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Public and Private Enforcement of Competition Law – A Differentiated Approach

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Non-technical summary

Most competition law enforcement systems are based on two enforcement pillars: public enforcement and private enforcement. While private enforcement is often treated as something new or at least marginally important in Europe, it has been the driving force of US antitrust enforcement since the middle of the 20th century. In order to create more incentives to seek compensation before European courts, the European Commission has published a Green Paper in 2005 and a White Paper in 2008 to incentivise private damages actions and remove perceived obstacles for victims of anticompetitive conduct.

Strengthening the enforcement of private rights inevitably raises the question of how public and private enforcement can ideally be aggregated to achieve a welfare optimal outcome. Both public and private enforcement are costly, but each mode also has got its particular benefits. As a consequence, any integrated enforcement scheme ought to find a way to optimally combine the benefits and costs of running the two systems. In a situation – as in Europe – in which private enforcement activities are added to an existing public enforcement system, an assessment of the incremental costs and benefits of such a step becomes crucial for the design of an optimal competition law enforcement system.

Against this background, we investigate the relationship between public and private enforcers introducing a more differentiated approach. In contrast to the existing literature, we take into account that the costs and benefits of detection and prosecution and, thus, the usefulness of each enforcement mode may change with a variation of the type of anticompetitive conduct. We define a set of parameters that determine the costs and benefits of both types to enforce the antitrust laws and discuss implications for European competition law and policy.

Das Wichtigste in Kürze

Die Durchsetzung von Wettbewerbsrecht basiert üblicherweise auf zwei Pfeilern: der öffentlich-rechtlichen und der privatrechtlichen Durchsetzung. Während die privatrechtliche Durchsetzung in Europa oftmals als eine neue Entwicklung von noch untergeordneter Bedeutung angesehen wird, ist sie in den Vereinigten Staaten von Amerika seit der Mitte des 20. Jahrhunderts die zentrale Triebkraft der wettbewerbsrechtlichen Durchsetzung. Mit dem Ziel einer Stärkung der Rechte der Opfer von Kartellrechtsverstößen im allgemeinen sowie einer Erhöhung der Anreize zur Einreichung von Schadensersatzklagen bei europäischen Gerichten im besonderen hat die Europäische Kommission im Jahr 2005 ein Grünbuch und im Jahr 2008 ein Weißbuch veröffentlicht.

Eine solche Stärkung der privatrechtlichen Durchsetzung wirft unmittelbar die Frage auf, wie die öffentlich-rechtliche und privatrechtliche Durchsetzung zur Erreichung eines wohlfahrtsoptimalen Zustands aufeinander abgestimmt werden sollten. Beide Durchsetzungsformen verursachen Kosten, generieren aber auch spezifische Nutzen. Hieraus folgt, dass jedes integrierte Durchsetzungsschema einen Weg finden muss um eine optimale Kombination dieser Kosten und Nutzen zu erreichen. In einer Situation – wie derzeit in Europa – in der die privatwirtschaftliche Durchsetzung zusätzlich zu der bereits implementierten öffentlich-rechtlichen Durchsetzung eingeführt bzw. verstärkt wird, kommt einer Analyse der inkrementellen Kosten und Nutzen eines solchen Schrittes demnach eine zentrale Bedeutung für die Gestaltung eines optimalen Durchsetzungsschemas für das Wettbewerbsrecht zu.

Vor diesem Hintergrund untersuchen wir die Zusammenhänge zwischen öffentlich-rechtlicher und privatrechtlicher Durchsetzung mit Hilfe eines differenzierteren Schemas. Im Gegensatz zur bestehenden Literatur berücksichtigen wir, dass Kosten und Nutzen von Aufdeckung und Verfolgung – und damit die Effektivität beider Durchsetzungsformen – mit der Art des Wettbewerbsverstoßes variieren können. Wir identifizieren einige zentrale Parameter die die jeweiligen Kosten und Nutzen determinieren und leiten daraus Schlussfolgerungen für das europäische Wettbewerbsrecht und die europäische Wettbewerbspolitik ab.

PUBLIC AND PRIVATE ENFORCEMENT OF COMPETITION LAW

A DIFFERENTIATED APPROACH

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Abstract

We investigate the relationship between public and private enforcers introducing a more differentiated approach. In contrast to the existing literature, we take into account that the costs and benefits of detection and prosecution and, thus, the usefulness of each enforcement mode may change with a variation of the type of anticompetitive conduct. We define a set of parameters that determine the costs and benefits of both types to enforce the antitrust laws and discuss implications for European competition law and policy.

Keywords Competition policy, public enforcement, private enforcement, European Union

JEL Classification K21, L40

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1 Introduction

Most competition law enforcement systems are based on two enforcement pillars: public enforcement and private enforcement. While private enforcement is often treated as something new or at least marginally important in Europe, it has been the driving force of US antitrust enforcement since the middle of the 20th century. In order to create more incentives to seek compensation before European courts, the European Commission has published a Green Paper in 2005 and a White Paper in 2008 to incentivise private damages actions and remove perceived obstacles for victims of anticompetitive conduct.

Strengthening the enforcement of private rights inevitably raises the question of how public and private enforcement can ideally be aggregated to achieve a welfare optimal outcome. Both public and private enforcement are costly, but each mode also has got its particular benefits. As a consequence, any integrated enforcement scheme ought to find a way to optimally combine the benefits and costs of running the two systems. In a situation – as in Europe – in which private enforcement activities are added to an existing public enforcement system, an assessment of the incremental costs and benefits of such a step becomes crucial for the design of an optimal competition law enforcement system.

In this paper we investigate the relationship between public and private enforcement introducing a more differentiated approach. We consider whether or not the benefits and costs of the two enforcement modes change with a variation of the type of anticompetitive conduct. In contrast to the existing literature, normally assuming 'a violation', we allow the infringement to vary by introducing three different types of illegal action: horizontal agreements, vertical agreements and abuses of a dominant position. Building up on the central findings of Segal and Whinston (2007) and McAfee, Mialon and Mialon (2008) we will refine some of the determinants of an optimal enforcement mix such as the possession of information or the quality and capacity of the antitrust authority. Depending on the type of violation, the parameters help to indicate whether or not the behaviour in question is better tackled by a private individual or a public enforcer. Once the parameters for an optimal enforcement system are determined, policy makers can choose effective (legal) mechanisms which will provide the incentives for public and private actors to take on the infringement they are respectively best suited to deal with.

The paper is structured as follows. In Section 2 we introduce public and private enforcement as the two pure enforcement approaches. Section 3 continues with an assessment of the interaction of both enforcement types. In addition to a discussion of the general

necessity of such an analysis, several central determinants of an optimal enforcement mix are identified and characterized. Section 4 then continues with the introduction of the differentiated approach of competition law enforcement by considering different types of anticompetitive conduct – horizontal agreements, vertical agreements and abuses of a dominant position – when choosing the mix between public and private enforcement of competition law. The gained insights allow the derivation of several implications for European competition law and policy. Section 5 concludes the paper by summarising its key insights.

2 Characterization of pure enforcement types

In this section we provide an initial characterization of the two pure enforcement pillars of competition law: public and private. In addition to a brief general description we especially discuss the underlying aims, however, ignore the interaction between both enforcement types.

2.1 Public enforcement

Public enforcement means that antitrust rules are enforced by state authorities. Normally public enforcers are vested with special powers and use special procedures to investigate an infringement. Decisions of antitrust authorities are subject to judicial review. The public enforcement process can broadly be separated into two steps: detection and intervention. In the *detection stage*, the basic task for an antitrust authority is to separate forms of suspicious conduct from procompetitive business conducts. In general, there are two fundamental answers to this challenge: Per se rules and the rule of reason.[1] While a per se rule approach generally prohibits well defined forms of bad behaviour (such as, e.g., horizontal price fixing), the so-called rule of reason approach accommodates the more frequent case that the procompetitive effects of certain behaviour have to be weighted against the anticompetitive effects. Such an approach therefore stands for a case-by-case analysis of suspicious business conduct and consequently gives the antitrust authority a considerable amount of administrative discretion. In addition to the choice between two types of control strategies, per se versus rule of reason, the antitrust authority may also have to decide – if not determined by the respective law provisions – when to use a certain control strategy, namely before an infringement actually takes place (ex ante) or after an infringement occurred (ex post).

[1] European competition law refers to conduct that has the object or effect of harming competition.

Detecting is a necessary but not sufficient condition for enforcing. Even the cleverest detection rule stays an academic mind game if it is not applied in the sense that possible infringements are pursued and eventually intervened against. From the viewpoint of an antitrust authority, the *intervention stage* adds a third powerful decision variable to the already identified choices of the control strategy and the timing of control: the type of intervention. In general, three types of intervention are available for an antitrust authority: fines, behavioural remedies and structural remedies. A fine is commonly understood as either imprisonment or an amount of money which must be paid for a proved misdemeanour or felony. A remedy comprises all other possible (non-pecuniary) interventions with either a behavioural or a structural focus. Conceptually, fines and remedies differ considerably; "[r]emedies cure, correct, or prevent unlawful conduct, whereas sanctions penalise or punish it" (OECD, 2007: 7). The choice of the appropriate intervention depends on the type of conduct it refers to. If an ex ante approach is applied, fines are generally inappropriate, as – by definition – no anticompetitive (harmful) effect has occurred yet which would justify such a procedure. Behavioural and structural remedies, however, might very well be considered as appropriate ex ante tools, for example, if it is likely that future market structures would be more vulnerable to forms of anticompetitive behaviour. An ex post approach can revert to the full toolbox of interventions reaching from the imposition of fines via behavioural remedies up to structural remedies such as divestitures.

The key objective of public enforcement is usually seen in the creation of a deterrent effect. Following the more detailed discussion in Wils (2002: 16ff.), deterrence is almost doomed to be the enforcement approach, simply because the alternatives, such as prevention (e.g., changes in the competitive environment) or stimulation by moral commitment (e.g., standard setting), might be able to add value as additional strategies to achieve compliance but are, however, simply too expensive to administer in order to constitute a perfect substitute for the deterrence-based approach. Antitrust authorities are usually designed to act in the public interest although concerns as to the capture of authorities have been issued.

The derivation of a (minimum) fine that deters the illegal conduct is quite straightforward. Following the seminal contribution of Becker (1968), it is assumed that a certain illegal activity leads to a gain G, e.g. an additional (supra-competitive) profit. In a world without any law enforcement, this is the direct net gain for the offender. However, if now a public enforcement regime is introduced, the offender has to pay a fine F if the infringement is detected. However, as activities are complex to monitor by state authorities, the infringer

cannot be automatically detected and punished, but only with a certain probability α. Given these parameters, it is straightforward to assume that a rational offender will engage in the illegal activity as long as the expected gain is larger than zero. Formally, the condition can be expressed as follows:

$$\alpha (G - F) + (1 - \alpha) G \geq 0 \quad (1)$$

In order to receive an expression for the (minimum) fine that deters the illegal conduct, equation (1) must simply be rearranged to receive

$$F = (G / \alpha) \quad (2)$$

As expressed by equation (2) the (minimum) fine that deters the respective illegal behaviour must take away the expected gain of the infringement. As a consequence, the state has two parameters to influence the occurrence of the illegal conduct: through a change in the fine and through a change in the probability of detection.

Taking these basic mechanics of optimal fines into account, Buccirossi and Spagnolo (2005) present a richer model set-up for a derivation of deterrence-optimal fines. In particular, they specify the determinants of the gain of an infringement – in their case a horizontal cartel agreement – and are therefore able to come to additional insights on the minimum fine that deters certain unlawful behaviour. In a non-infringed market, they assume that the profits π are given by $\pi=qcm$, with q being individual quantity demanded at the competitive price, c being (constant) marginal cost and m standing for the competitive mark-up (leading to a competitive price of $p=c(1+m)$). If an infringement is implemented and the price correspondingly increases from p to p^m, each firm sells a quantity $q^m=q(1-\varepsilon k)$ with ε being the absolute value of the demand elasticity at the competitive price and k representing the percentage price increase reached by the infringement, i.e. $p^m=p(1+k)$ is the price under the infringement. The respective profits are then given by $\pi^m=qc(1-\varepsilon k)[k(1+m)+m]$ leading to the following expression for the increase in a firm's profit due to the infringement:

$$\pi^m - \pi = qkc\left[(1+m)(1-\varepsilon k) - \varepsilon m\right]. \quad (3)$$

As the revenues in the affected market at the elevated price are

$$qc(1+m)(1+k)(1-\varepsilon k), \quad (4)$$

the expected fine can be expressed as follows

$$\alpha fqc(1+m)(1+k)(1-\varepsilon k). \quad (5)$$

A minimum fine with deterrence effects basically has to take away the expected gain from participating in the infringement, i.e. the increase in profits minus the expected fine must be equal to zero. In the model framework of Buccirossi and Spagnolo (2005), such a minimum fine with deterrence effects f^* can be calculated as follows:

$$f^*(\alpha, k, \varepsilon, m) = \frac{k\left[(1+m)(1-\varepsilon k) - \varepsilon m\right]}{\alpha(1+m)(1+k)(1-\varepsilon k)}. \qquad (6)$$

As shown by equation (6), the minimum fine depends on the four variables α, k, ε and m. Comparing expressions (2) and (6) reveal that the minimum fine is shrinking in both cases with increasing α and that the remainder of the more complex expression (6) simply specifies that the respective gain of the infringement depends on the infringement-induced percentage price increase, the competitive mark-up and market demand elasticity. Under reasonable parameter assumptions, it can be said that the higher the infringement-induced price increase, the lower the competitive mark-up and the lower market demand elasticity, the larger is the respective minimum fine that deters the implementation of the infringement.

2.2 Private enforcement

Private enforcement refers to individually initiated litigation, either as stand-alone or follow-on action, before a court to remedy an infringement of antitrust law. If successful, the legal action leads to some sort of civil sanction imposed by a court such as damages, restitution, injunction, nullity or interim relief (Komninos 2008; Yeung 1998). Unlike public enforcement agencies, private parties do not have special (public) powers in civil law disputes.

From an economic perspective private antitrust actions impose sanctions on firms that make them comply with the legal order. The financial penalty – often in the shape of damages – aims at preventing the offender and other potential infringers from breaking the law (again). The deterrence goal of private enforcement underpins the models of optimal sanctioning (Becker 1968; Breit, Elzinga 1985) and models of public and private antitrust enforcement (Segal, Whinston 2007; McAfee et al 2008).

The objectives of private antitrust enforcement are less clear. Deterrence is often stressed in conjunction with the mandatory trebling of damages in private antitrust suits in the United States (Baker 2003), however, other goals play a role as well (Crane 2009; Cavanagh 2005). The discussion in Europe is even more diversified. The European Court of Justice stressed the compensation functions in its *Manfredi* and *Courage* cases in the context of damages claims.

The European Commission also favours the compensation objective (European Commission 2008). It is claimed that private enforcement is superior in achieving corrective justice (Renda et al. 2007: 58). Wils assigns the compensation task to private enforcement while public enforcement is better suited to achieve deterrence (Wils 2009).

Notwithstanding the strong focus on the compensation objective, we will assume in this paper that private antitrust enforcement pursues a deterrence objective; basically because there is a compelling argument against the compensation objective. Compensation only holds true if the private remedy aims at the recovery of some type of loss. However, this assumption does not hold for all kinds of private remedies. The claim that private actions are a tool to repair harm done by anticompetitive conduct is based on a narrow view on private actions including, more or less, only damages. Operating with a narrow definition of private enforcement, we would have to ignore a good part of cases being brought before the courts (e.g., Peyer 2012 for the case of Germany). While it is true that the prospect of a financial transfer motivates those plaintiffs who bring damages claims, court cases contribute to the deterrence effect of all enforcement actions.

Turning from the objectives to the central benefits of the private enforcement system it is usually argued that private enforcers have greater incentives, better information and sufficient resources to take on violations compared to public enforcers. This might lead to additional benefits for society through additional deterrence (McAfee et al. 2008). The downside of the private enforcement system is that it can create extra cost, especially when private actions follow public investigation of anticompetitive conduct and, thus, duplicate enforcement efforts. In addition to the general costs incurred by an additional private system, private enforcers also have greater incentives to use antitrust rules strategically and might therefore cause harm to society (see generally McAfee and Vakkur 2004). As a consequence, the cost of innocent firms to prove their innocence may rise. This needs to be traded off against the additional deterrence effects.

In an attempt to formalise the decision of the plaintiff to sue – thereby increasing our understanding of the determinants of the degree of private enforcement – Renda et al. (2007, p. 175) assume that the costs faced by the plaintiff can be subdivided into the opportunity cost of time spent in litigation (OC_t) or settlement (OC_s), the costs of access to courts (AC) and the legal costs for litigation (LC_t) and settlement (LC_s). On the benefits side, the plaintiff considers the expected rewards in the form of the damages claimed (D) multiplied by the probability of winning the trial (w), and expected settlement amount (S) times the probability

to settle the claim before trial (*1-p*). It is then straightforward to see that the plaintiff will decide to sue as long as the following inequality holds:

$$p[wD - (OC_t + LC_t + AC)] + (1-p)[S - (OC_s + LC_s)] \geq 0 \quad (7)$$

In essence, equation (7) shows that the plaintiff's decision to sue will depend on its perception of *p*, *w* and *S* (which might be error-prone in a world of imperfect information). However, having in mind our aim of studying the optimal mix of public and private enforcement, the most important message of equation (7) is that – although the private plaintiff strictly follows its personal profit incentives – state authorities have several possibilities to influence the plaintiff's decision to sue. As expressed by equation (7), ceteris paribus, the possibility to award multiple damages increases the incentives to sue (as it increases *D*). The same conclusion is true for a reversal of the burden of proof in favour of the plaintiff (as it increases *w*). Furthermore, a one-way fee-shifting rule would remove LC_t and *AC* from the equation and would therefore also increase the incentives to sue (see generally Renda et al. 2007, pp. 174ff.). Last but not least, an increase in civil court capacities (handling private cases) would reduce OC_t und would also lead to increasing incentives to bring a suit.

3 Interaction of public and private enforcement

In this section, we depart from the isolated analysis of the two pure enforcement modes and particularly study the question how they interact with each other. In addition to a general discussion of the necessity of such an integrated analysis, we particularly investigate central determinants of an optimal enforcement mix.

3.1 Necessity of an integrated analysis

Although the discussion in the previous sections revealed that an introduction or strengthening of private enforcement might follow compensatory rather than deterrence aims, it is straightforward to show that such a move would certainly have an impact on deterrence. Referring to the simple algebraic example from Section 2.1 above, we introduce an addition variable *D* which, e.g., stands for damage payments the offender has to pay in case the offence is uncovered.[2] From the perspective of the offender, *D* reduces the expected gain and hence inequality (1) has to be extended as follows

$$\alpha (G - F - D) + (1 - \alpha) G \geq 0 \quad (8)$$

[2] D can also be interpreted as additional costs the infringer has to cover in order to defend its behavior in front of a civil court.

leading to the following condition for the minimum fine that deters the unlawful behaviour

$$F = (G / \alpha) - D \tag{9}$$

The damage payment basically acts as an additional fine in the sense that it takes away additional gain from the infringer. Ceteris paribus and assuming that an optimal (public) fine was implemented before the introduction of private enforcement, equation (9) also suggests that the deterrence-optimal fine must be reduced in a dual enforcement world. In other words, the results of the simple model suggest that overdeterrence would occur in a system in which optimal public fines are already charged and private enforcement is subsequently introduced without reducing the public fine. This effect is strengthened further as soon as private enforcement leads to an increase in the probability of detection α.

On a more general level, the identified problem of overdeterrence is discussed quite intensively in the literature. Rubinfeld (2006), for example, argues that – as soon as both enforcement systems are implemented in a certain jurisdiction – the key question is how to harmonise both systems in order to minimise costs and avoid problems of under- or overdeterrence. For example, if firms refrain from implementing welfare enhancing cooperation for the fear of large fines and compensation payments (if the cooperation is later classified as antitrust violation), a case of overdeterrence is likely. In the reverse case firms may engage in welfare diminishing behaviour simply because it raises their individual profits and the threat from public and private sanctions is negligible.

From an economic point of view the question can be asked whether a ‘pure’ public or ‘pure’ private system is able to achieve a welfare optimal state. Although most enforcement systems comprise of a mix of public and private antitrust enforcement, the analysis is often restricted to pure systems (Schwartz 1980). Both pure public and pure private systems are said to achieve optimal deterrence. Focusing on criminal law, Becker and Stigler posit that deterrence can be achieved through private enforcement as effectively and efficiently as with public enforcement if individuals compete for a ‘bounty’. They argue that the adverse effects of private antitrust enforcement would be eliminated if the individual that discovers the violation receives the fine (Becker and Stigler 1974). Others have stressed the weak points of private actions, especially the incentive problems, and favour a publicly dominated enforcement mode (Wils 2003). In particular, private actions can create free-riding problems, strategic litigation and contain the risk of anticompetitive rival suits (Shughart II 1988). Private antitrust enforcement is considered a costly mechanism to transfer wealth and may incentivise the use of antitrust laws to subvert competition.

Challenging Becker's and Stigler's model, Landes and Posner (1975) show that relying on private parties to enforce the law could lead to overdeterrence as the correct probability of detection and the appropriate amount of fines cannot be achieved. In a private system an increased fine will lead to more instead of less detection as it provides a stronger incentive for detection and, consequently, overdeters. Polinsky (1980) criticises this result. Based on the assumption that private enforcers must break even at least in order to pursue a violation, he argues that some violations may not generate a sufficient return for the private enforcer in order to cover enforcement cost. Thus, private enforcement of law may lead to underenforcement instead of overenforcement. According to both models, public enforcement is better suited to enforce antitrust laws. The public enforcer has the advantage of choosing the level of sanctions and the resources devoted to detection and apprehension. Consequently, the public enforcer can set the extent up to which public enforcement is thought to be desirable (Polinsky 1980: 110). Because of the incentive problems that are observed in private law enforcement, Schwartz regards public enforcement as being superior in achieving a social optimal level of enforcement (Schwartz 1980).

Last but not least, McAfee et al. (2008) recently compared private and public enforcement in a simple game-theoretic model of antitrust violation and lawsuit. They find that if the court is sufficiently accurate, adding private enforcement to public enforcement always increases social welfare, while if the court is less accurate, it increases welfare only if the government is sufficiently inefficient in litigation. They further conclude that pure private enforcement is never strictly optimal; however, public enforcement can achieve the social optimum with a fee for public lawsuit that induces efficient information revelation.

Given this assessment of the literature together with practical observations, it becomes clear that pure public or private solutions are of rather theoretical nature. Comparing both systems directly, a private enforcement system is said to provide greater incentives to pick up a case, provides better information and makes more resources available for enforcement. In addition to public efforts, it strengthens the deterrent effect. However, potential positive effects of a private system have to be weighed against potential negative effects, such as additional enforcement costs in general and the potential for strategic abuse in particular.[3]

[3] Interestingly, the voices stressing this abuse potential have based their analysis implicitly or explicitly on the US litigation system which is unique in several respects. Before generalising the risk of abuse that might exist in the US civil litigation system it is important to note that multiple damages awards, one-way cost shifting and contingency fee agreements are alien to most European jurisdictions. This changes the potential cost and, thus, the incentives for plaintiffs and defendants to abuse the private enforcement system substantially.

In contrast to public enforcers, private enforcers have more personal motives to initiate proceedings against the infringer. The most important factor motivating parties to reveal information about a detrimental act is the financial gain from reporting. A second motive to bring forward information is the desire to avoid suffering harm. However, private parties may be afraid of initiating an action or reporting illegal conduct for the fear of reprisal. Changing the incentives of the parties, legal rules influence the costs and likelihoods of alternative outcomes and thus influence the parties' decisions. Injured plaintiffs may be more likely to sue over questionable conduct if the reward for successful action is increased exceeding a plain compensation for losses. Cost and fee rules as well as legal standards may have similar effects on the bringing of a case (Salop and White 1986 and Section 2.2 above).

3.2 Determinants of an optimal enforcement mix

In theory, an optimal enforcement mix is reached if the cost-benefit spread (i.e., the net benefit) of enforcement activities is maximized. In other words, in determining the optimal degree of public and private enforcement, the benefits and costs of various combinations have to be assessed and quantified leading to the identification of the welfare-optimal solution. In practice, however, such a quantification of the respective costs and benefits can be expected to have such high degrees of complexity that the relevance and robustness of any quantification effort would immediately be questioned.

However, despite this scepticism regarding a detailed quantification, it still adds value to study the key determinants of the costs and benefits of public and private enforcement thereby gaining insights on how an effective enforcement mix can be composed. In this section, we will therefore outline these key determinants of an optimal mix of public and private enforcement. While the following section will concentrate on the cost side, subsequent sections will focus on more specific drivers of particularly the benefits side in the form of assessments of the capacity and the quality of enforcement institutions (Section 3.2.2), the role of information possession and gathering (Section 3.2.3), legal certainty (Section 3.2.4) and the role of sanctions and remedies (Section 3.2.5).

3.2.1 Conduct and enforcement costs

When an antitrust statute is infringed, society typically deals with two types of costs. There are losses caused by the actual breach of law (conduct cost) and expenses for pursuing the violation (enforcement cost) (Becker 1968). The latter expenditure comprises of spending on detection and apprehension (Schwartz 1981). While conduct costs occur when the law is

violated, enforcement costs are only generated if resources are spent on reducing the existing individual loss (compensation) or preventing future harm (deterrence) (Posner 1973; Shavell 1993, 1997; Block, Sidak 1980). Resources are spent on establishing and running public agencies, prosecutors and courts. Private parties sacrifice management time and incur legal costs. The costs of enforcement include the expenditure for detecting the infringements, punishing the culprits and compensating the victims. Since the prosecuting agency or the private plaintiff bear the burden of proof for the anticompetitive conduct, they normally sustain the initial cost of an investigation. Gathering evidence that satisfies the respective legal standards is most likely to be one of the major cost factors. In addition to such direct enforcement costs, the economic literature discusses various forms of indirect costs. Most importantly, the errors in appraising the behaviour in question by both the competition authority and the court must be considered as an integral part of overall costs.

In general, decision theory provides a framework to guide the choice between alternative antitrust rules in a world of imperfect information (Hylton and Salinger, 2004). On a very abstract level, a certain antitrust rule divides cases into two categories: those that are 'legal under the respective rule' and those that are 'illegal under the respective rule'. While in a world of certainty and perfect information, this categorisation is congruent with cases that are 'not harmful to society' and cases that are 'harmful to society', in a world of imperfect information, this automatic link is lost. As the respective antitrust rule is inherently imperfect, the derived categorisation "is not identical to the distinction between the cases that are harmful and benign" (Hylton and Salinger, 2004: 55). The fundamental consequences for antitrust enforcement are that two basic kinds of antitrust errors are introduced. On the one hand, an antitrust rule might detect an instance of harmful behaviour which in fact is not harmful (a so-called *type I error*). On the other hand, an antitrust rule might come to the conclusion that certain behaviour is not harmful although it is in fact harmful (a so-called *type II error*).

According to Chicago-School thinking, type I errors pose a greater threat to welfare than type II errors because it is believed that the markets will self-correct the latter type of error. Error costs are likely to increase if less precise information is available to decision makers. This could be the case if, for instance, less is spent on detection and the gathering of evidence. On the other hand, more expenditure on detection will inevitably increase the overall enforcement cost. The enforcement expenses caused by private litigation are only partly sustained by claimants pursuing a violation of antitrust laws. A proportion of the overall cost

of private actions are born by society such as, e.g., error cost or cost for maintaining the courts.

Generally, antitrust errors harm social welfare *directly* by undertaking wrong enforcement decisions and *indirectly* via the consequential reduction in the deterrence effect of fines. As shown by Polinsky and Shavell (2000: 60), a positive probability of a type I error reduces the deterrence effect of fines because it lowers the expected fine for a violation, while a positive probability for a type II error lowers the deterrence effect of fines because it reduces the difference between the expected fine from violating the law and not violating the law. As a consequence, in order to achieve the desired level of deterrence (in a world with positive probabilities of errors) it is necessary to increase the probability of detection or the amount of the fine in order to avoid a state of under-deterrence. From an economic perspective, the optimal degree of enforcement is typically not reached if there are no further violations but at the point where marginal costs and marginal benefits of a further increase in enforcement levels are equal.

3.2.2 Capacity and quality of enforcement institutions

With capacity and quality of enforcement institutions we refer to the financial endowment and expertise of institutions, on the one hand, and to the level of protection of rights on the other. The resources available to law enforcing agencies, private enforcers and courts determine how swiftly an investigation or a legal proceeding can be brought to an end and, therefore, determine the cost of public and private actions. Skilled individuals with profound knowledge reduce the probability of errors. With respect to capacity, public enforcement activities are typically constrained by the budget of the competition authority. If the authority is short of manpower to, e.g., actively detect hard core cartel agreements, this has direct negative implications on the public enforcement of competition law. As private enforcement is largely driven by the individual incentives behind the respective claims, it can be assumed that capacity issues are not significant on the side of the private parties. However, as soon as smaller firms with tight financial budgets are considered, it becomes clear that capacity restrictions might also become relevant for private antitrust enforcement cases. Furthermore, insufficient court capacities might have a negative impact on the incentives to bring private antitrust cases. Additionally, as long as private cases are brought as follow-on cases, capacity issues at the competition authority have negative knock-on effects on private antitrust enforcement.

3.2.3 Information possession and gathering

In both public and private antitrust proceedings it is crucial for the enforcer to know about the illicit conduct, to be able to quantify the harm and to secure the possession of court-prove evidence. For some anticompetitive actions the information about the breach is asymmetrically distributed. Segal and Whinston (2007) argue that the cost of obtaining information might be different for public and private enforcers. Information cost for public enforcers can be higher because the public sector is less efficient than the private, the financing of public enforcement through taxes imposes a deadweight loss and private parties have an (initial) information possession advantage.

In the remainder of this article, we follow Segal and Whinston (2007) and distinguish the initial *possession* of information from the *gathering* of further information. An individual or the competition authority may possess knowledge about the illegal act even before an investigation or search for evidence is commenced. This will provide a cost advantage because resources do not need to be spent on screening or detection. Once a victim or the agency decides to undertake a legal action against the infringer, they are likely to attempt to gather (more) information about and evidence of the (alleged) anticompetitive conduct. It is often assumed that private parties have an initial information advantage about the identity or location of liable parties (see for instance Shavell 1993, p. 269; McAfee et al. 2008). This supposed information advantage is one of the reasons for assigning private parties with the task of enforcing the law. However, the level of information an individual or the agency initially possess about a violation depends on the type of the anticompetitive conduct in question. Interestingly, as argued by Segal and Whinston (2007, p. 308), "… the assumption of superior private information may not apply to many types of antitrust violations. For example, whether a given competitive action is a violation of antitrust law is often determined by the "rule of reason", which compares the likely social costs and benefits of the action. This is a complicated calculation that requires substantial knowledge of economics and market conditions, and on which even economic and industry experts often disagree. Private parties may be less likely to have such knowledge than a dedicated public agency staffed by experts."

Turning from the possession of information to the gathering of information both public enforcers and private parties need to invest to identify the person who committed an undesirable act or to find the evidence needed to show that a breach of competition law occurred (for information problems see Segal and Whinston 2007 and Sarra and Marra 2008). We posit that agencies are likely to have superior powers basically due to the lack of certain

powerful discovery procedures for private plaintiffs such as dawn raids to retrieve information.

3.2.4 Legal certainty

With legal certainty we refer to the degree of knowledge and confidence parties have about the legal consequences of their chosen course of action (Calfee and Craswell 1984). One can distinguish between *ex-ante* legal uncertainty on the side of the potential infringer before he commits an illegal act and *ex-post* legal uncertainty on the side of the potential enforcer after the infringement but before an enforcement action is commenced. Since we focus on *ex-post* enforcement actions we will not further discuss the legal uncertainty for potential violators with regards to their conduct (see Calfee and Craswell 1984; Kaplow 1990). The potential enforcer faces uncertainty from ambiguous legal rules hindering the assessment of potentially illegal behaviour; similar to the potential infringer who does not know about the legality of his action. In order to reduce uncertainty the legislator or competition authority can adopt fixed legal standards such as, e.g., per se rules.

A per-se-rule approach generally prohibits a predefined behaviour. Accordingly, the antitrust authority or the courts only have to answer the question 'Did the incumbent engage in the proscribed practice?' If the answer is 'yes', the antitrust authority and afterwards the courts are committed to suppress the behaviour and eventually to fine the respective firm, independent of the question whether there has been an actual injury to competition or not (Calvani, 2001: 201ff.; Wood, 1993: 887ff.). The central characteristics of the per se rule predestine the approach for types of behaviour that are clearly identifiable (for the firms and the antitrust authority) and have clear (and almost certain) negative welfare consequences (Carlton et al., 1997: 423ff.). If these preconditions are not met, some kind of rule-of-reason approach or effects test is applicable.

The rule of reason accommodates the more frequent case that the procompetitive effects of certain behaviour have to be compared with the anticompetitive effects. Such an approach stands for a case-by-case analysis of suspicious business conduct. The rule-of-reason approach gives the antitrust authority considerable administrative discretion and at the same time creates a considerable amount of uncertainty among firms about the conformity of their business conducts with antitrust rules. Compared to the per se rule, the rule-of-reason approach is typically more expensive to administer as pro- and anticompetitive effects have to be assessed and compared. If softer legal standards are applied, uncertainty may increase as

parties will have more difficulties to predict the decision of the competition authority or the court.

In addition to the uncertainty created by ambiguous substantive rules, the bringing of legal actions causes further uncertainty. The outcome of a claim depends on factors such as the knowledge of the court or tribunal or the availability of incriminating or disburdening evidence. Legal certainty can be increased if courts adopt a consistent legal practice. This may work through the setting of precedents; that are cases by higher courts to which lower courts adhere for practical reasons or because they are bound to follow them, and through a judicial practice that has created a large number of cases. The expertise of judges may improve with the number of cases brought before them. A larger number of proceedings and decisions clarifies the legal standards that must be met to successfully bring a legal action and offers guidance to plaintiffs. This guidance can, however, be reduced substantially – in both public and private enforcement – by the possibility to settle a case out of court thereby keeping the respective agreements in secrecy.

In the absence of legal certainty, parties may commence hopeless actions or strategically use the antitrust laws in order to extort settlements from defendants. In the former case parties waste resources on litigation although the chances of success are slim. In the latter scenario a (malevolent) party claims that an antitrust violation has occurred although, in fact, the infringement did not exist. Extending this definition, nuisance suits may be described as claims with a low probability of winning which are filed with the prospect of inducing the defendant to settle because the latter wants to avoid the costs of a legal disputes or the risk of an adverse court ruling. For a nuisance suit to pose a credible threat to a defendant there must be a low probability of predicting the outcome of the suit; that is high legal uncertainty or strong reputational effects if a legal action is brought. For some types of anticompetitive conduct, the legal assessment is clearly established such as price fixing (Breit and Elzinga 1974: 341).

3.2.5 Sanctions and remedies

After an infringement is detected, sanctions (or remedies) are the final step in the enforcement process. In general, it can be differentiated between monetary and non-monetary sanctions. Competition authorities will normally act in some kind of administrative proceedings as opposed to the civil law process. Building on our assessment of optimal public fines in Section 2.1 above, we concentrate on an extension of our analysis beyond damages including other civil law remedies.

The strongest sanction against individuals who engage in anticompetitive conduct is the imprisonment of the culprit. It is reasonable to assume that, compared to monetary sanctions, incarceration exerts the strongest deterrence effect on those who fall within the remit of the respective prohibition. Since this is the harshest remedy it typically does only apply to certain types of violation (in certain jurisdictions), namely breaches of the cartel prohibition (for more details see Wils 2005). At the same time the cost of incarceration for society are substantially higher than monetary punishment (Becker 1968).

Competition authorities also fine both individuals and undertakings for engaging in anticompetitive activity. The public enforcer has the advantage of choosing the level of sanctions and the resources devoted to detection and apprehension. Consequently, the public enforcer can set the extent up to which public enforcement is thought to be desirable (Polinsky 1980: 110). In a mixed system the level of detection also depends on the private enforcers and is, thus, at least partly out of hand of the public enforcer. The cost of punishment may also increase when private enforcers seek a private remedy against the perpetrator who had already been fined by the agency. For the purpose of our analysis it is important to note that remedies available to public and private enforcers may differ and that not all remedies are available for all types of infringements.

4 Towards a differentiated approach of competition law enforcement

One key insight of the previous sections was the finding that a combination of public and private enforcement is likely to increase the benefits of competition law enforcement compared to the implementation of a pure (either public or private) enforcement strategy. In this section, we use these insights to propose a differentiated approach of competition law enforcement. Instead of choosing only one general level of public and private enforcement we argue that adjustments with respect to the type of infringement are likely to increase overall welfare. In the following, Section 4.1 delineates three broad categories of competition law infringement to study the potential differences in an optimal enforcement of the respective law provisions. Based on these insights, Section 4.2 then applies these general insights to the specific situation of the European Union aiming at deriving important policy conclusions.

4.1 Significance of the type of infringement

Given our above finding that the public and private enforcement modes require coordination in order to achieve a welfare optimal outcome, we will match the determinants of an optimal

enforcement mix derived in Section 3 with different types of anticompetitive conduct in order to show that the costs and benefits for public and private enforcement actions may differ depending on the type of infringement. For simplicity reasons we differentiate between three prominent types of infringement: horizontal agreements, vertical agreements and abuses of a dominant position. Typical examples of conduct that belong to the first category are price-fixing agreements, limitations of output or partitioning of markets. The second category consists of vertical agreements between upstream and downstream firms such as resale price maintenance or rebate schemes. These practices might aim at excluding competitors and foreclose markets but can also entail efficiency gains. The third category – abuses of a dominant position – includes all types of behaviour exercised by firms with market power in order to maintain or extend their strong position in the market in an anticompetitive fashion to the detriment of their rivals. We include both exclusionary practices such as predatory pricing or refusals to deal as well as exploitative abuses such as excessive prices, into this third type of infringement.

The central results of the matching exercise are described in the following sub-sections and are also summarized in Table 1 in the Appendix.

4.1.1 Horizontal agreements

The detection and prosecution of anticompetitive horizontal agreements is certainly one of the most prominent areas in competition law and policy; partly due to their clearly negative welfare effects and correspondingly clear enforcement standards. These clear standards reduce the probability of both types of decision errors. Consequently, relatively clear bright-line tests for horizontal agreements reduce the potential costs of errors. At the same time, the obvious illegality of many horizontal agreements induces competitors to disguise their arrangements. Plaintiffs and competition authorities therefore need to invest considerably in the detection of such agreements.

For both public authorities and private parties, it is reasonable to assume that they typically do not have a genuine information advantage with respect to the existence of horizontal agreements. On the contrary, many horizontal anticompetitive agreements are concealed and difficult to discover without public ‘information gathering’ instruments such as leniency programmes and cartelists who blow the whistle (in order to avoid (or at least reduce) public fines). Antitrust agencies resort to leniency programmes in order to increase the detection rate but also to save on detection and especially prosecution costs. Gathering additional information about horizontal violations is costly but more so for private enforcers.

Private disclosure, if possible at all, can be expected to be expensive and likely requires more resources compared to public enforcement due to the negotiation and court proceedings involved. As a consequence, private enforcers might concentrate their efforts on so called follow-on actions. Although the plaintiff is still forced to show the harm caused by the agreement, the existing public decision at least proves the existence of the horizontal agreement. This advantage, by definition, comes at the cost that the beginning of private enforcement actions is delayed until the public enforcement decision is finally made. As a consequence, the deterrent effect of private enforcement is reduced significantly.

Legal certainty regarding anticompetitive behaviour of competitors is relatively high. The legal standards are clear: agreements between competitors restricting competition are illegal. Sanctioning illegal horizontal conduct, however, is a costly and error-prone process due to both imperfect information and limited resources for investigation. Both agencies and courts require significant legal and economic expertise to identify the existence, duration and effect of the illegal agreement and to derive the respective fine or damage. Overall, the costs caused by enforcement actions against horizontal restraints may be lower for antitrust agencies due to information gathering advantages. However, complementary private actions seem to be important for both compensatory and deterrence purposes.

4.1.2 Vertical agreements

Vertical agreements are ambiguous by nature as most contain some efficiency-enhancing potential but also have negative effects on competition and welfare. The rule of reason approaches which are mainly applied to these types of conduct complicate the *ex-post* assessment of vertical restraints for both public and private enforcers. This is likely to increase enforcement cost because agencies and courts require more expertise to establish an infringement. As for the capacity and quality of enforcement in general, public agencies and private parties have to invest considerably in order to successfully bring a case. Since agencies prioritise their spending, they may not have the resources or incentives to pick up vertical infringements due to the ambiguous nature or because some cases simply do not have a large impact on the economy. Private parties, however, are likely to have an information advantage if the violation takes place in a business relationship. Illicit terms in contracts are easy to observe for those private plaintiffs who are also contractual partners. Private parties also enjoy a further information advantage as they normally know the industry better than the competition authority. However, a possible obstacle for private actions is that plaintiffs may be deterred from bringing a case if they are afraid of losing future business (as the defendant

will often be an existing or future business partner). The public enforcer will normally rely on the complaints it receives from market participants to learn about an infringement. As for the remedies and sanctions, agencies have fines and behavioural remedies at their disposal. Private enforcers can ask for damages but may also seek an injunction to stop the infringement or request the contract term in question to be declared void. The latter two remedies may provide a less costly alternative to damages claims because no monetary harm stemming from the infringement has to be quantified. Compared to horizontal agreements, the enforcement of alleged anticompetitive vertical agreements demands a more active role of private enforcement early in the process of detection and prosecution.

4.1.3 Abuses of a dominant position

Abuses of a dominant position include all types of behaviour exercised by firms with market power in order to maintain or extend its strong position in the market in an anticompetitive fashion to the detriment of their rivals. For these types of behaviour, legal standards are again not very clear and this does affect both public and private enforcement. As in case of vertical agreements, the detection and assessment of the conduct concerned requires significant expertise and investment. The private enforcer may have an initial information advantage for violations that take place in business relationships, i.e. for those were there evidence in the form of contracts. In addition to that, the private enforcer is familiar with the industry. Most jurisdictions offer private parties a choice of remedies including damages, injunctions and voidness claims. Competition authorities can fine companies or impose structural or behaviour remedies. Monitoring the latter two may be rather costly though. Compared to vertical agreements, the enforcement of abuse rules demands a higher involvement of public enforcement, especially because it is often difficult for private parties to assess how to delineate the market and to therefore come to robust conclusions whether the alleged abuser actually has market power (which is a pre-condition for any kind of enforcement activities under these rules).

4.2 Implications for European competition law and policy

So far, the analysis in this article stayed at a very general level and concentrated on the derivation of general insights on the optimal interaction between public and private enforcement of competition law. However, in order to create value for practical competition law and policy, it is crucial in a final step to relate these general insights to the legal situation in a particular jurisdiction. Given the recent initiatives in the European Union to complement

the existing (strong) public enforcement with an improved private enforcement, we will use this jurisdiction for our derivation of implications for competition law and policy.

Referring to our simple modelling approaches in Sections 2 and 3 above, the introduction or strengthening of private enforcement immediately raises the question of overdeterrence. If the public fines were already set at an optimal level, the introduction of private enforcement would cause a situation of inefficient overdeterrence. As a consequence, public fines should be reduced. The relevance of this argument for the European Union, however, crucially depends on a thoughtful answer to the question whether the public fines alone have reached the deterrence-optimal level. Although commentators do not fully agree, the majority of cartel-related studies come to the conclusion that current fines levels are structurally clearly below the optimal level (e.g., Connor 2006, Veljanovski 2007, Smuda 2012). As a consequence, it can be assumed that the introduction of private enforcement strengthens the deterrence effect through additional 'fines' in the form of damages without reaching levels of inefficient overdeterrence.

However, from a pure deterrence perspective, it has to be reminded that it may be more cost efficient to increase the public fine rather than to incentivise private follow-on actions to close the identified deterrence gap. If *follow-on* actions are primarily facilitated, overall enforcement costs would increase substantially for a rather modest benefit in the form of an increase in deterrence. As a consequence, additional goals – such as compensation – or the factual impossibility of further increases in public fines (e.g., as they turn out to be unrealizable for decision makers) must be included into the assessment to tip the balance in favour of a further promotion of follow-on private enforcement. However, stand-alone actions, focusing on previously undetected violations, are less likely to interfere with government enforcement actions, especially leniency programs, and have the potential to substantially increase the overall deterrence effect of competition law enforcement.

However, what is still yet to be determined is the optimal interplay between public and private enforcement in the European Union. Again referring to the simple models in Section 2 and 3 above, the state has several possibilities to influence the degree of public and private enforcement. Public enforcement is basically depending on the fine level and the probability of detection. As a consequence, if the state would like to strengthen this enforcement pillar, it has to either extend the various fining possibilities or it has to improve on the probability of detection. The latter parameter is influenced by a multitude of factors such as the capacity and

organizational structure of the antitrust authority[4], the education of its staff, the degree of cooperation with other agencies, and, last but not least, the application of proactive detection tools (Hüschelrath 2010).

Although the degree of private actions is mainly driven by the personal motives of the plaintiffs, the state still has several possibilities to make such private actions more or less attractive. Again referring to our simple models above, it becomes apparent that, e.g., the determination of cost and fee shifting rules has an effect on the incentives to bring a case. The same is true for the amount of damages awarded or, last but not least, the speed and accuracy of court decisions. Ceteris paribus, the probability to sue is higher if the plaintiff receives a (correct) decision faster. As a consequence, if the state would like to promote private enforcement activities, it could, e.g., adapt existing cost and fee shifting rules as well as damage calculation and pre-judgment interest rules, increase civil court capacities, invest in the training of specialist judges, offer advice and guidance (or even financing options) to small and medium-sized companies who might have been harmed, and, last but not least, provide easier access to necessary data for the plaintiff (to prove an alleged infringement). Most of these options have been identified and also discussed at the European level since the publication of the Green Paper in 2005 and the White Paper in 2008. Substantial reforms aiming at strengthening the incentives of private plaintiffs, however, have not been implemented so far. Our analysis in this article suggests that such policy reforms are likely to increase overall welfare, particularly in the fields of vertical (and partly also horizontal) agreements on the condition that they are designed appropriately and shift focus from follow-on litigation to stand-alone actions.

5 Conclusion

The recent initiatives in a number of jurisdictions to strengthen the possibilities of private parties to enforce competition law not only raises the question of an appropriate framework and design of such activities but also demands a more general law and economics assessment of the interaction between public and private enforcement. In this article, we have investigated this relationship by introducing a differentiated approach. In contrast to the existing literature, we have developed a framework which takes into account that the usefulness of each

[4] In the last couple of years, several national competition authorities decided to spin-off separate cartel enforcement units. While such a bundling of powers alone is already likely to have positive spill-over effects on the probability of detection, it also secures a number of experts constantly working on cartel detection and prosecution (and not being reallocated to, e.g., merger enforcement in case of increases in the case load).

enforcement mode may change with a variation in the type of anticompetitive conduct. We have defined a set of parameters that determine the value of the public or the private mode to enforce the antitrust laws such as, for example, the possession of information. We have departed from the general assumption that private parties always have an initial information advantage about the identity or location of liable parties. Other factors which can determine the optimal enforcement mix are the cost of detection and prosecution, the quality and capacity of antitrust authorities and courts, legal certainty and available remedies. We have complemented the development of the set of parameters with the introduction of a differentiation of the type of infringement into horizontal agreements, vertical agreements and abuses of a dominant position.

Based on the matching of the identified determinants of an optimal enforcement mix with the different types of anticompetitive conduct, we have found, first, with respect to *horizontal agreements*, that public enforcement has to play the leading part first and foremost due to the difficulties in the detection and information gathering by private parties. As a consequence, private parties are likely to bring cases largely on a follow-on basis. Although this 'work share' appears to be desirable from a welfare perspective, it delays the private enforcement process substantially thereby weakening the deterrence effect. As a consequence, a strengthening of the rights of private parties is likely to increase overall welfare; at least in a situation in which current public fines are considered too low to reach deterrence and further increases of such fines are considered difficult to implement.

Second, with respect to *vertical agreements*, the matching exercise has suggested that especially the information possession and gathering advantages of private parties should lead to a more prominent role of private enforcement. Given the existing contractual relationships in many cases of vertical agreements, it is likely that detection and prosecution by private parties is not only possible at lower enforcement costs but also expect higher quality decisions due to the use of insider knowledge. However, as the respective claimant firms' future might depend on future business possibilities with the potential infringer, public enforcement still plays a significant role. The same conclusion is true for the gathering of specific types of information (such as demand and cost data) that might be needed to prove a certain infringement.

Third, with respect to *abuses of a dominant position*, the matching exercise has suggested that for these types of conduct, public enforcement again should play the leading role as long as the victim does not have direct dealings with the infringer. One key driver of this

conclusion is the clear information gathering advantages on the side of the competition authority together with the fact that there is often no information possession advantage on the part of the private enforcer. Without access to detailed cost and demand data of the infringer, it is difficult to successfully bring an abuse case. Thus, in the absence of (vertical) contracts and the existence of (horizontal) direct competition between the infringer and the claimant, public enforcement seems to be better suited to tackle such infringements. However, if the dominant undertaking and the victim have some business dealings, insider knowledge may be in the possession of the potential claimant or easily obtainable. Furthermore, certain types of abuse are particularly relevant for attempts to strategically use competition law thereby supporting the leading role for public enforcement.

Although the proposed differentiated approach allows the derivation of more detailed recommendations on the optimal 'fine tuning' of public and private antitrust enforcement, there is no doubt that further research in the area is needed. Especially the latter two types of anticompetitive conduct – vertical agreements and abuses of a dominant position – are likely delineated too broadly to come to robust conclusions on the optimal degree of public and private enforcement. This is particularly true for the vertical agreements category where economic research has been largely inconclusive on the social desirability of most business strategies that fall into this category. This problem of rather vague antitrust rules is the key challenge for the efficiency of both public and private enforcement.

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Table 1: Matching types of anticompetitive conduct with parameters of enforcement systems

	Parameters of enforcement systems			
Types of anticompetitive conduct	*Capacity and quality of enforcement*	*Information possession and gathering*	*Legal certainty*	*Sanctions and remedies*
Horizontal agreements	*Public enforcement:* Detection needs significant capacity investment; both antitrust errors unlikely *Private enforcement:* If follow-on cases are the rule, private claims are a direct function of public cases	*Public enforcement:* No initial information possession advantage; Information gathering advantage (leniency, dawn-raids), gathering costly *Private enforcement:* Typically no initial information possession advantage; information gathering very costly	*Public enforcement:* Legal standards relatively clear; nevertheless level of sanction often difficult to estimate ex-ante *Private enforcement:* Legal standards relatively clear with respect to infringement but not with respect to sanction (damages, indirect purchaser)	*Public enforcement:* Criminal sanction, administrative fine *Private enforcement:* Damages
Vertical agreements	*Public enforcement:* Prosecution needs significant capacity investment; significant probability of both antitrust errors *Private enforcement:* Lower incentives to bring case due to future business opportunities; lower risk of antitrust errors due to insider knowledge; strategic abuse potential	*Public enforcement:* No initial information possession advantage; moderate information gathering advantage (e.g., demand and cost information) *Private enforcement:* Initial information possession advantage if in contract; information gathering advantages due to insider knowledge	*Public enforcement:* Legal standards partly clear partly ambiguous due to rule-of-reason assessment *Private enforcement:* Legal standards partly clear partly ambiguous with respect to infringement	*Public enforcement:* Sanction, administrative fine, behavioural remedies *Private enforcement:* Terminating infringement (injunction), damages, voidness of contract terms or contracts
Abuses of a dominant position	*Public enforcement:* Detection needs significant capacity investment; significant probability of both antitrust errors *Private enforcement:* Lower incentives to bring case due to future business opportunities; lower risk of antitrust errors due to insider knowledge; strategic abuse potential	*Public enforcement:* No initial information possession advantage; clear information gathering advantage (e.g. demand and cost information) *Private enforcement:* No initial information possession advantage unless conduct takes place in contractual relationship; costly information gathering	*Public enforcement:* Legal standards partly clear, partly ambiguous; detection often requires detailed assessment *Private enforcement:* Legal standards partly clear, partly ambiguous	*Public enforcement:* Sanction, administrative fine, structural remedies (divestitures) *Private enforcement:* Terminating infringement (injunction), damages, voidness of contract terms or contracts; access to facilities (injunction)