this very brief and somewhat superficial introduction to modern industrial economics by emphasizing what it is *not*: modern industrial economics is *not* about the model of perfect competition with all its heroic assumptions! Instead, the common background of the various and diverse approaches that loosely form modern industrial economics is the *game-theoretic reformulation* of the much older price theory of oligopolies. Following the landmark contributions from *Cournot* (1838) and *Bertrand* (1883), neoclassical price set up an oligopoly theory that, however, quickly ran into some stagnation because of a lack of available methods that could adequately and treatable model the core of the market form oligopoly, namely *oligopolistic interdependency*. The defining moment of an oligopolistic market is the explicit and conceived interaction between competitors. Different from the notion of perfect competition in which competition is an anonymous force not conceived as rivalry by the ‘competi-

tors',[1] the oligopolists are aware that the success of their actions depend on the reactions of their (more or less well-known) competitors. They react to their actions and intentionally act while considering their reactions. In other words, the market participants play a strategic game, in which each player has some leeway to act and influence the market parameters but, notwithstanding, depends in his or her revenue on its competitors (as well as of the demand side of the market, of course). The adoption of game theory allows for explicitly modelling this oligopolistic interdependency and to analytically describe the underlying strategic game. Thereby, it departs from neoclassical economics by escaping the dichotomy of monopoly and polyopoly and addressing the dominant real-world market form – oligopolies – in a direct way. Although this process started as far back as in the 1960s, an explicit and comprehensive employment of the insights of game-theoretic oligopoly theory and the related (empirical) methods for antitrust purposes intensified only through the 1980s and entered competition policy practice (in the U.S.) more systematically in the 1990s (sometimes labelled as Post-Chicago economics; inter alia *Brodley* 1995; *Baker* 1999a; *Hovenkamp* 2001). The EU followed a decade later with the so-called more economic approach (inter alia *Christiansen* 2006; *Neven* 2006; *Röller* & *Stehmann* 2006).

Since modern industrial economics consists of a kaleidoscopic myriad of models in all areas of anticompetitive arrangements and conduct, it is impossible to summarize its 'canon' in a couple of paragraphs.[2] Therefore, I restrict myself to

1 "Competition has two different meanings. In ordinary discourse, competition means personal rivalry, with one individual seeking to outdo his known competitor. In the economic world [perfect neoclassical competition; OB], competition means almost the opposite. There is no personal rivalry in the competitive market place. There is no personal higgling. The wheat farmer in a free market does not feel himself in personal rivalry with, or threatened by, his neighbor, who is, in fact, his competitor. The essence of a competitive market is its impersonal character. No one participant can determine the terms on which other participants shall have access to goods or jobs. All take prices as given by the market and no individual can by himself have more than a negligible influence on price (…)" *Friedman* (1962: 119-120). See also *Hayek* (1948) for a forceful and comprehensive critique of denouncing a situation that actually encompasses the absence of virtually all elements of the real phenomenon competition with the label 'perfect competition'.

2 Standard textbooks (e.g. Tirole 2004; Carlton & Perloff 2005; Lipczynski et al. 2005 and many more) as well as specifically antitrust policy oriented handbooks and volumes (e.g. *Motta* 2004;

pointing out some selected major developments in the classic three areas of economic competition analysis, namely (i) collusion, (ii) mergers and (ii) exclusionary, predatory and abusive strategies.

In the area of collusion, the landmark contributions of modern industrial economics include the analysis and derivation of so-called stabilizing factors. Modelling oligopolies as multi-stage prisoners dilemma games (including supergames) yielded an impressive list of market characteristics (inter alia few competitors, homogeneous goods and cost structures, high market transparency, multimarket contact, entry and exit barriers, etc.) that help to stabilize illegal collusive arrangements as well as collusive equilibria. For instance, these insights aid competition authorities in screening markets that are prone to collusion or identify markets in which the emergence of coordinated effects (collective dominance) is likely. Furthermore, game-theoretic insights promoted the introduction of leniency programs for cartel defectors that arguably improved cartel detection and anticartel policy. In merger analysis, the concept of anticompetitive unilateral effects of oligopolistic mergers in heterogeneous markets without dominance represented an innovation that subsequently entered antitrust practice. Furthermore, various efficiency rationales behind vertical integration processes have been emphasized. Conglomerate mergers have, on the one hand, found to be less anticompetitive due to efficiency arguments, but, on the other hand, conglomerate mergers in 'neighbouring' markets, i.e. markets that are distinct but very close to each other, have been found to be more like horizontal mergers. The analysis of welfare effects of a large variety of business strategies (e.g. pricing, tying & bundling, entry deterrence, incompatibility creation, raising rivals' costs, advertising, research & development, etc.) contributed to a more differentiated understanding of their competitive effects. In many cases, conditions could be derived and specified that distinguish a procompetitive use of a strategy type from an anticompetitive one (e.g. predatory pricing).

Neumann & *Weigand* 2004; *Kaplow* & *Shapiro* 2007; *Buccirossi* 2008; *Kerber* & *Schwalbe* 2008) offer good overviews on the widely accepted canon of the field. However, industrial economics is a very dynamic research field and the body of knowledge expands and evolves remarkably rapidly.

On the one hand, this led to a decrease of anticompetitive concerns regarding several business practices (e.g. price discrimination). On the other hand, some practices entered the radar of antitrust authorities (e.g. raising rivals' costs).

It must be emphasized, however, that the competition policy conclusions are far from providing a general framework or consistent paradigm for antitrust authorities. Probably, *Fisher*'s (1991: 207) "second organizing principle" that suggests that "the principal result of theory is to show that nearly anything can happen" might be somewhat exaggerated but it entails a true core. In this regard, modern industrial economics do not represent a (more or less) coherent school like the famous Chicago or Harvard Schools of Antitrust Analysis or the German Freiburg School of Competition Law and Economics.[3] An advantage of not being such type of a school of thought might be that ideology plays a much smaller role.[4] However, the analysis in chapter 3 will show that the elements of arbitrariness also cause some of the problems when it comes to competition policy practice.

3. Limits and Open Problems

Even the brief overview in the preceding section demonstrates that modern industrial economics provide a powerful and rich theoretical framework for analysing competition and business strategies on markets. Therefore, the step towards grounding practical competition policy and the application of competition law more firmly on the theories and methods that form modern industrial economics represents a logical and straightforward development. Naturally, competition policy must be based on the economics of competition since "antitrust law is designed to protect and facilitate the competitive process itself, and the only way to do that effectively is to understand what one is trying to protect

3 See for an overview on the influential schools of thought in competition economics e.g. *Budzinski* (2008: 296-313).

4 There is a danger, however, that ideologies are just hidden away in ostensibly 'non-ideological' models.

or facilitate" (*Wood* 1999: 83). And, as the evolution of competition economics progresses and develops new insights, theories and methods, the new knowledge about the nature and the effects of competition must be injected into competition policy from time to time in order to keep competition policy in line with scientific progress.[5]

However, changing – or modernizing – the underlying economic fundamentals of competition policy does not imply that automatically everything gets better. Teething problems necessarily occur. Furthermore, the inherent limits of a new approach might be initially neglected as the advocates of change need to stress (and exaggerate?) the advantages in order to push the reform through. However, a serious and sustainable industrial economics based competition policy strategy must pay attention and be aware of not yet solved problems and principal limitations. Or, in other words, when the decision 'if' is made, the questions 'how' and 'how far reaching' gain importance.

The more economic approach has been employed on both sides of the Atlantic for quite a while now and in a number of cases. In the course of the academic discussion as well as in the application of theories and methods in case practice, objections have been raised and problems have occurred. In the following subsections, selected important problems and objections are reported and subsequently analysed whether (i) they hit the more economic approach at all, (ii) represent teething problems or (ii) have to be considered as serious limitations.

3.1. Data Availability

Among the major innovations of a modern industrial economics-based competition policy, the employment of new quantitative instruments to detect and as-

5 A much more difficult question is when new economic thinking is settled and accepted enough to base policies on it – in particular in the light of the deficiencies of scientific theory progress through sequences of dominating paradigms. See *Budzinski* (2008) for an analysis of these meta-theoretic implications of the more economic approach.

sess anticompetitive firm behaviour plays an outstanding role. Econometrics and simulation techniques aim to quantitatively model real-world cases based upon real-world data and to derive precise quantitative assessments and predictions (inter alia *Crooke* et al. 1999; *Röller* 2005; *Werden* 2005; *Neven* 2006). For the sake of the following reasoning, these innovative instruments can be classified into two categories:

- Ex post empirical analysis: with the help of econometric methods the structure of the market and the patterns of interaction between the market participants can be estimated for past periods. For instance, this considerably improves the detection of collusive behaviour in the past (cartel policy, but also coordinated effects analysis in merger control). It also can be used to estimate the influence of the presence of specific competitors on the price-setting behaviour of merging (merger control) or dominating (control of abusive and predatory strategies) companies, like it was successfully done in the Staples/Office Depot merger case.[6] Furthermore, this kind of econometrics helps to identify the existence and magnitude of competitive pressure that two companies exert on each other. This information is needed for unilateral effects analysis in merger control as well as for assessing the importance of fringe competition in a market with a dominating firm.[7]

- Ex ante simulation: simulation models allow for predictions of welfare effects that lie in the (near) future and are likely to be the cause of an alleged or real restriction of competition. Up to now, simulation models have predominantly been used in merger control in order to predict the welfare effects of a merger. The best-known examples include Interstate

6 In brief and somewhat simplified, the proposed U.S. merger between Staples and Office Depot was blocked because econometric analysis revealed that these two companies pre-merger exerted significant competitive pressure on each other that would have been lost post-merger (*Baker* 1999b; *Baker* & *Rubinfeld* 1999; *Dalkir* & *Warren-Boulton* 2004; *Baker* & *Pitofsky* 2009).

7 These are just some major examples that do not attempt to be exhaustive.

Bakeries/Continental Baking Co., Kimberley-Clark/Scott Paper, Volvo/Scania, Lagardère/Natexis/VUP, Nuon/Reliant, Oracle-PeopleSoft, and Häagen-Dazs/Dreyer's (overview: *Budzinski* & *Ruhmer* 2009). Another field could embrace predation strategies where simulation could be employed to predict future welfare effects in cases of successful predation of fringe competitors.

An obvious limitation for the use of these instruments is data availability. Comprehensive and precise data is required in order to have a sufficiently broad fundament for a serious and reliable application of sophisticated econometric methods. The same is true for merger simulation models which must be calibrated with comprehensive market data so that reliable results can be derived. In contrast to some critical voices, sufficiently comprehensive and extensive data is available for several markets. In particular, this includes markets where data from scanner cashpoints is available and also auction markets often provide a workable data volume and quality. However, it must also be admitted that there are many markets where such data is simply not available, for instance markets with less frequent transactions, specific types of wholesale markets, etc. As a consequence, (ex post or ex ante) quantitative analysis is not always feasible.

In cases where a lack of data quantity and/or quality does not allow for quantitative analysis, qualitative, more structural analysis must necessarily prevail. Although a lack of data also affects the quality of these types of more traditional methods, the effect is less severe since the less detailed, often more general 'rules-of-thumb' incorporate knowledge about typical effects and tacit knowledge. Dealing with low or fuzzy case information is well-nigh the domain of qualitative methods. The co-existence of detailed quantitative case analysis (when data is available) and more qualitative 'rule-of-thumb' analysis (when no sufficient data is available) raises the rarely discussed question whether this involves an unequal treatment of antitrust cases in data-rich markets compared to such in low-data markets. Focusing on employing econometrics and simulation

could lead to a bias towards data-rich markets – involving negative welfare effects from neglecting data-poor markets. An important question in this regard is whether data availability can be expected to improve in the future (more scanner cashpoints, more digital data, etc.). This might decide about the character of the problem 'data availability' as a temporary restriction or a more principal limitation for the use of quantitative assessment and analysis methods in antitrust cases. In general, however, there is a lack of economic research addressing the intersections, interfaces and interaction of quantitative and qualitative instruments in antitrust proceedings.[8]

3.2. The Multi-dimensional Character of Competition

A widespread criticism of modern industrial economics and its methods refers to its focus on short-run price and output effects. The underlying reasons for this focus are (i) the importance of these effects for welfare (*Farrell* & *Shapiro* 2008: 7), (ii) the (comparatively feasible) quantifiability of these effects, and (iii) due to the price-theoretic roots of theoretical industrial economics, these effects have a long tradition, wherefore a large number of well-developed models with this focus is available. However, there is more to competition than short-run price and output effects – and these additional dimensions of competition are usually neglected by industrial economics-modelling despite their undisputed contribution to welfare. According to the literature, the neglected dimensions include more short-run non-price elements of competition like e.g. barriers to entry and exit, buyer power, brand, promotion and placement effects, shelf space competition, strategy effects on/of market participants, etc. (inter alia *Scheffman* 2004; *Bengtsson* 2005; *Walker* 2005: 487-490) along with more long-run dimensions like innovation and dynamic efficiency (e.g. *Audretsch* et al. 2001; *Gaffard* & *Quéré* 2006; *Baker* 2007; *Katz* & *Shelanski* 2007a; *Evans* & *Hylton* 2008), diversity (e.g. *Farrell* 2006; *Kerber* 2009b), adaptive effi-

8 But see *Baker* & *Bresnahan* (2008) for a summary of the state of knowledge in this regard.

ciency (*Budzinski* 2004), fairness (*Gal* 2009) as well as economic freedom (e.g. *Möschel* 2001; *A. Schmidt* 2008; *Kerber* 2009a: 106-118).[9]

It should be quite obvious and less controversial that a competition policy that neglects all these welfare-relevant dimensions of competition and instead exclusively focuses on price and output effects displays significant and severe shortcomings. In a recent study, *Froeb* et al. (2007) demonstrate against the background of the controversial Häagen-Dazs/Dreyer's merger that the neglect of non-price dimensions can easily lead to false competition policy decisions.[10] Furthermore, there are cases where neither (advanced) Bertrand- nor Cournot models of oligopoly competition adequately describe the competitive interaction on the underlying market as a complex and multifaceted phenomenon, causing enforcement problems of a price- and output-focused approach (*Farrell* & *Shapiro* 2008: 15).

However, do non-price dimensions of competition really represent a blind spot of modern industrial economics? Admittedly, there is some truth in this criticism for the hitherto predominantly applied models in antitrust cases. However, new and more advanced models might heal that deficiency and integrate more and more non-price effects into the existing models. A prime example is *Froeb* et al. (2007) who do not only show that neglecting promotional competition (in the Häagen-Dazs/Dreyer's case) leads to false decisions but also demonstrate how this non-price dimension can be integrated into a simulation model of this merger. Moreover, in the Oracle/PeopleSoft case, for instance, the merger simu-

9 From a more fundamental, economic systems-oriented perspective, competition represents a superior coordination mechanism for economic behaviour because it induces allocative efficiency (short-term welfare effects), innovative efficiency (incentives to innovate and imitate; mid-term welfare effects), adaptive efficiency (keeping the economy flexible regarding changing environments; evolutionary welfare effects; long-term welfare effects), consumer sovereignty (producers are induced to adjust their supply according to the preferences of the consumers) and contributes to economic freedom (liberal welfare effects). See e.g. *Budzinski* (2008).

10 In this case, the inclusion of the non-price dimension of competition "promotional activities" alone significantly reduced the welfare effects compared to the price-and-output-only simulation model.

lation models featured (stylized) effects on quality and merger-specific reduced choice options for consumers (*Budzinski* & *Christiansen* 2007). This goes hand in hand with a large body of the more theoretical and not-yet-applied modelling in industrial economics that addresses – at the least – most of the short-run non-price dimensions of competition. Furthermore, there is an extensive body of industrial economics literature on innovation and dynamic efficiency. Eventually, the scientific progress of industrial economics also embraces an extension of methods, for instance towards more complex multistage and supergames; 'real' dynamics, etc. And, of course, more can be expected from the research efforts in this area. Thus, can the tendency towards neglecting non-price elements of competition be classified as a teething problem that will be healed in the course of further research?

The answer is partly 'yes', but unfortunately there is also indication of more persistent problems. For instance, economists face ongoing difficulties to make (industrial economics) innovation models applicable for antitrust (*Baker* 2008; *Evans* & *Hylton* 2008). In the same veins, the employment of more advanced models (like supergames or dynamic modelling) looks likely to quickly hit its limits regarding the suitability of such types of models for antitrust practice. Can model complexity still be handled? Is it still possible to derive clear-cut results which are necessary for antitrust proceedings? The problem of model complexity and the tractability of more complex models leads to another limitation. Although it is often possible and feasible to introduce one or two additional non-price competition dimensions into a price-and-output-focused model, real-world cases usually involve multiple competition dimensions that additionally interact with each other. From nowadays perspective it is difficult to see how this can sufficiently be healed by an advance in industrial economics methods in the near future.

The latter issue is even more relevant as there are competition dimensions that are non-quantifiable by nature. Today, this is to a considerable extent true for long-run effects like innovation capabilities, diversity, adaptive efficiency, the

coordinating force of competition, etc. Many of these effects cannot be adequately modelled with contemporary methods and even in the face of dynamic theory progress it remains highly doubtful whether this will change in the next decades. For the application to antitrust cases, it is even more problematic that these effects can hardly ever be captured by instruments like econometrics and simulation techniques. However, to be very clear, lacking ability to make a phenomenon mathematically feasible or to quantify the respective variables does not mean that these effects carry less importance for real-world welfare. Therefore, neglecting some important welfare effects just because they are not quantifiable is very likely to cause deficient decisions.

One consequence of the preceding reasoning is that competition policy must inevitably deal with uncertainty. Dealing with uncertainty and principle limits to predictability have always been the core of market process-oriented competition economics (pioneered by *Hayek* 1948, 1978) and connecting their insights more strongly with antitrust-focused modern industrial economics might represent an interesting – but to my knowledge not yet existing – research programme. More recently, risk-based approaches, inter alia from decision theory, have been injected into the debate (*Katz* & *Shelanski* 2007b) and might represent an alternative way forward.

Altogether, the limitations discussed in this section might well be alleviated in the course of theory progress. However, it must also be considered that some effects might remain being non-quantifiable due to their nature.

3.3. Competing Models

The common feature of modern industrial economics-based competition policy is that the competitive patterns of the underlying market must be modelled. Ideally, the industrial economics-model is chosen or designed that most accurately pictures the real market and the real case. However, virtually all antitrust cases were characterized by competing industrial economics-models, injected by the

different parties to the case.[11] Most prominent was, of course, the Microsoft case where the expertises of leading industrial economics covered almost the complete scale from 'most anticompetitive' to 'completely procompetitive'.[12] However, competing models also occurred in many merger cases and represent more the rule than the exception. Actually, the controversial industrial-economic treatment of some cases triggered fierce academic debates[13] – and, thereby, drove theory development (in most cases without eventually resolving the conflicts). Thus, economic evidence in antitrust cases often leads to a 'battle of experts' as each party (competition agency, defending firms as well as competitors, costumers and suppliers of defending firms) injects its own models into the proceedings. As a consequence, law courts – the deciding body in the U.S. and the appeal body in the EU – struggle to (i) deal with the increasingly complex models offered by economic experts and (ii) identify the 'right' model that should guide the decision. Such a battle of experts, a widespread critique reads, decreases the quality of legal decision making.

The battle of experts is driven by two dimensions:

1. The analytical dimension of the selection problem refers to the non-existence of one 'right' model. Each model inevitably must simplify the underlying real case (complexity reduction) in order to create meaningful information or, as *Joan Robinson* (1962: 33) puts it: "A model which took account of all the variegation of reality would be of no more use than a map at the scale of one to one." The necessary complexity reduction cre-

11 See generally on the problem of competing economic evidence and expertise *Mandel* (1999), *Posner* (1999), *Hovenkamp* (2002), *Werden* (2007), *Budzinski* & *Ruhmer* (2009), *Lianos* (2009), and *Wigger* (2009).

12 See inter alia *Bresnahan* (2001); *Fisher* & *Rubinfeld* (2001); *Gilbert* & *Katz* (2001); *Schmalensee* (2001); *Werden* (2001); *Evans* et al. (2005).

13 Next to Microsoft, see for instance GE/Honeywell (Evans & Salinger 2002; *Reynolds* & *Ordover* 2002; *Gerber* 2003) or Volvo/Scania (*Hausman* & *Leonard* 2005; *Ivaldi* & *Verboven* 2005a,b).

ates scope for competing models since different models can simplify on different parameters of the underlying case (*Budzinski* 2009).

2. The policy dimension of the selection problem refers to political interests of experts working for the competition authority or allegedly anticompetitive-behaving companies or their competitors, customers or suppliers. Partisan models injected by the parties to an antitrust case need not be of insufficient quality just because they are biased. Furthermore, from an economic perspective of self-interested agents and agencies, the competition authorities are not necessarily completely unbiased either. If each side to a trial sends (f.i. equally) high-ranked experts to defend their case, then it might become rather difficult for a decision body, for instance a law court, to discriminate between the proposed models.

However, from an economic perspective it is not self-evident that such a battle of experts is naturally deficient. Actually, it represents a *competition* of experts and such a device could alternatively also be viewed to be an efficient way to detect and create knowledge about the case.[14] However, this specific competition might be characterized by considerable imperfections, leading to market failure. In particular, asymmetric and distorted information might be so severe that the identification problem (choice of the most adequate models among the competing proposals) cannot be solved. Furthermore, existing institutional conditions might be deficient. For instance, if the burden of proof lies predominantly or even exclusively on one party, then experts' competition might asymmetrically weaken this party – as it is easier to raise doubts on economic evidence than to provide better or more reliable economic evidence.[15]

14 The sheer fact that the experts are biased (partisan interests) does not necessarily change that assessment per se. See *Becker*'s (1983) model of an efficient competition among pressure groups for political influence.

15 The related issue of standards of proof will be discussed in section 3.4.

In other words, the phenomenon of inefficient battles of experts does not necessarily represent an argument against economic evidence. Instead, it calls for better *competition rules for the imperfect competition among experts*. Only if the market failures cannot be healed by better procedural institutions, this might turn out to be a 'hard' limitation for a modern industrial-economics based competition policy. Possible solutions or remedies for the imperfections and deficiencies of economic experts' competition might be (advanced) standards for economic expertise (pro: *Werden* et al. 2004; *Werden* 2007; con: *Lianos* 2009), enhanced scope for neutral, non-partisan experts (appointed by the courts) (*Baker* & *Bresnahan* 2008: 30-32) or modified rules on the allocation of the burden of proof (*Budzinski* & *Christiansen* 2007: 157-158; *Parret* 2008). Altogether, a systematic economic analysis of the working conditions and efficiency effects of competition among economic experts – including possible remedies – represents a task for further research.

3.4. Erosion of the Protection of Competition?

An important concern that has been raised in the debate about a modern industrial economics-based approach to competition policy hints to a possible erosion of the level of competition protection. This concern can be distinguished into two variants: an invitation to nonenforcement and an unintended weakening of antitrust.

3.4.1. Invitation to Nonenforcement

This view alleges to some degree that the focus on modern industrial economics as the sole of dominating base of competition policy is not (only) motivated by the target of basing antitrust firmly on modern mainstream economic thinking. In addition, the advocates of this critique hint to a related policy agenda that seeks to weaken antitrust interventions into 'free markets' and to strengthen the position of big enterprises. This tendency is sometimes labelled as the victory of the Chicago School in Europe – quasi through the backdoor – and an invitation to nonenforcement (*I. Schmidt* 2007, 2008). The latter results from the in-

troduction of ‘defences for everything’, i.e. the traditional focus on allocative efficiency becomes qualified by an increasing focus on productive efficiency. According to this view, modern industrial economics introduces predominantly defences of otherwise anticompetitive firm behaviour into competition policy. Possible efficiency effects of otherwise anticompetitive business strategies are derived from a kaleidoscopic world of models (with sometimes rather specific assumptions) and injected into the antitrust world as the erosion of clear presumptions of anticompetitive effects. Examples include the strengthening of the efficiency defence for mergers, the emphasis on potential efficiencies of vertical strategies,[16] the focus on efficiency effects of predatory strategies, and many more. Instead of leading to a better assessment of individual cases, the critics emphasize that the efficiency focus makes almost every type of business behaviour justifiable and due to the notorious lack of data (see section 3.1), lacking justiciability of economic criteria and, in particular, the absence of an exact theory that can explain dynamic performance quantities (*I. Schmidt* 2008: 74), this represents an invitation to nonenforcement – motivated by political reasoning.[17]

While the suspected general tendency towards less enforcement can actually be backed by empirical evidence (see section 3.4.2), this line of reasoning is treating modern industrial economics somewhat unfair in a couple of respects. First of all, modern industrial economics considerably departs both from neoclassical price theory (see section 2) and from the ‘ideology’ of the Chicago School of Antitrust Analysis.[18] In particular, modern industrial economics (or Post-Chicago antitrust economics) have qualified and even reverted several insights

16 The recent controversial skipping of the U.S. per se prohibition of resale price maintenance in favour of a case-by-case rule of reason approach represents a prime example. See *Graglia* (2007), *Peeperkorn* (2008) and *Breyer* (2009).

17 “The argument, that the more economic approach serves a maximization of consumer welfare as the final objective of competition policy, is obviously of politically-tactical nature and aims to gloss over the deliberate weakening of competition policy“ (*I. Schmidt* 2008: 74; translation OB).

18 See for reviews – in praise as well as more critical - of the Chicago School and its relation to other schools within competition economics *Posner* (1979), *Fox* & *Sullivan* (1987), *Schmidt* & *Rittaler* (1989), *Kovacic* & *Shapiro* (2000), *Budzinski* (2008) and *Schmalensee* (2008).

from Chicago. Where the Chicago School predominantly acknowledged pro-competitive efficiency effects, modern industrial economics implies a much more critical view and derives considerably more scope for anticompetitive arrangements and effects, for instance regarding vertical relations, dominant firm behaviour, foreclosure, exclusive dealing and predatory strategies (inter alia *Riordan* & *Salop* 1995; *Baker* 1999a; the chapters in *Pitofsky* 2008).[19] Moreover, next to a more critical assessment of well-known types of potential restrictions of competition, modern industrial economics also identified additional areas of competitive concern. Two examples illustrate this. First, unilateral effects in heterogeneous oligopolies, implying negative welfare effects of mergers in such markets well below any dominance or monopolization threshold, represent an innovation from game-theoretic oligopoly theory not known in that way before (overview: *Werden* & *Froeb* 2008). Second, the anticompetitive effects of meeting-the-competition clauses and other specific discount schemes appear considerably more severe in modern industrial economics than in many other approaches (e.g. *Salop* 1986; *Edlin* & *Emch* 1999; *Kretschmer* & *Budzinski* 2009). Consequently, modern industrial economics does not only consist of new defences, it also adds new theories of harm. In this regard, the invitation-to-nonenforcement critique, when targeted on modern industrial economics as an economic fundament to competition policy, overshoots the mark and a more balanced view seems to be appropriate.

3.4.2. Unintended Weakening of Antirust

However, there is empirical indication from the U.S. that a stronger reliance on quantitative economic evidence might *unintentionally* weaken antitrust enforcement, in particular in the area of merger control (*Baker* & *Shapiro* 2008; *Farrell* & *Shapiro* 2008) but also with respect to dominant firm behaviour as well as exclusionary and predatory strategies (e.g. *Salop* 2007, 2008; *Hovenkamp* 2008). In merger control, the U.S. antitrust authorities failed to successfully challenge a number of mergers that raised serious anticompetitive con-

19 Budzinski (2008: 301-305) provides an overview of selected landmark theory contributions.

cerns. However, the courts rejected to prohibit these mergers because of doubts about the reliability and accurateness of the presented (industrial-) economic evidence. Prominent examples include Oracle/PeopleSoft, Nestlé (Häagen-Dazs)/Dreyer's Grand Ice Cream, Whirlpool/Maytag or Whole Foods/Wild Oats. Notorious weaknesses have been the economic evidence on market delineation (although often not even relevant for the overall welfare effects of the merger in question) as well as simulation models and quantitative predictions (*Budzinski* & *Christiansen* 2007; *Froeb* et al. 2007; *Baker* & *Shapiro* 2008; *Farrell* & *Shapiro* 2008).

Of course, it could be argued that the American antitrust authorities were simply wrong in challenging those mergers. The serious and (from an economic point of view) quite convincing anticompetitive concerns, however, are somewhat supported by recent ex post studies about several eventually cleared mergers that initially raised anticompetitive concerns (e.g. *Ashenfelter* & *Hosken* 2008; *Weinberg* 2008). These studies come to the conclusion that many of these mergers were actually harmful from hindsight, allowing for the conclusion that a prohibition would have been beneficial.[20]

Although empirical evidence à la *Baker* & *Shapiro* (2008) is lacking for European merger control, there is at least indication for comparable tendencies in the last decade. The Commission's judgement were nullified in several high-profile merger cases by the European Court of First Instance, notably covering next to three merger prohibitions (Airtours/First Choice, Schneider/Legrand, Tetra Laval/Sidel) also one clearance decision (Sony/BMG). This is accompanied by a couple of spectacular U-turns in the assessment of merger proposals (e.g. Oracle/PeopleSoft; Sony/BMG) – from a sharp statement of objection to an (almost) unconditional clearance decision. Furthermore, some commentators refer to an all-time low of prohibitions (*German Monopolies Commission* 2006, 2008; *Christiansen* 2009: 570-572). Since 2001 the Commission issued only

20 Regarding the Häagen-Dazs/Dreyer's merger, *Froeb* et al. (2007) come to a comparable conclusion with the help of an advanced merger simulation model.

two prohibitions (ENI/EDP/GDP; Ryanair/Aer Lingus) despite the occurrence of several controversial cases (e.g. T-Mobile Austria/tele.ring; E.ON/MOL; Korsnäs/Assidomän Cartonboard; Inco/Falconbridge; Friesland/Campina; StatoilHydro/ConocoPhilips). Similarly, tendencies towards less enforcement in the area of abuses of dominant positions have been mentioned (e.g. *Lyons* 2008). There is a possibility that the antitrust authorities on both sides of the Atlantic have become more reluctant to fight restrictions of competition (except of hardcore cartels) in fear of court defeats. Instead, in merger control for instance, they rely more strongly on conditional clearances with remedies. However, empirical economic studies demonstrate that remedies might often not suffice to alleviate welfare losses from anticompetitive combinations and strategies; instead, only outright prohibitions seem to be effective remedies (*Duso* et al. 2006; *Seldeslachts* et al. 2008).

In summary, there is some empirical support for the thesis that a more industrial economics based competition policy can unintentionally weaken antitrust enforcement by eroding the power of the antitrust authorities to prove anticompetitive concerns (*Farrell* & *Katz* 2006; *Salop* 2007; *Baker* & *Shapiro* 2008; *Farrell* & *Shapiro* 2008; *Lyons* 2008; *Seldeslachts* et al. 2008; *Sørgard* 2008; *Christiansen* 2009).[21] In the areas of merger control as well as abusive, exclusionary and predatory strategies, this tendency might cause a systematic bias towards false positives[22] (*Farrell* & *Shapiro* 2008: 20; *Goldschmid* 2008). Note, however, that anticartel policy cannot be included in this reasoning about the danger of underenforcement. Quite in contrast, cartel detection activity seems to have increased and improved through modern industrial economics-based competition policies – although it is hard to tell whether the increasing numbers of detected cartels on both sides of the Atlantic reliably hints to a better detection ratio (or rather to an increasing number of cartels).

21 However, see for a contrary assessment *Carlton* (2007).

22 This implies that the focus is about avoiding to prohibit potentially efficient strategies and arrangements and that the price of this focus is the neglect of false negatives, i.e. too many anticompetitive strategies and arrangements are allowed.

3.4.3. Towards an Explanation? The Specific Problems of Predictive Quantitative Economic Evidence

However, why might this tendency represent an *unintended* weakening of antitrust enforcement? An explanation could be the lacking fit between the new instruments (generating predictive quantitative economic evidence) and the 'old' institutional environment. The character of the new type of economic evidence, in particular its (ostensibly) precise quantitative nature, might have caused an unintended and 'tacit' increase in the standard of proof as well as an unintended and 'tacit' shift in the allocation of the burden of proof. In support of this hypothesis, two interrelated issues can be discussed: pseudo precision and the degree of certainty of quantitative evidence.

In a different context, *Hansen* & *Heckman* (1996: 98) describe a caveat with the use of numerical predictions as follows: "Precise numerical outputs are reported, but with no sense of the confidence that can be placed in the estimates. This produces a false sense of precision." The underlying implication is that numerical predictions and quantitative evidence create an illusion of precision that deviates from and tend to ignore the capacity of the estimates. If a price increase, for instance, is predicted to be 7.7 per cent as the outcome of a – inevitably – simplifying merger simulation model, then this creates a stronger sense (or even perception) of precision than a more vague qualitative assessment à la 'considerable price increases must be expected'. The problematic implication of this cognitive framing effect (*Kahneman* 2003a, 2003b) is that it becomes easier to shatter the trust in the evidence by the defendants. In the case of the numerical prediction it might suffice to create doubt on the *exact figure* of the price increase ('with other model specifications, the increase becomes significantly lower'), whereas in the case of the qualitative assessment the hurdle to create doubt that price increases occur *at all* is much higher. This problem becomes further aggravated if predictive quantitative economic evidence is – intentionally or unintentionally – treated as forensic evidence that attempts to prove facts of the past. A merger simulation model, for instance, can never achieve the de-

gree of certainty of a genetic fingerprint simply because future effects can not be perfectly foreseen in a non-deterministic world.

As a consequence, the party who bears the burden of proof faces an implicitly increased standard of proof. It actually must prove to a higher degree of certainty that the predicted effects are reliable – and, sometimes, the demanded degree of certainty might become prohibitive. Since the competition agencies carry the burden of proof regarding most issues,[23] their power to enforce the competition rules becomes unintentionally weakened. The controversial cases mentioned in the preceding sub-chapter include some good examples where defendants escaped prohibitions or stricter conditions because doubt on the precision of quantitative economic evidence could be raised (relatively) easy. The predictions of the merger simulation of Oracle/PeopleSoft, where different models on both side of the Atlantic pointed to very similar severe anticompetitive effects (comparison: *Budzinski* & *Christiansen* 2007), were not dismissed because of a better model with contrary predictions. Similarly, doubts on the precision of calculations – and not proof to the contrary – eroded the anticompetitive concerns in Whole Foods/Wild Oats, Tetra Laval/Sidel and other cases.[24]

The problem of the interaction of predictive quantitative economic evidence with the standard of proof as well as with the allocation of the burden of proof has not yet been sufficiently analysed. The innovative instruments of generating quantitative economic evidence have been injected into antitrust practice without research into their *institutional fit* with the existing institutional environ-

23 An exception would be the efficiency defence where the merging companies carry the burden of proof. This might explain why there is (almost) no case where efficiencies have played a major role in front of a law court or driven its decision.

24 The European Commission was put into a somewhat curious situation when the Court of First Instance rejected its clearance decision on the Sony/BMG merger, emphasizing that there is a symmetric standard of proof for prohibitions (proof of harm) and clearances (proof of the absence of harm). This leaves it open what should be done if neither harm nor the absence of harm can be proved with sufficient certainty. See *Aigner* et al. (2007) for an analysis.

ment. Given the lack of scientific knowledge on this fit, it seems rather likely that the effectiveness of these instruments could be improved by an adjusted institutional environment.

3.5. Continuity Assumption vs. Structural Interruptions

Another bunch of critical remarks addresses the implicit continuity assumption inherent in ex ante-oriented industrial economics methods of competition analysis. Predictive methods (like merger simulation) assume that markets before an anticompetitive incident (e.g. pre-merger markets) more or less equal the markets after the anticompetitive incident (e.g. post-merger markets) with the exception of the event (e.g. the merger). For instance, merger simulation models usually assume that the post-merger market mirrors the pre-merger market with the exception that the competition between the merging companies vanishes. Similarly, industrial economics-analyses of abusive strategies usually assume that the post-markets mirror the pre-abuse markets with the exception of the abuse. In other words, usually only one aspect is changed and the rest is assumed to remain unchanged, like the form of competition, the positioning of the products, the available strategy options, etc. Thus, quantitative predictive methods usually rely upon past data (calibration) in order to predict future effects and market outcomes.

However, does the underlying fundamental competition process actually remains unchanged? This brings up the problem of the possibility of structural interruptions that are caused by the anticompetitive incident in question. Future prices and quantities are predicted by employing a model of the pre-incident market, calibrated with pre-incident data and adjusted to the post-incident situation by parameters like market share, cost variables or measures of product variability. On the one hand, this has been criticized from an econometric and statistics perspective. Price increases are often approximated by assuming that elasticities and market shares of the outsiders (e.g. the non-merging firms in merger cases) will be unchanged post-merger. This might represent an inade-

quate extrapolation (*Kokkoris* 2005; *Capps et al.* 2003). On the other hand, it might be questionable whether the basic form of competition remains unchanged – for instance, Bertrand-competition will remain Bertrand-competition and not switch to Cournot-competition, or vice versa, etc. While this assumption may be unproblematic in many cases, there is some plausibility, however, that it is not in other cases (*Werden* 1997: 98).

For instance, mergers in narrow oligopolies are considered to be a particularly rewarding area for merger simulation (because of their complex economic effects). If the market structure changes in a narrow oligopoly, say for instance from 4 to 3 or 3 to 2, this implies a particularly severe change of the business environment for the oligopolists and, therefore, their adjustment of strategies might be more than marginal. Considerable changes in the way oligopolists are competing, however, tend to overstrain predictive methods because of the missing nexus to measurable past market behaviour. As insights from cognitive economics (e.g. *Kahneman* 2003a, 2003b) demonstrate, decision-makers tend to *create* alternative strategies not until the 'old' recipes fail (new framing; adjustment of mental models), in other words, changes in the form of competition can hardly be simulated because they are not predictable and non-anticipatable as they are non-existent before the new situation actually takes place.[25] This is related to the criticism that changes in price incentives are usually not captured (*Farrell* & *Shapiro* 2008: 24-25), changes that generate structural interruptions that disallow extrapolating past patterns into the future.

The possible occurrence of structural interruptions represents a serious and non-negligible problem exactly because the most challenging potential anticompetitive incidents exert the strongest impacts on market environments and decision frameworks of the players. Mergers in narrow oligopolies as well as abuses of dominant positions can represent a discontinuity in market evolution, significantly changing the underlying competition process and the played strategies,

25 For applications to competition economics see e.g. *Budzinski* (2004) and *Kerber* (2006).

inducing creative and non-anticipatable reaction patterns. Advances in industrial economics oligopoly theory will certainly improve models of competition processes, however, there is certainly serious doubt whether the problem of (non-anticipatable) structural interruptions can be solved in such a framework.

3.6. Costs-Benefit-Analysis

Any serious economic analysis of policy instruments must take a look at the costs of the instruments in question and put them in relation to the (expected) benefits. While potential problems with the latter have been addressed in the preceding subchapters, the cost side has been ignored so far. Some authors, however, point out that the innovative instruments of an industrial economics-based competition policy are no cheap instruments but involve significant costs instead (*Schmalensee* 1982; *Voigt* & *Schmidt* 2004; *Christiansen* 2006). These costs include 'direct' costs like costs of data collection, payment for expertise, computer hours, manpower, etc. as well as costs in terms of a potential extension of the duration of proceedings and possibly reduction in legal certainty (*Zimmer* 2006). The latter might result from a decreased predictability of the outcome of the competitive assessment: a more structural analysis along the lines of rather rough proxies might be easier to anticipate by business companies in advance of the actual authority decision than the outcomes of a detailed case-by-case analysis and simulation. Since rational business companies consider competition laws and authority practice when designing a merger project or a competitive strategy, decreased legal certainty causes additional costs for business activities. This may be welcomed regarding the deterrence effects on anticompetitive strategies, however, legal uncertainty also creates a cost burden and a deterrence effect on efficiency-increasing combinations and strategies. While legal uncertainty predominantly burdens business, the increased costs for data collection, model building, expertise payments, etc. hits both the business companies, who might want to challenge the assessment of the antitrust authori-

ties with own expertises,[26] and competition agencies, the latter implying increasing costs for taxpayers.

It can hardly be denied that a detailed quantitative-economic analysis of a case is more costly than a more structural analysis relying on more or less rough proxies and 'rules-of-thumb'. This is, however, easily justifiable if the benefits from the new instruments (better decisions) outscore the additional costs. Eventually, this points to an empirical question: are the results of, for instance, econometric analyses of collusive patterns or merger simulations so much better than more traditional analyses that they justify the increased costs? Unfortunately, to my best knowledge, cost-benefits-analyses along these lines are not available, so that the outcome remains speculative. There is some preliminary indication that the benefits might outweigh the costs regarding cartel detection whereas the hitherto record of merger simulation models in antitrust cases might not be so convincing (*Walker* 2005; *Budzinski* & *Ruhmer* 2009) and a justification of the additional costs might be more difficult here.

However, does the cost-benefit issue – a problem actually calling for a better 'controlling' of competition policies – really represent a limitation on the use of modern industrial economics as the fundament of competition policy? This would only be the case, if a tendency towards more case-by-case analyses and expensive in-depth investigations of alleged anticompetitive mergers and business strategies was an imperative consequence of injecting modern industrial economics into antitrust. If, however, the question of 'case-by-case approach vs. rule-based approach' can be uncoupled from the question of rooting competition policy in modern industrial economics, then the cost-benefit issue points more towards the question of *how* to use modern industrial economics (instead of the question *whether* to use it).

26 *Friederiszick* (2009: 4) estimates the annual turnover of the European antitrust related economic consultancy industry to be about 60 million € in 2008, increasing from virtually zero in the early 1990s and with a further increasing tendency.

4. Implications for Competition Policy and the More Economic Approach

Altogether, the discussion in the preceding chapter reveals several limits and open problems although some of the criticisms raised in the literature must be rejected or at least considerably qualified regarding their importance. Furthermore, in order to put the derived limits into perspective, two general remarks are very important:

1. A general difference between the typical fields of competition policy can be identified, namely between fields that predominantly rely upon ex post analysis (like cartel policy) and such that entail more predictive ex ante analysis (like merger control; abusive, exclusionary and predatory strategies). Many of the valid limitations and criticisms discussed in this paper predominantly hit the forward-oriented, predictive part of competition analysis and accompanying policies. In backward-oriented policy areas, predominantly or even exclusively dealing with the detection of things that happened in the past, modern industrial economics instruments perform much better and less controversial than in areas, where the forward-oriented, predictive part is very important. For instance, econometric methods and industrial economic theories have considerably improved anticartel policy through an improved (econometric) detection of collusive patterns, the appropriate use of leniency programs, specifying characteristics of markets prone to collusion, etc. Modern industrial economics-based competition policy looks like a success story in this area. However, in merger control and abuse control, the record is much more mixed, corresponding to the fact that the detection and documentation of past patterns – although important – do not suffice here. The predictive part inevitably plays an important role in these areas and this creates several problems for quantitative economic analysis (see section 3).

2. Many problems do not result from employing modern industrial economics per se. Instead, they result from the way modern industrial economics is employed – namely for in-depth case-by-case analyses.[27] Apparent limitations – like data availability, competing models, unintended underenforcement and unfavourable cost-benefit relations – are actually more a consequence of a tendency towards more case-by-case analyses and away from a rule-based competition policy. However, if 'modern industrial economics vs. other competition theories' and 'case-by-case vs. rule-based approaches' become disentangled, then these problems can be directed more closely to their actual cause. Modern industrial economics is a theory of *competitive harm* and as such it serves to inform competition policy. The question whether competition policy should be done on a more rule-based or more case-by-case-based approach, however, relates to a theory of *competition policy*, for instance an institutional theory, taking into account the institutional environment, the specifics of law and court proceedings, the imperfections and deficiencies of real-world policy procedures, etc. In other words, modern industrial economics can be used in different ways: to quantify welfare effects of single cases – but alternatively also to shape and design better rules codifying robust presumptions of anticompetitive impact that are only in exceptional cases subject to an in-depth 'rebuttal' analysis.[28] A reasoning along these lines would advocate for combining modern industrial economics with modern institu-

27 "Moreover, since the state of industrial organization economics is such that the longer the list of factors that must be weighed, the more the ultimate outcome reflects judgment, decisions would probably become the less predictable. Such a procedure gives no guarantee of reaching better decisions on average" (*Schmalensee* 1987:46). "Legislation that would require anything approaching a full-blown cost-benefit analysis would produce both long trials and unpredictable decisions" (*ibid*: 42).

28 Recent proposals from leading industrial economists to overcome the underenforcement problem are very much compatible with this reasoning (see e.g. *Farrell* & *Shapiro* 2008).

tional economics in order to create a workable and beneficial competition policy system.[29,30]

Next to the complex interplay of the economics of competitive harm with the economics of rules and antitrust enforcement, the multifaceted, multidimensional character of competition as an evolutionary process represents a major challenge for any competition policy and in particular for a modern-economics based antitrust strategy with its inherent focus on short-run price and quantity effects. Partly, advances within the paradigm of contemporary industrial economics will certainly alleviate this challenge. However, in addition to internal progress, a prospective way forward could be to embrace other sub-disciplines of modern economic research, like for instance innovation and evolutionary economics (e.g. *Baker* 2007, 2008; *Katz* & *Shelanski* 2007a; *Cantner* 2009; *Kerber* 2009b) or behavioural and experimental economics (e.g. *Engel* 2009; *Haucap* 2009; *Wilson* 2009) and integrate their insights into the analysis. This process has started but still remains in its infancy.

In summary, this essay shows that there are sustainable limits to applying modern industrial economics as a case-by-case antitrust analysis that involves predictive economic evidence. However, this refers not so much to the question whether modern industrial economics represents an important ingredient of competition policy. Instead, it points to the way in which modern industrial economics is used. A lot of the current limits can probably be alleviated if the insights from modern industrial economics are applied to design and shape better competition rules – and the rules (the law) and their application pay respect to the economics of rules, the institutional environment as well as to the special

29 See also *Christiansen* & *Kerber* (2006), *Kerber* (2006), *Kerber* et al. (2008) as well as the chapter from *Haucap* (2009) in this volume.

30 It is a widespread misapprehension, for instance, to state a principal incompatibility between the German ordoliberalism tradition and modern industrial economics (like e.g. *Ahlborn* & *Evans* (2008) so vehemently do). Ordoliberalism is a theory of how to do shape the competition policy system. As such, it can be combined with different theories of competitive harm, including modern industrial economics.

characteristics of applying law and exercising policies. The most important research questions address the multi-dimensional character of competition. Although progress is already visible in this regard and industrial economics-informed competition analysis is moving away from focusing on prices and quantities only, there remains a lot of work to do. Embracing the insights from other sub-disciplines of (competition) economics, like institutional, behavioural, evolutionary or experimental (competition) economics, could be helpful in accelerating the respective theory progress. If it comes to applying economics to policy practice, paradigmatic ignorance and insistence on theory monoculture is definitely the wrong avenue. Recent developments indicate that this insight is gaining more and more advocates.

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