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**Competition Policy with Optimally Differentiated
Rules Instead of "Per se Rules vs. Rule of Reason"**

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Competition Policy with Optimally Differentiated Rules Instead of "Per se Rules vs. Rule of Reason"

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Abstract: Both in US antitrust and EU competition policy a development to a broader application of rule of reason instead of per se rules can be observed. In the European discussion the attempt to base competition policy on a "more economic approach" is mainly viewed as improving the economic analysis in the assessment of specific cases. In this paper it is shown from a general law and economics perspective that the application of rules instead of focusing on case-by-case analyses can have many advantages (less regulation costs, rent seeking and knowledge problems), although an additional differentiation of rules through a deeper assessment can also have advantages in regard to the reduction of decision errors of type I and II. After introducing the notion of a continuum of more or less differentiated rules, we show - based upon law and economics literature upon the optimal complexity of rules - in a simple model that a competition rule is optimally differentiated, if the marginal reduction of the sum of error costs (as the marginal benefit of differentiation) equals the marginal costs of differentiation. This model also allows for a more detailed analysis of the most important determinants of the optimal degree of rule-differentiation. From this law and economics perspective, competition policy should consist mainly of (more or less differentiated) rules and should only rarely rely on case-by-case analysis. Therefore the main task of a "more economic approach" is to use economics for the formulation of appropriate competition rules.

JEL-Classification: K 21, K 40, L 40

Keywords: Competition Policy, European Competition Law, Rule of Reason

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I. Introduction

Both in US antitrust and EU competition policy a development on a broader application of rule of reason instead of per se rules can be observed. In the European discussion the attempt to base competition policy on a "more economic" approach is mainly viewed as improving the economic analysis in the assessment of specific competition cases. This has been justified by new insights in industrial economics on the ambiguous welfare effects of many business practices. While we explicitly appreciate the increased input from economics, we question that a more case-specific enforcement is the inevitable consequence. There exists a number of sound arguments against such a discretionary form of policy, which may have large negative welfare effects due to rising enforcement costs, rent seeking problems and legal uncertainty. Considering both the advantages and the disadvantages of simple per se rules in comparison to more complex rules or even full-scale market analyses, we suggest searching for optimally differentiated competition rules.

Our approach is based upon the legal and above all law and economics literature about the general problem of the optimal complexity (or precision) of rules.¹ The basic idea is to minimize the sum of the welfare costs caused by decision errors of type I ("false positives") and type II ("false negatives") as well as the costs for the application of the rules. This so-called "error cost-approach" has occasionally been referred to in competition policy literature as well.² A general model of optimally differentiated competition rules, however, is still missing. Starting with the traditional, but outdated dichotomy of "per se rules vs. rule of reason", we elaborate the notion of a continuum of intermediate solutions between those two extremes and ask for the conditions and determinants for optimally differentiated rules. In a simple model we show that a competition rule is optimally differentiated, if the marginal reduction of the sum of error costs (as the marginal benefit of differentiation) equals the marginal costs of differentiation. The result of this analysis about the rational design of competition rules is that competition policy should attempt less to assess the positive and negative effects in individual cases but work with sets of (more or less) differentiated rules. Such a rule-based approach is also in line with general insights from the theory of economic policy concerning the superiority of policies based upon rules rather than on discretionary decisions.

This paper is organized as follows: Section II confronts the developments in the US and EU towards a greater application of rule of reason with the dangers of discretionary economic policy from a "rule of law" perspective. After elaborating the notion of a continuum of differentiated rules, in section III a small model for the determination of optimally differentiated rules is presented. In section IV, the influence of three determinants (frequency distribution of welfare effects, regulation costs, rent seeking behaviour) on the optimal degree of differentiation is analysed. In regard to the (European) discussion on the "more economic approach", section V shows that the main task of economics is to use economic analysis also for formulating appropriately differentiated competition rules. Throughout this article the discussion on the proper treatment of resale price maintenance is used as a small example for the application of these considerations. Conclusions are presented in section VI.

¹ Important contributions, albeit differing in focus, were made by Ehrlich/Posner (1974), Diver (1983, 1989), Gifford (1971, 1989), Polinsky/Shavell (1989), Ogas (1992), Kaplow (1995, 2000), and Mahoney/Sanchirico (2005).

² The most notable examples include Easterbrook (1992), Becker/Salop (1999), Arthur (2000), Tom/Pak (2000), Joskow (2002), Evans/Padilla (2005), and Voigt/Schmidt (2005).

II. More "Case-by-Case-Analysis" Instead of "Rule of Law"?

1. Current Developments in the US and EU

The distinction between per se and rule of reason historically originated from the US Supreme Court's jurisdiction on Sec. 1 Sherman Act (Arthur 2000; Tom/Pak 2000). The classic definition of the rule of reason dates back to 1918: "The court must ordinarily consider the facts peculiar to the business to which the restraint is applied; its condition before and after the restraint was imposed; the nature of the restraint and its effect, actual or probable. The history of the restraint, the evil believed to exist, the reason for adopting the particular remedy, the purpose or end sought to be attained, are all relevant facts".³ Accordingly, analysis under the rule of reason is effectively open-ended. A full-scale market investigation is necessary and, as a corollary, no justifications brought forward by the defendants are excluded a priori. This turned out to be a major obstacle to effective antitrust enforcement and was the main motivation for the development of various per se rules, as the Court explicitly acknowledged in its Northern Pacific judgement (1958): "This principle of per se unreasonableness [...] avoids the necessity for an incredibly complicated and prolonged economic investigation [...] - an inquiry so often wholly fruitless when undertaken".⁴ It gave the now classic justification for per se prohibitions: "There are certain agreements or practices which because of their pernicious effect on competition and lack of any redeeming virtue are conclusively presumed to be unreasonable and therefore illegal without elaborate inquiry as to the precise harm they have caused or the business excuse for their use".⁵ The decisive point is that the defenses available for firms are strictly limited (Krattenmaker 1988).

Until the 1960s enforcement relied increasingly on per se rules. This was increasingly criticized in the academic literature, especially by scholars of the "Chicago School" (Bork 1966). Beginning with the GTE Sylvania (1977)⁶ judgement, the Supreme Court also gradually reversed its jurisdiction on horizontal and vertical restraints. In NCAA⁷ (1984) it furthermore stated that "there is often no bright line separating per se from Rule of Reason analysis", thus opening discussions on intermediate forms of analysis such as "truncated" or "structured" rule of reason or simply "quick look analysis" (Tom/Pak 2000). At present there are virtually no plain per se prohibitions on contractual arrangements anymore besides hard-core restraints (Pitofsky 2002). Moreover, a case-specific approach has always remained common in other areas of competition policy such as merger control or monopolization. Therefore, current enforcement practice pays increasing attention to the peculiarities of specific cases and weighs the advantages and dangers of the conduct in question, thus effectively performing a rule of reason analysis. This approach is based on "the renewed recognition of the fact that markets are much more varied and complex" (Hovenkamp 2001: 268; see also Sullivan 1995). This corresponds to the increasing refinement of theoretical models and empirical research in industrial economics, which shows that many business practices can in principle have both positive and negative welfare effects (Post-Chicago Antitrust). Beyond that, these new theoretical models and methods of empirical analysis are increasingly used for improving the economic analysis in particular competition cases (Muris 2003).

³ Board of Trade of Chicago v. U. S., 246 U.S. 231 (1918).

⁴ Northern Pacific Railway Co. V. U.S., 356 U. S. 1 (1958).

⁵ Id.

⁶ Continental T.V. Inc. v. GTE Sylvania Inc., 433 U.S. 36 (1977).

⁷ Nat'l Collegiate Athletic Ass'n v. Board of Regents of the University of Oklahoma et al., 468 U.S. 85 (1984).

There are similar developments in European Competition Policy, albeit with a certain time lag compared to the US (Van den Bergh 2002). In regard to vertical restraints, the European Commission accepted the critique that the economic effects of these restraints should be considered more closely ("effects-based approach"; Bishop/Ridyard 2002; Montangie 2000; Waelbroeck 2006; Whish 2000): In the latest Block Exemption Regulation⁸ a market share threshold of 30 per cent was introduced, below the level of which agreements are generally deemed legal, thus creating a "safe harbour" for firms. Per se prohibitions were restricted to hard core restraints such as certain types of resale price maintenance. In merger control the European Commission explicitly embraced a "more economic approach" in the recent reform (Christiansen 2005; Röller 2005; Zimmer 2004). The new prohibition criterion "significant impediment to effective competition" (SIEC), the assessment of coordinated and unilateral effects and the explicit consideration of efficiency gains, call for a more detailed analysis of individual cases, particularly through empirical evidence and particular econometric studies (e.g. Bishop/Lofaro 2005; Colley 2004). Finally, the pending reform of abuse control under Article 82 of the EC Treaty will almost certainly lead to an increasing use of economic analysis in specific competition cases (EAGCP 2005; Evans/Padilla 2005; Gérardin/Petit 2005; Vickers 2005).

As a consequence, we observe a marked tendency in competition policy and analysis both in the US and in the EU to employ more case-specific concepts and consequently inquire more deeply into individual cases. In traditional terms this amounts to a wider application of rules of reason. This development is deemed as the logical consequence of incorporating more economics into competition law and its application.

2. Rule of Law: Some Theoretical Background

From the perspective of the theory of economic policy, however, this development can be viewed as very problematic. The problems associated with specific interventions into the market process and, conversely, the advantages of establishing and enforcing (more general) rules for the market ("rule of law") have long been recognized both by Hayek (1973), constitutional economists (e.g. Brennan/Buchanan 1985; Vanberg 1994) and the German Ordoliberals (e.g. Eucken 1952). They all postulate that economic policy should mainly consist of establishing and enforcing a framework of general legal rules and should not assess the merits and demerits of behaviour in specific cases. The large negative experiences of interventionist policies in many countries have supported the call for rule-bound economic policies and for limiting the discretionary scope of government and its agencies. On a theoretical level, this can be supported by three groups of arguments:

1) *Rules stabilize expectations*: An extension of rule of reason with more decisions based on a case-specific analysis of welfare effects considerably reduces legal certainty (Christiansen 2005). The institutional framework of a market economy, however, can only fulfil its task of channeling the behaviour of firms in welfare-enhancing directions, if the firm know which behaviour is permitted or prohibited – both for having guidance for their own behaviour and for being able to form reliable expectations about the behaviour of others. Therefore, legal uncertainty – understood as a low probability for predicting what is allowed

⁸ Commission Regulation (EC) No 2790/1999 on the Application of Article 81(3) of the Treaty to Categories of Vertical Agreements and Concerted Practices, Official Journal of the European Communities L 336, December 29 1999, 21-25.

and what is not – can be a serious problem for efficiency in a market economy (Voigt/Schmidt 2005: 1-5).

2) *Rules reduce rent seeking-problems*: Constitutional economics as well as the Ordoliberal Freiburg School of Law and Economics have shown that rules, which restrict the scope of government (and government agencies), can be a good instrument for reducing the negative welfare effects through all kinds of rent seeking activities. If governments or agencies have a wide discretionary scope, their policies are very prone to influence and distortion from interest groups. As a consequence, credible rules can serve as protection from rent seeking interests (Eucken 1952; Brennan/Buchanan 1985). An extension of rule of reason can increase the danger of distorted decisions in competition cases.

3) *Rules mitigate knowledge problems*: Even if governments, agencies and courts as well are benevolent (and thus do not abuse their power), they often have very serious knowledge and information problems that can lead to decision errors. Hayek particularly emphasized the crucial knowledge problems for carrying out successful economic policies (Hayek 1973). In a similar vein, Heiner (1990) showed that under conditions of uncertainty and ignorance it might be rational for imperfect decision-makers to follow general rules of thumb instead of attempting to decide on a case-by-case basis. The basic idea is that following an appropriate rule without trying to optimize in any specific case might produce on average less wrong decisions. If we also take into account that rule-following requires less information and, therefore, leads to much lower costs than case-by-case maximization, then the application of rules can be a very economical way of dealing with knowledge problems (Vanberg 1994).

Therefore, a "rule of law" with high predictability and strict limits for the discretionary scope of authorities can be crucial for the effectiveness of policies.⁹ In particular, Hayek and the German Ordoliberals (Eucken, Böhm) have emphasized that economic policy should mainly consist of a framework of general legal rules, and - beyond that - should refrain as far as possible from intervening into the market process (Eucken 1952; Hayek 1973). Using this as a background, Hoppmann argued in favour of per se rules in competition policy and warned about interventionist competition policy (Hoppmann 1972). Although it is widely acknowledged that simple per se rules will not be sufficient in competition policy, the arguments about the merits of the rule of law must be taken seriously. The advantages and disadvantages of a (more or less) rule-based competition policy will, therefore, be analysed in more detail in the following sections.

III. Towards an Economic Analysis of a Rule-Based Competition Policy

1. The Notion of Degree of Differentiation of Competition Rules

Instead of the dichotomy of per se rules on one hand and rule of reason on the other hand, we want to introduce the notion of a continuum of more or less differentiated rules. As one extreme case, no individual effects are relevant at all under a plain per se rule such as the per se prohibition of resale price maintenance. At the other extreme point of a full-scale rule of reason, a comprehensive analysis of all pro-competitive and anti-competitive effects must be conducted in every particular case (as e.g. in a merger case with an explicit "efficiency defense"). Most importantly, however, many intermediate solutions exist such as the aforementioned "structured rule of reason" in US antitrust, which restricts attention to certain (simple) criteria. A good example from the EU is the new "safe harbour"-rule in the treatment of verti-

⁹ For a similar account of the (economic) virtues of simple rules, see Epstein (1995).

cal restraints. In the US antitrust discussion, the terms "truncated rule of reason" and "quick look rules" are other expressions for intermediate solutions (see e.g. Arthur 2000; Tom/Pak 2000). The term "rules" here is interpreted broadly. It covers not only the primary legal provisions, such as the Sherman Act or the relevant Articles of the EC Treaty. Administrative rule-making by means of Guidelines, Notices or Block Exemption Regulations and established decision practice by the competent authority as well as judicial precedents also qualify as rules, if and insofar as they provide general guidance beyond individual cases (Hofmann 2006).

In the legal as well as in the law and economics literature, there have been some discussions about the advantages and disadvantages of "rules versus standards" and of "general versus specific" rules, but also about the "optimal complexity" or "precision" of rules.¹⁰ Since the terms are used differently, some clarification is necessary. With our concept of optimal differentiation of rules we follow the approach of Kaplow (1995, 2000), who defines the complexity or precision of rules as referring to the number and complexity of distinctions incorporated in the (set of) rules.¹¹ As a consequence, the complexity or differentiation of rules increases with the depth of case analysis and, therefore, with the number of assessment criteria and the extent of information that are taken into account.¹² The main advantage of more precise (or more differentiated) competition rules is that their complexity might allow a more effective distinction between procompetitive and anticompetitive behaviour. It should, moreover, be noted that differentiation is fundamentally different from what is usually referred to as the "aggressiveness" or "toughness" of competition policy (e.g. Evans/ Padilla 2005; Voigt/Schmidt 2005: 36). From our analytical perspective, a per se prohibition is equivalent in terms of differentiation to a per se permission, since both require minimum case-specific analysis. Obviously, in terms of "toughness" they are polar opposites.

Other related discussions refer to the "generality vs. specificity" of rules (e.g. Mahoney/ Sanchirico 2005) and to the problem of "standards" (Ehrlich/Posner 1974; Kaplow 2000: 508-514). If generality and specificity are defined as referring to the degree of complexity and precision of rules (in the sense of Kaplow), then a general rule is a simple one (as e.g. a per se rule) and a more specific rule is a more complex rule. This is perfectly compatible with our approach. But often - as in competition law - we have a type of "general rules", which denote rather vaguely formulated legal commands such as "unfairness" or "unreasonableness" and, hence, leave much room for ex post interpretation. The problem is that these "standards" have more the character of normative standards that should guide the assessment, without defining beforehand, what set of (how many) criteria and distinctions should be used.¹³ If those "standards" are interpreted as being open to all (also entirely new) kinds of arguments and criteria, this notion is very close to the extreme version of a rule of reason, which - on second thought - is no longer a rule, because it can end up in case-by-case assessments.

In the following sections, it will be shown that the most interesting kinds of competition rules are intermediate solutions, i.e. rules, which limit the extent of case analysis, but which are also more complex and differentiated than simple per se rules. We are well aware, however,

¹⁰ See Ehrlich/Posner (1974), Diver (1983, 1989), Ogus (1992), Kaplow (1994, 1995, 2000), and Mahoney/ Sanchirico (2005).

¹¹ More sophisticated formal measures of complexity have been developed in game theory in the context of repeated games with finite rationality (e.g. Kalai/Stanford 1988; Ben-Porath 1993).

¹² As an alternative, Ehrlich/Posner (1974) associate preciseness with the clarity of a rule. Accordingly, per se rules are the most precise rules, which is entirely contrary to Kaplow's definition.

¹³ For the relation between rules and standards, see e.g. Ehrlich/Posner (1974) and Kaplow (2000: 508-514).

that it is difficult to measure the degree of differentiation on a unidimensional scale. For example, beyond the number and complexity of distinctions and assessment criteria, differentiation of rules can also imply differences in the required quality and quantity of evidence (“standard of proof”; Bailey 2003).¹⁴ Also the legal consequences can differ: Besides plain prohibitions or permissions a range of intermediate solutions exists, e.g. in form of remedies as divestitures or behavioural obligations in merger cases. Differentiation of competition rules can also consist of complex sequential multi-stage processes of assessments: By using simple rules with low-cost information (as e.g. safe harbour-rules) in an initial step a lot of unproblematic cases can be filtered out, whereas for the remaining cases, in a second step, more information is gathered and additional assessment methods are applied. Beckner/Salop (1999) have analysed such multi-stage decision processes in competition policy from a decision-theoretic approach.

2. Optimizing the Degree of Differentiation: the Basic Rationale

After having shown that there is a complex continuum of more or less differentiated rules between the both extremes of a per se-rule and a full-scale market analysis, the question arises what the optimal differentiation of competition rules is. For the following analysis we assume that the aim of competition policy is welfare maximization.¹⁵ Both in antitrust law and the general law and economics literature, the problem whether more general or specific (precise) rules should be applied has been discussed from an economic point of view by applying an “error cost approach”. The basic idea is that the optimal rule is characterized by the minimum of the sum of welfare losses through wrong decisions (error costs) and regulation costs.¹⁶ In regard to the differentiation of competition rules, this suggests the following main trade off: More differentiated (or detailed) rules coupled with deeper investigations in individual cases may reduce decision errors, but drive up regulation costs.

The basic assumption of this error cost-approach is that competition policy enforcement is always imperfect (Easterbrook 1992; Joskow 2002; Heyer 2005). Decision errors are bound to occur for various reasons. Firstly, the imperfection may lie in the underlying rules. There could either be a gap, i.e. a certain type of harmful conduct escapes prosecution (“underinclusiveness”; Ehrlich/Posner 1974: 268) or the rules could prohibit beneficial behaviour (“overinclusiveness”). Such imperfections may exist because the rules are not in tune with economic analysis, e.g. as a result of lobbying activities (see also IV.3) or the evolution of theories over time (Van den Bergh 2002). In other areas the reason may be persistent ambiguity regarding the economic assessment of particular types of conduct (Burton 1994). Secondly, in individual cases competition rule enforcement is fraught with incomplete information and uncertainty (Besanko/Spulber 1989; Heyer 2005). This can be a consequence of strategic information disclosure by firms. Prohibitive costs (or even inherent limits) of gathering information in

¹⁴ This must not be confused with the allocation of the “burden of proof” between the affected parties, which can also be analysed from the perspective of minimising costs (e.g. Hay 1997).

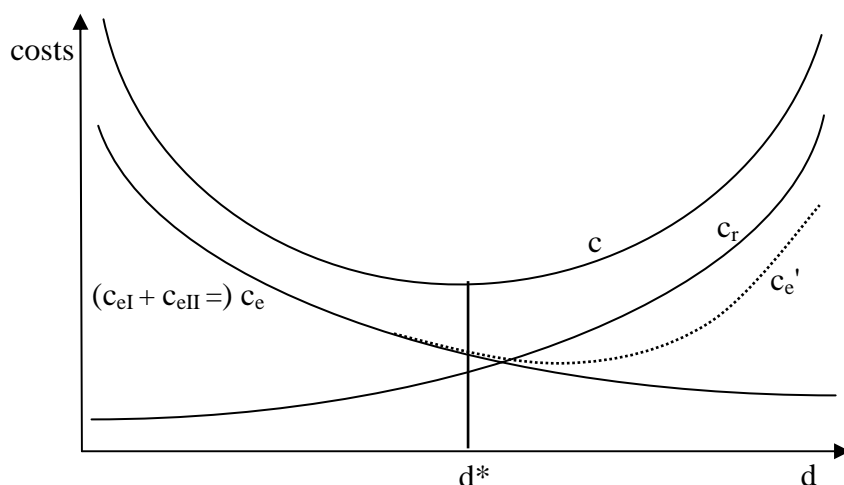
¹⁵ This is a simplifying assumption. Our analysis is meant to be independent from any particular normative standard of a given policy regime. It is not confined to a total welfare standard, but can also refer to consumer welfare or even some bundle of economic goals, as long as the objective function is clearly defined.

¹⁶ See Rubinfeld (1985), Polinsky/Shavell (1989), Besanko/Spulber (1989), Easterbrook (1992), Arthur (2000: 340), Boschek (2000: 6-7), Tom/Pak (2000: 394), Joskow (2002: 97-100), Trebilcock / Iacobucci (2002: 368), and Evans/Padilla (2005: 113-118); some authors have restricted their focus only to the error costs as e.g. Heyer (2005: 376), and Voigt/Schmidt (2005: 36-38).

individual cases play a role as well as difficulties in predicting future market developments (Easterbrook 1992). Finally, rent-seeking behaviour may also distort decisions in individual competition cases (see also IV.3). The regulation costs as the second main category in this “error cost-approach” encompass all kinds of direct and indirect costs that are caused by the formulation and subsequent application of competition rules (Diver 1989: 219-227; Ehrlich/Posner 1974: 267-271). They comprise the set up-costs of competition rules, the general and specific monitoring, information and administrative costs of competition authorities as well as the compliance costs of firms and all kinds of indirect costs due to legal uncertainty (more in detail in IV.2).

In fig.1, it is graphically shown how the optimal degree of differentiation can be determined. Error costs (c_e), regulation costs (c_r) and their sum, referred to as total costs (c), are depicted on the vertical axis, while the degree of differentiation (d) is drawn on the horizontal axis. A very small degree of differentiation on the left side indicates simple per se rules, whereas a full-scale market analysis would imply a high degree of differentiation on the extreme right side of the horizontal axis. The costs for ascertaining whether a certain business behaviour, such as a merger, is allowed or prohibited can be assumed to rise with an increasing degree of differentiation. Hence, the cost curve c_r increases and even slopes upward, because marginal costs of additional differentiation presumably rise. Since additional assessment criteria through more differentiated rules can lead to a better identification of pro- and anticompetitive behaviour, a higher degree of differentiation will usually imply a reduction of error costs (c_e). The marginal cost reduction, however, will diminish with rising differentiation (leading to a less decreasing curve c_e). As a consequence, the optimal degree of differentiation d^* can be found at the minimum of the total cost curve c , which is itself derived by the vertical aggregation of the other two cost curves.

Fig. 1: Error Costs, Regulation Costs, and the Optimal Degree of Differentiation



The crucial implication of this error-cost approach is that the optimally differentiated rule usually does not lead to correct decisions in every single case, but rather minimizes the sum of error and regulation costs on the average of all cases (Easterbrook 1992, 129; Besanko / Spulber 1989): "The test of a good legal rule is not primarily whether it leads to the correct decision in a particular case, but whether it does a good job deterring anticompetitive behaviour throughout the economy given all of the relevant costs, benefits and uncertainties associated with diagnosis and remedies" (Joskow 2002, 99-100). Therefore, a limited number of wrong

decisions through the application of the optimal rule are accepted because the costs for avoiding these decision errors are higher than their costs.

3. Optimizing the Degree of Differentiation: A Simple Model

Although some reasonings are based on this error costs-approach about per se rules versus rule of reason in the antitrust literature,¹⁷ a general model in regard to the optimisation of the degree of differentiation of competition rules is missing. In the following, a small model is presented, which allows a more precise analysis of the problem and the determinants of the optimal degree of differentiation of competition rules.

Depending on a number of circumstances, a certain business behaviour B, as e.g. resale price maintenance or a merger, can have procompetitive or anticompetitive effects. In figure 2, the two columns with the welfare effects $w(B) \geq 0$ and $w(B) < 0$ distinguish between those cases, which (depending on their positive or negative welfare effects) should be allowed and prohibited from the perspective of welfare maximization. The two lines with "permission" and "prohibition" separate between those cases, in which business behaviour B is allowed or forbidden under a rule j. For simplification, we assume perfect enforcement of the decisions. Since competition rules (and the authorities who apply them) can make mistakes, not all behaviour B with positive effects are allowed and not all behaviour B with negative effects are forbidden. Therefore two types of errors with welfare losses can ensue. A type I error is said to occur, if a conduct with negative welfare effects is wrongly allowed ("false positive"), whereas a type II error denotes an erroneous prohibition of behaviour, which would have increased welfare ("false negative").¹⁸

Fig. 2: Net Welfare Effects, Legal Decisions, and Type I and II Error Costs

| | | Net welfare effects of behaviour B | |
|---------------------------------------|-------------|---|--|
| | | $w(B) \geq 0$ | $w(B) < 0$ |
| Treatment of behaviour B under rule j | Permission | correct decision $a_j B^+$ | type I error ("false positive") $c_{eI,j} = -b_j B^-$ |
| | Prohibition | type II error ("false negative") $c_{eII,j} = (1-a_j) B^+$ | correct decision $-(1-b_j) B^-$ |

If a_j is the share of procompetitive B, which are allowed under rule j, $(1-a_j)$ is the share of those positive B, which are wrongly prohibited under this rule. If B^+ denotes the sum of the welfare effects of all B with $w(B) \geq 0$, the overall positive welfare effects of behaviour B,

¹⁷ See fn.15.

¹⁸ It is a general problem, which we cannot discuss here, that the terms "type I error" and "type II error" as well as "false negatives" and "false positives" are used differently in the literature. In regard to the type of errors we follow Polinsky/Shavell (1989).

which is correctly allowed, is $a_j B^+$.¹⁹ The loss of welfare caused by wrong prohibition of pro-competitive behaviour B through rule j ("false negative") are the type II error costs $c_{eII,j} = (1 - a_j) B^+$. Vice versa, if b_j is the share of anticompetitive B ($w(B) < 0$) that are wrongly allowed under rule j ("false positive"), $(1 - b_j)$ is the share of those negative B, which are correctly prohibited. If B^- denotes the sum of the welfare effects of all B with $w(B) < 0$, the loss of welfare caused by a wrong permission of anticompetitive behaviour B through rule j are the type I error costs $c_{eI,j} = -b_j B^-$ (with $B^- < 0$). $-(1 - b_j) B^-$ is the sum of the welfare effects of those anticompetitive behaviour B (with $B^- < 0$), which is correctly prohibited by rule j.²⁰

The welfare effects of the (actually carried out) business behaviour B under rule j, $w_j(B)$, are the positive welfare effects of the permitted procompetitive B (with $w(B) \geq 0$) minus the welfare costs through the non-prohibition of anticompetitive B (with $w(B) < 0$; type I error costs) minus the regulation costs $c_{r,j}$ of the set-up and application of rule j:²¹

$$w_j(B) = a_j B^+ - (-b_j B^-) - c_{r,j} \quad (\text{with } B^- < 0) \quad (1)$$

These welfare effects of B under rule j can also be expressed in terms of the error costs $c_{eI,j}$ and $c_{eII,j}$:

$$w_j(B) = B^+ - (c_{eI,j} + c_{eII,j} + c_{r,j}) \quad (2)$$

Therefore the welfare effects of B under rule j can also be described as the sum of the positive welfare effects of B minus the sum of error costs of type I and II and the regulation costs. If we ask for the optimal rule j in regard to B, this optimum can also be expressed as the minimum of the total costs c_j of the rule j:

$$c_j = c_{eI,j} + c_{eII,j} + c_{r,j} \quad (3)$$

For an illustration, consider the following rules:

(1) In the case of a perfect rule, which is able to separate pro- and anticompetitive cases completely, $a_j = 1$ and $b_j = 0$. This would imply that the error costs are $c_{eI,j} = c_{eII,j} = 0$. However, it is very doubtful that this result is attainable, independent from the perhaps huge regulation costs $c_{r,j}$ that would ensue.

(2) A per se-rule that permits B in all cases would imply that there are no welfare losses by type II error ($a_j = 1$; $c_{eII,j} = 0$), but perhaps considerable costs due to type I error ($b_j = 1$; $c_{eI,j} = -B^-$), since all anticompetitive B are allowed. However, the regulation costs are $c_{r,j} = 0$.

(3) The opposite per se-rule that prohibits B in all cases can lead to large welfare losses due to type II error ($a_j = 0$; $c_{eII,j} = B^+$), because all procompetitive B are forbidden, but the welfare losses through type I error are nil ($b_j = 0$; $c_{eI,j} = 0$). Here, however, the regulation costs $c_{r,j}$ might not be small because of enforcement costs.

(4) Differentiated rules would imply $0 \leq a_j \leq 1$, and $0 \leq b_j \leq 1$, leading to welfare losses due to type I and II errors $c_{eI,j} = -b_j B^-$ and $c_{eII,j} = (1 - a_j) B^+$ and regulation costs $c_{r,j}$. In comparison to

¹⁹ For simplicity, it is assumed that the average welfare effects of the wrongly decided cases are the same as the average welfare effects of all cases.

²⁰ Since this behaviour is prohibited, the net welfare effect is positive.

²¹ It is not correct to sum up the welfare effects in all four fields in figure 1, since the information on the welfare effects on the bottom lines (prohibition) is already contained in the welfare effects of the top line (permission). The relevant question is which rule j would maximize the welfare effects of the actually carried out business behaviours B. Alternatively, the ultimately relevant equation (3) can also be derived from the maximization of the welfare effects of the correct decisions minus the regulation costs.

a per se-rule of prohibition, the more differentiated rule would lead to smaller costs of error type II, because less procompetitive B are prohibited, but to additional error costs of type I, because now anticompetitive B might be wrongly allowed as well.²² Additionally, higher regulation costs $c_{r,j}$ ensue because the more differentiated rule implies additional assessment criteria.

Analytically, the optimal degree of differentiation, d^* , can be derived by maximizing $w(d)$ or minimizing $c(d)$:

$$\max_d w = B^+ - (c_{eI} + c_{eII})(d) - c_r(d) \quad (4)$$

$$\min_d c = (c_{eI} + c_{eII})(d) + c_r(d) \quad (5)$$

Based on our reasoning in Section III.B the cost functions have the following properties:

$(c_{eI} + c_{eII})'(d) < 0$ ²³, $(c_{eI} + c_{eII})''(d) \leq 0$, $c_r'(d) > 0$, $c_r''(d) \geq 0$. From this the optimal degree of differentiation d^* can be derived:

$$c'(d) = (c_{eI} + c_{eII})'(d) + c_r'(d) = 0 \quad (6)$$

$$-(c_{eI} + c_{eII})'(d^*) = c_r'(d^*) \quad (7)$$

Result: At the optimal degree of differentiation d^* the marginal regulation costs of additional differentiation equals the marginal reduction of the sum of the error costs. Therefore it is worthwhile to increase the degree of differentiation of competition rules by taking into account additional assessment criteria up to the point at which the additional regulation costs are higher than the additional reduction of error costs. In fig. 1, we already have derived this result graphically.

For competition policy questions, this reasoning can be used for answering the practical question, whether it might be worthwhile to increase the depth of competition assessment by including additional criteria. For example, the question has been raised whether in the case of resale price maintenance instead of a per se prohibition a rule of reason should be applied, i.e. a more differentiated rule, which allows for certain exceptions according to additional criteria. The argument is that industrial economics can prove that there are cases in which resale price maintenance can have positive welfare effects, because it can solve free-rider problems or other kind of efficiency problems (Bishop/Walker 2002: 167; Motta 2004: 377). In terms of our modelling approach this amounts to asking whether it is worthwhile to replace a rule $j = 1$ by a more differentiated rule $j = 2$ (with $d_1 < d_2$). This substitution can be recommended, if the total costs $c_1 > c_2$ or

$$c_{eI,1} + c_{eII,1} + c_{r,1} > c_{eI,2} + c_{eII,2} + c_{r,2} \quad (8)$$

$$(c_{eII,1} - c_{eII,2}) > (c_{eI,2} - c_{eI,1}) + (c_{r,2} - c_{r,1}) \quad (9)$$

This inequality implies that the transition from the per se-prohibition rule 1 to a more differentiated rule 2 can only be recommended, if the reduction of error costs of type II ("false negatives"), which might be expected by an additional differentiation ($c_{eII,1} - c_{eII,2} > 0$), is lar-

²² For more differentiation from the starting-point of a per se permission, it is vice versa.

²³ An additional differentiation leads either to a decrease of c_{eI} , which is larger than the ensuing increase of c_{eII} , or to a decrease of c_{eII} , which is larger than the increase of c_{eI} . The decisive point is that an increasing degree of differentiation d leads to a reduction of the sum of error costs $c_{eI} + c_{eII}$.

ger than the increase of error costs of type I ("false positives"), which arise through errors in the application of the exceptions ($c_{eI,1} - c_{eI,2} < 0$), plus the additional regulation costs of the more differentiated rule ($c_{r,2} - c_{r,1} > 0$).

The model shows the economic rationale for applying more or less differentiated rules in competition policy instead of deciding on a case-by-case basis. A crucial result is that - depending on the costs and the benefits of additional differentiation - the optimal complexity (or precision) of competition rules varies between different types of business behaviour. Simple per se rules, intermediate solutions (as structured rules of reasons or quick look rules) as well as - in presumably rare cases - a traditional rule of reason (as full-scale market analysis) can be the preferable kind of rule. Taken together it is economical to follow rules, but the complexity of these rules might be very different.

IV. Determinants of the Optimal Differentiation of Rules

On the basis of the error-cost approach of section III, three determinants of the optimal differentiation of competition rules are analysed on a general level: the frequency distribution of the welfare effects of business behaviour, the different kinds of regulation costs and the impact of rent seeking activities.

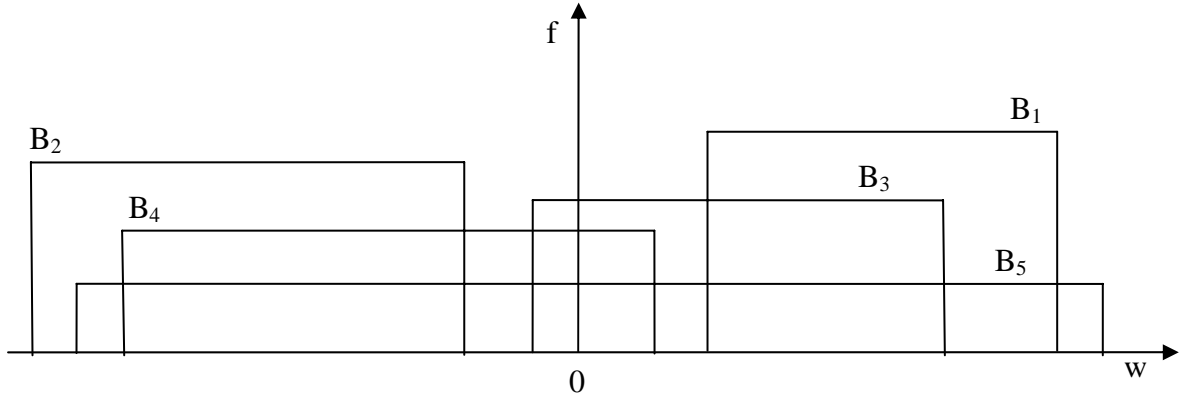
1. Distribution of the Positive and Negative Welfare Effects of Business Behaviour

The expected benefit of a larger differentiation of competition rules is that it leads to a more effective separation of business behaviour with positive effects and negative welfare effects, and therefore enables a better control of behaviour. This amounts to a reduction of both types of error costs, $c_{eI} + c_{eII}$. The size of this benefit in turn depends crucially on the frequency distribution of the welfare effects of the controlled business behaviour.²⁴ In figure 3 below, five different frequency distributions of the welfare effects of behaviours B_1 to B_5 are depicted. The vertical axis shows the relative frequencies²⁵, and the horizontal axis the welfare effects of B_i , which on the right (left) side are positive (negative). For simplicity, it is assumed that the welfare effects are evenly distributed between a minimum and a maximum value.

Fig.3: Distributions of Welfare Effects of Different Types of Business Behaviour

²⁴ This factor was mentioned in one form or the other, but less thoroughly analysed by Diver (1983: 74-75; 1989: 222), Ehrlich/Posner (1974: 270), Gifford (1989) and Kaplow (1995: 155; 2000: 505).

²⁵ Since relative frequencies are depicted, the size of the area under the frequency distribution of each B_i has to be 1, and is therefore - independent from the absolute frequencies - identical for all B_i .



The analysis of cases of B_1 and B_2 is straightforward because their welfare effects are either always positive (B_1) or always negative (B_2). Per se rules, which allow or prohibit this behaviour, are the optimal rules. The costs of errors of type I and II are zero (e.g., $c_{eI,1} = c_{eII,1} = 0$), and additional differentiation cannot yield any benefit.²⁶ The situation is different in the other three cases. Many types of business behaviour, such as B_3 , mostly entail positive welfare effects, but in a limited number of cases reduce welfare. Permitting this behaviour per se would lead to error costs of type I ("false positives"), which we denoted $c_{eI,j} = -b_j B_3^-$. An additional differentiation, which is able to identify (and prohibit) the cases of B_3 to the left of the vertical axis, might be worthwhile, because it reduces $c_{eI,j}$. Business behaviour B_4 is the symmetrical case, in which a per se prohibition leads to error costs of type II ("false negatives"), i.e. $c_{eII,j} = (1-a_j) B_4^+$. These might also be reduced by introducing additional criteria for sifting out the positive cases. B_5 finally represents the case of a type of behaviour with greatly varying welfare effects.

However, we cannot assume that the new differentiation criterion, which is part of the more differentiated rule, can separate perfectly between pro- and anticompetitive behaviour. Therefore, in regard to the example of B_3 , the more differentiated rule can, on one hand, correct only a part of the "false positives", and, on the other hand, will also produce "false negatives", i.e. cases, in which behaviour B_3 with positive effects is mistakenly be forbidden, leading to additional error costs of type II. In section III.3 we showed that the condition for a recommendable transition to a more differentiated rule is fulfilled, if the reduction of the sum of error costs is higher than the additional regulation costs (see equation 9). The fulfillment of this condition depends on what might be termed the "separation effectiveness" of the additional criteria. The higher this "separation effectiveness" of the additional criteria is, the higher the capability of the more differentiated rule in reducing one type of error without producing too many errors of the other type.²⁷

Figure 3 illustrates how the fulfillment of this condition depends on the frequency distribution of the welfare effects. As an example consider again the question whether we should replace the per se prohibition of resale price maintenance (rule 1) by a more differentiated rule 2. The benefit of higher differentiation depends critically on the share of "false negatives" under the old per se rule, which could be corrected. Vice versa, the negative effects of producing a considerable number of new "false positives" must be weighed against this benefit. Therefore it is

²⁶ However, in the case of a per se prohibition also the enforcement costs have to be considered.

²⁷ As a consequence, the higher the "separation effectiveness" of the additional criteria is, the higher the share a_j of B_i with positive welfare effects that are permitted, and the higher the share $1 - b_j$ of B_i with negative welfare effects, which are prohibited.

doubtful, whether the reduction of error costs of type II ($c_{eII,1} - c_{eII,2}$) is larger than the negative effects of additional error costs of type I ($c_{eI,1} - c_{eI,2}$). Even if this is the case, then this net effect still must be larger than the increase in regulation costs ($c_{r2} - c_{r1}$). We can conclude that the more uneven the frequency distribution in regard to positive and negative welfare effects is, the smaller (other things equal) the benefit of an additional differentiation of the rules. Therefore, in the cases of B_3 and B_4 , a more differentiated rule might be worthwhile only, if both the "separation effectiveness" of the additional criteria is high and the additional regulation costs are moderate. The situation is different with the behaviour B_5 , since, in this case, both a per se permission and a per se prohibition would produce large error costs. Therefore, the net effect of higher differentiation can be positive, even if the additional regulation costs are considerable and / or the "separation effectiveness" of the additional criteria is rather moderate. One must consider, however, that not only the mere share of positive or negative cases are important, but the whole frequency distribution with all positive and negative effects.

2. Regulation Costs

The regulation costs are the second important determinant at which we look in more detail. As a general tendency, regulation costs are expected to rise with higher degrees of differentiation, since more criteria are to be considered and a deeper investigation becomes necessary. A deeper analysis of the involved regulation costs, however, is complex, due to different kinds of costs, different bearers of the costs, the distinction between fixed and variable costs and the problem of direct and indirect costs. Here only some (preliminary) reasonings can be presented on how regulation costs depend on the degree of differentiation.

The following four kinds of costs of competition rules can be distinguished:

(1) *Set up-costs of rules*: These comprise all kinds of costs for formulation and implementation of competition rules, either through formal legislation in parliament or - much more relevant for competition policy - through the drafting of guidelines (or precedence) by a competition authority or court (Diver 1989: 220-221; Ehrlich/Posner 1974: 267-268). The more differentiated competition rules are, the larger set up-costs can be expected. Moreover, they can be characterized as fixed costs, i.e. independent from the number of cases (Mulligan/Shleifer 2005). As a fairly general conclusion the development of sophisticated sets of rules should be restricted to important enforcement areas (Gifford 1989).

(2) *Information and assessment costs in competition cases*: Resources are used in actual enforcement proceedings by all parties involved, i.e. the competition authority, the court(s) and the involved firms (Diver 1989: 221-223; Ehrlich/Posner 1974: 267-268). In competition policy, a significant part results from collecting and analysing data, e.g. in order to delineate the relevant markets and evaluate the competitive effects (Kaplan 1998). Elzinga/Wood (1988) studied the resources used in US antitrust proceedings empirically, looking inter alia at the number of docket entries and depositions, the total case duration and the number of trial days. Voigt/Schmidt (2005: 8-11) conducted a survey on selected procedural aspects of EU Merger Control such as the time span of informal contacts and the number of meetings between parties and the authority as well as the degree of uncertainty experienced by the firms. Information and assessment costs are mainly case-specific and, hence, constitute variable costs. They can be expected to rise rapidly (even with increasing marginal costs), if the depth of assessment is increased by more differentiated rules.

(3) *General monitoring and compliance costs*: Both competition authorities and firms spend resources beyond specific proceedings. The authorities incur costs for the communication of

standards and for general monitoring (Gifford 1971). The firms bear compliance costs, e.g. in regard to expenditures for the learning of the rules or the legal advice of lawyers (Diver 1989: 223-225; Kaplow 1995: 151), and the adaptation of their business conduct to the rules. The costs of both the competition authorities and the firms are partly fixed and partly variable. Higher differentiation will tend to increase monitoring costs for competition authorities because illegal behaviour is harder to detect. It will also lead to rising compliance costs for the firms because they must tackle a complex legal situation, which requires professional advice. First experiences with the “more economic approach” in EU Merger Control seem to conform this (Weitbrecht 2006).

(4) *Costs through legal uncertainty*: Since highly differentiated rules typically require deeper case analysis and comprise additional and more complex criteria, it is more difficult for the firms to know in advance what kind of business behaviour is allowed or prohibited (Christiansen 2005; Voigt/Schmidt 2005). The resulting legal uncertainty implies not only significant error costs, which can ensue from an unclear and vague legal situation, but also welfare losses in the form of foregone desirable competitive behaviour. Firms may refrain from welfare-enhancing transactions respectively choose less efficient forms of doing business in order to avoid uncertainty. Alternatively, firms may engage in anticompetitive behaviour, while hoping to escape prosecution. Therefore, uncertainty can lead to overdeterrence as well as underdeterrence, which both entail negative welfare effects (Polinsky/Shavell 1989; Besanko/Spulber 1993). Another source of costs caused by legal uncertainty is the lapse of time, before firms receive a definitive decision (Voigt/Schmidt 2005: 3).²⁸

Although the effects of rule differentiation on the various kinds of regulation costs differ, there are a lot of well-substantiated arguments that show that more differentiated rules, which require a deeper analysis and more information, will lead to increasing regulation costs and presumably also to increasing marginal costs of further differentiation. Conversely, it is one of the most important economic insights that applying more general rules instead of a case-by-case-investigation can economise on information and decision costs (Easterbrook 1992).²⁹ From that perspective it becomes clear that a full-scale analysis of all positive and negative welfare effects is desirable only in rare cases, whereas in regard to the millions of everyday business transactions simpler rules are preferable, which can more easily be monitored and complied with.³⁰

3. Impact of Political Influences and Rent Seeking

²⁸ Cross-country empirical research confirms the superiority of predictable policy compared to a more discretionary approach (e.g. Brunetti/Kisunko/Weber 1998; Mahoney 2001); see generally on the problem of legal uncertainty also Ogus (1992), Kaplow (2000: 513-514), and Voigt/Schmidt (2005: 1-12).

²⁹ Somewhat related to these cost considerations, the competence level as well as the resources of the competition authorities and the size of the area of jurisdiction are relevant. A low level of competence and / or resources for enforcement, which are typical for less developed countries or countries, that only recently introduced competition law, is another reason for the preferability of less differentiated competition rules (Schäfer 2006). Otherwise, decisions errors can be expected to be much higher. At the same time, larger jurisdictions should develop more differentiated rules (Mulligan/Shleifer 2005).

³⁰ Another related problem is the allocation of enforcement resources between different kinds of business behaviour (e.g. Gifford 1971: 461-465; Pitofsky 2002: 588-589). For example, depending on the distribution of practices and their effects, a concentration of enforcement effort may be preferable (Lando/Shavell 2004; Röller 2005: 19).

A third important determinant of optimal differentiation is the extent of political influences and rent seeking, since both are sources of lengthy proceedings and wrong decisions with the consequence of high regulation and error costs. This refers to all sorts of political pressure or rent seeking-activities, which attempt to influence competition policy decisions in order to serve particular interest groups or single firms. A number of potential avenues for the exertion of (political) pressure can be discerned, depending on the institutional specificities of the system (Doern 1995). In terms of their subject matter, such influences can happen on three levels: (1) The primary legal provisions, which are typically enacted by parliaments, can be distorted by lobby interests and, hence, deviate from the optimal welfare-maximizing rules (e.g. Shughart 1990; Ekelund / McDonald / Tollison 1995). (2) Beyond this, all kinds of more concrete rules for the application of these legal rules, such as guidelines or notices, can be influenced by lobby groups. (3) Individual decisions of competition authorities can be influenced either directly by the firms themselves or indirectly through political pressures. In the US and the EU a number of competition cases can be found in which political pressure could be observed and where the decisions seemed to have been distorted (Faith/Leavens/Tollison 1982; Schmidt 1999). On one hand, firms aim at a more lenient formulation respectively application of competition rules. For example, exporters might lobby for an exemption of export cartels from the general cartel prohibition, which would lead to type I errors. On the other hand, firms may be interested in an overly restrictive application of the competition rules in regard to their competitors. For example, competitors might induce the competition authority to block a welfare-enhancing merger for fear of increased competition. This would amount to a type II error. Particularly in the US legal context of private litigation, it has been argued that competition law can be abused by firms as a strategic instrument against competitors (Baumol/Ordover 1985).

How does the negative welfare effects of additional errors of type I and II, which are caused by rent seeking-activities, depend on the degree of differentiation? The literature both on political economy and on the theory of economic policy shows that governments and government agencies can be influenced to a greater extent from interest groups, if they have large discretionary powers. Restricting this discretion by means of clear and transparent rules is, thus, a particular effective way of reducing rent seeking behaviour (Mahoney/ Sanchirico 2005). Simple per se rules offer few possibilities for influencing the decisions of authorities and courts. By contrast, the more exceptions are allowed, the more arguments might be put forward by interested parties, thus giving the decision-makers a large scope of discretion. As a consequence, the more differentiated the rules are, and the more criteria can be taken into account (with much scope in weighing the different arguments), the larger the danger is that both political pressure and / or direct interventions of the parties can influence the decisions of the competition authority and therefore produce decision errors. One possibility of influencing the decisions of competition authorities is strategic information disclosure under conditions of information asymmetry (Besanko/Spulber 1989). Mahoney / Sanchirico (2005) present a model about the appropriate choice between general and specific rules for regulating industries. They show that due to information asymmetries between a rule-maker, who must rely on the expertise of the industries he has to regulate, and these regulated industries, it might be better to enact one general rule for several industries instead of establishing specific rules for each industry, because this allows a limitation of rent seeking activities of the specific industries through the provision of one-sided and distorted information.

If we take these error-cost enhancing effects of rent seeking activities into account, it can no longer be assumed that the sum of the error costs always decreases with more differentiation. There might be a degree of differentiation, beyond which the negative effects of rent seeking activities on the error costs are larger than the positive effects of a better separation of pro-

and anticompetitive effects through higher differentiation. Therefore, the error costs might even increase again with rising differentiation. In fig. 1 in section III.2, this possibility is indicated by the alternative upward sloping curve c_e' . As a consequence, also independently from regulation costs, the increasing welfare costs of distorted decisions through rent seeking supports the recommendation to limit the differentiation of competition rules.

The extent of this distorting impact on decisions in competition cases, however, also depends on the institutional structure of the competition law regime. Other things equal, the larger the rights of the political level to interfere in competition law decisions (such as the ministerial authorisation in German merger control) are and the lower the level of transparency of competition law proceedings, the larger the discretionary scope of the decision-makers in competition law, and the larger the danger that considerable decisions errors due to rent seeking behaviour occur. To reduce these errors a number of institutional safeguards have been proposed, which limit the extent of distorting political pressures and rent seeking activities (Baum 1982; Wilks/Gowan 1995; Voigt/ Schmidt 2005: 166-175). For example, an independent competition authority might mitigate rent seeking activities, or more suitable procedural rules might lead to lower regulation costs. Presumably, however, the superior means of solving these problems is the binding of competition authorities to rules with limited differentiation (and discretion).

V. The “More Economic Approach” in the EU, the Knowledge Problem and the Task of Economics

Both in US antitrust policy and EU competition policy, we observe a development to a greater application of rule of reason and a deeper case-specific analysis (see section II.1). Particularly the recent reforms in EU competition policy were explicitly motivated by the attempt to apply "more economics" in competition policy. Proponents urged for an "effects-based" approach instead of "formalistic" legal rules (e.g. Whish 2000; Bishop/Ridyard 2002; EAGCP 2005) and argued that the more differentiated analyses of the welfare effects of business behaviour in modern industrial economics (Post-Chicago economics) call for more case-specific assessments in order to determine the specific net welfare effects in particular cases. On the contrary, our argument outlined above about the advantages of applying (differentiated) rules instead of deciding on a case-by-case basis relies primarily on the insight that competition authorities and courts are imperfect decision-makers, who produce a certain share of wrong decisions. Therefore, the knowledge problem as an additional determinant must be analysed.³¹

Although decision errors can also be caused by distortions through rent seeking-activities (section IV.3) or by too high information and assessment costs (section IV.2), many decision errors are a consequence of lacking knowledge and incomplete information. Particularly two kinds of knowledge are important for competition policy: (1) Crucial is the general knowledge in economics about the working of markets and competition, especially the impact of business behaviours and market structures on competition and welfare, and the various possibilities for impeding effective competition. This knowledge is the basis for deriving the general assessment criteria, which are used in differentiated rules as well as in case-by-case analysis. (2) For the application of competition law, also case-specific knowledge is necessary. This includes all kinds of case-specific information, e.g. about turnovers or market shares, as well as specific methods for being able to assess the economic effects of, e.g. a merger. Despite some

³¹ Another important determinant of the optimal differentiation of rules that is not analysed here concerns the dynamic effects of more or less differentiated rules, e.g. in regard to the possibilities of learning from experiences in the application of competition rules (see e.g. Kovacic 2001).

undeniable progress in economics, we must accept the fact that both our general economic knowledge about market competition and our possibilities to achieve sufficient case-specific knowledge in order to assess the specific positive and negative welfare effects are limited (Easterbrook 1992; Joskow 2002; Heyer 2005; see section III.2).

As a consequence, we cannot assume that competition authorities or courts dispose of the knowledge base for avoiding decision errors, i.e. a certain share of decisions will be wrong, producing errors of either type I or type II.³² These limits of knowledge of the decision-makers in competition policy (as an important reason for state failure) must be taken into account. In terms of our analysis, we cannot assume that the marginal benefit of additional differentiation will always be positive. It can even be zero or negative.³³ Even without distortions through rent seeking activities, the curve of error costs c_e in figure 1 above might stop sloping downward at a certain value of d and afterwards be either flat or even slope upward again. Analytically, this implies that additional assessment criteria do not contribute to the capability of the differentiated rule to separate between pro- and anticompetitive business behaviour, i.e. that the separation effectiveness of additional assessment criteria (or a full-scale market analysis) is zero or even negative. This is a logical consequence of having reached the boundaries of our general knowledge of competition and/or our case-specific knowledge.

What are the conclusions about the main task of economics for competition policy? From our law and economics perspective, economics can be applied on two different levels: (1) Economic knowledge can be used for the formulation of competition rules, both in regard to the optimal degree of rule differentiation and the appropriate set of assessment criteria. (2) For deciding individual cases, economic analysis can be applied in order to assess the particular case-specific positive and negative welfare effects, e.g. by using econometric studies. Since the marginal benefits of deeper case-specific analysis are limited, both through limited knowledge, the increasing danger of distorting rent-seeking activities and soaring additional regulation costs, the number of criteria used (and therefore the depth of assessment) should remain limited in most cases. This corresponds to the core idea of optimally differentiated rules that case-specific analysis should only be carried out as long as the marginal benefits of additional differentiation exceeds the marginal costs.

Although the improvements of economic knowledge in regard to case-specific analyses should be welcomed, the main task for economics in competition policy is to ask which set of differentiated competition rules (and which set of criteria) is the optimal one, taking into account the marginal benefits of additional differentiation (on the basis of frequency distributions of welfare effects), the "separation effectiveness" of particular assessment criteria, the different kinds of regulation costs and the uncertainty of making wrong decisions due to lacking knowledge. Beyond rare exceptions, the control of business behaviour from a competition policy perspective can only be accomplished by ascertaining whether this behaviour complies with certain rules. These rules can be more or less differentiated, but the applied assessment criteria and the required information must remain in most cases very limited. Otherwise the effectiveness of competition policy both in regard to its costs and benefits cannot be achieved.³⁴ Therefore, it is not surprising that there is a broad consensus among both eco-

³² For an empirical analysis in regard to EU Merger Control see Neven/Röller (2002).

³³ See Heiner (1990), who shows that for an imperfect decision-maker, it might even be rational to avoid deviating from rules, if additional costless information is provided.

³⁴ Another problem involves whether the legislator or decision-maker, who decides on these rules, has both the knowledge and the incentives to establish the appropriately differentiated rules, which either restrict the discretionary scope of another agency or even its own discretionary scope as in the case of

conomic and legal experts that deep economic assessments of the welfare effects in specific cases can only be made in a small number of cases.

The decisive point of a rule-based competition policy is that both the criteria, which are used in differentiated rules, as well as the extent of differentiation should be based upon economic analysis. Thus there is no trade off between "more economics" and a rule-based competition policy, rather competition rules should be grounded in economics. Since the optimal rules are the result of a comparison of alternative rules in regard to their average welfare effects (including decision errors and regulation costs), a rule-based competition policy is also based on an "effects-based approach". In the case of the application of rules, however, a business behaviour is not prohibited or allowed on the basis of the expected welfare effects in the specific case, but on the basis of the average effects of this category of behaviour under a predefined set of circumstances (which is determined by the differentiated rule): "These [per se] rules are based on probabilities over the run of the cases, on the belief that a category of practices is so likely to be undesirable that it is not worth the costs (litigation, uncertainty, and error) of sifting through instances to separate beneficent from baleful" (Easterbrook 1992: 129). And: "Decide whether the category is allowed or not at the level of rules, not of cases" (id.).

One important conclusion for the European discussion on "per se rules vs. rule of reason" is that the following wide-spread argumentation is flawed: Both in the European legal and economic literature, it has often been argued that because there are cases in which a certain category of business behaviour has positive (negative) effects, a per se rule of prohibition (permission) must be rejected and a rule of reason should be applied (see e.g. Waelbroeck 2006). This implies that a per se rule is only appropriate, if a certain category of business behaviour *never* has positive (or negative) welfare effects. This contradicts fundamentally the results of economic analysis of rules, which we have presented above, and is therefore rightfully termed "never-fallacy" (Easterbrook 1992, 129).

Consider again our discussion, whether the per se prohibition of resale price maintenance should be given up in favour of a rule of reason approach (Montangie 2000; Waelbroeck 2006; Kerber/Schwalbe 2006: XXX). To justify this reform, it is not sufficient to show that there are cases in which resale price maintenance can lead to positive welfare effects. Rather, the following questions have to be answered:

- (1) How large is the share of cases in which resale price maintenance leads to more positive than negative effects or, more precisely, what is the frequency distribution of welfare effects of resale price maintenance?
 - (2) How large is the "separation effectiveness" of additional criteria that are used in a more differentiated rule, i.e. to what extent can their application reduce error costs of type II ("false negatives") and to what extent does it lead to additional error costs of type I ("false positives")? This also implies that an alternative rule with specified additional criteria must be formulated that allows for a comparative analysis.
 - (3) How large are the dangers of distorted decisions by the additional scope for rent seeking behaviour?
 - (4) What are the additional regulation costs, including all kinds of direct and indirect costs?
- Only if fairly reliable answers to these questions can be given, an economic recommendation on the deviation from the per se-prohibition of resale price maintenance can be given. To

guidelines. In regard to the knowledge problem, it is the task of economics to give appropriate advice, and the incentive problem has to be solved by an appropriate institutional design of the enforcement system of competition law, which is beyond the scope of this article. For literature on the related problem of the appropriate design of delegation of authority to agencies, see XXX.

most of these questions, however, we possess little knowledge in economics (e.g. in regard to the frequency distributions of welfare effects of business behaviours). Therefore, more empirical research on the economic effects of competition rules over a range of cases is necessary.³⁵

Finally, one example is given for a presumably justified additional differentiation in regard to the already mentioned discussion on the per se-prohibition of resale price maintenance.³⁶ Both in the EU and the US, vertical price ceilings as a subcategory of vertical price maintenance are exempted from this per se prohibition. Industrial economics can show that setting maximum prices for dealers (price ceilings) can solve some efficiency problems (e.g. due to double marginalisation) without causing a great danger of anticompetitive effects. Consequently, a more differentiated set of rules, which allows price ceilings as an exception, might reduce considerably error costs of type II ("false negatives") without leading to too many additional "false positives" (error costs of type I). Therefore, in this case the "separation effectiveness" of this additional criterion (type of vertical price fixing: maximum price, fixed price or minimum price) in regard to pro- and anticompetitive effects seems to be high. Since it is a clear criterion, the dangers of its being abused for distorted decisions and the additional regulation costs are small as well. Therefore, the advantages of this more differentiated rule can be presumed as being higher than those of the simple per se prohibition of all forms of vertical price maintenance.

What are our main conclusions for the "more economic approach" in EU competition policy? We firmly support the use of more economics in order to guide competition policy. From our analysis follows that it is very important to use "more economics" for the elaboration of appropriately differentiated rules. "The issue is not rules versus discretion, but how well the rules are grounded in economics" (Vickers 2005: 260).³⁷ We do not reject the use of sophisticated economic models and empirical methods of analysis in individual cases, rather we welcome the developments that have taken place in this regard. In our framework of analysis, they may increase the "separation effectiveness" of case assessment and, thus, make possible a higher degree of differentiation than before. However, the main research on how to apply more economics in competition policy should not focus primarily on case-specific analysis but on the elaboration of an optimal set of (more or less) differentiated competition rules. This would take into account the economic knowledge both in industrial economics and law and economics.³⁸

VI. Conclusions

³⁵ An example for the estimation of errors is given by Neven/Roeller (2002) with regard to EU Merger Control. Regulation costs were tried to measure e.g. by Elzinga/Wood (1988) and Voigt/Schmidt (2005: 8-11). Much work remains to be done in this regard.

³⁶ See for the discussion on vertical price maintenance Scherer/Ross (1990: 548-548), Motta (2004: 377), Carlton/Perloff (2005: 425-437), Kerber/Schwalbe (2006: XXX) and Waelbroeck (2006).

³⁷ See also Vickers regarding the use of "more economics" for the application of Article 82: "To say that the law on abuse of dominance should develop a stronger foundation is not to say that rules of law should be replaced by discretionary decision making based on whatever is thought to be desirable in economic terms case by case." (Vickers 2005, 260). In a similar vein, Evans (2005) and Evans/Padilla (2005) suggest ways of incorporating economic knowledge in competition rules, albeit focussing on specific types of competitive behaviour.

³⁸ Broadly conforming with our suggestions, Röller (2005: 16-19) distinguishes three areas of application of economics in competition policy: case work, guidelines and Block Exemptions and ex post/ex ante analysis, such as general market studies.

The analyses in this paper showed the value of the concept of a continuum of more or less differentiated rules instead of thinking within the too undifferentiated and outdated dichotomy of per se rules vs. rule of reason. Empirically, already many intermediate solutions between both extremes are applied both in US antitrust and EU competition policy. Applying rules with a limited set of assessment criteria instead of a full-blown case-by-case analysis has considerable advantages, particularly in regard to regulation costs, rent seeking and knowledge problems. However, they must be weighed against the benefits of a deeper economic assessment in specific cases in terms of a better differentiation between pro- and anticompetitive behaviour.

Based on the law and economics literature on the general problem of the optimal precision of rules, it was shown in a simple model that the optimal degree of rule differentiation can be determined by minimizing the sum of the welfare costs caused by decision errors of type I ("false positives") and type II ("false negatives") and the various costs of the regulation (error cost approach): Optimal differentiation is achieved, if the marginal reduction of error costs equals the marginal increase in regulation costs through additional differentiation. Important determinants for the optimal degree of differentiation are the frequency distribution of welfare effects of the controlled behaviour, the regulations costs, the rent seeking behaviour and the state of general economic and case-specific knowledge. Depending on these determinants the optimally differentiated competition rules can be expected to be very different for the various kinds of business behaviour. They can consist of simple per se rules, more or less differentiated rules (as safe harbour rules, "quick look" rules or predefined sets of assessment criteria in administrative guidelines), or, in presumably in rare case, also full-scale market analyses.

An important conclusion for the "more economic approach" of the EU competition policy is that the entirely correct claim for applying more economics to competition law should not be interpreted one-sidedly as a call for more case-specific economic analysis, because (more or less differentiated) rules will in most cases be the efficient solution for competition policy. The law and economics perspective presented in this paper rather demands to apply more economic analysis in searching for and implementing appropriate competition rules, both in regard to their degree of differentiation and in regard to the set of incorporated assessment criteria. As a consequence, there is no conflict between the "more economic approach" and a rule-based competition policy. The highest benefits can be reaped by finding simple and robust rules, which are able to solve most of the competition problems without causing high regulation costs. A competition policy regime, which primarily consists of (more or less) differentiated rules, would also be compatible with the demand for a "rule of law". It would be an appropriate answer to the legitimate concerns in regard to the dangers of a too large discretionary scope of government agencies, without ignoring the requirements of an effective competition policy.

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