Optimal Enforcement of Competition Policy: The Commitments Procedure under Uncertainty[*]

Axel Gautier[†]   Nicolas Petit [‡]

January 12, 2016

Abstract

Since the introduction of a commitments procedure in EU antitrust policy (Article 9 of Council Regulation 1/2003), the European Commission has extensively settled cases of alleged anticompetitive practices. In this paper, we use a formal model of law enforcement (Bebchuk, 1984; Shavell, 1988) to identify the optimal procedure to resolve cases in a context of uncertainty related to the law (L-uncertainty) and to the facts (F-uncertainty). We show that commitments are suboptimal when L-uncertainty is high. Furthermore, the generalized use of commitments creates an additional risk of under-enforcement when F-uncertainty is significant.

Keywords: Competition Policy; European Commission; Commitments; Law Enforcement; Over and Under Enforcement; Legal and Factual Uncertainty.

JEL Codes: K21, K41, L40

1   Introduction

In 2003, a reform of European Union ("EU") competition law entitled the European Commission ("the Commission") to enter into settlements with parties suspected of infringement of Articles 101 and/or 102 of the Treaty on the Functioning of the EU ("TFEU"). In exchange for "commitments"from suspected firms to change something in their behavior or in their structure, the Commission is ready to close proceedings. With this new procedure, the Commission can allegedly restore market competition quickly.[1]

In the literature, the commitments procedure is often described as an attractive substitute to infringement proceedings under Article 7. Wils (2008) documents two benefits on the agency side. First, the Commission can achieve earlier results[2] and second, it makes costs savings.[3] Practitioners also report benefits on the firm side. Since there is no formal finding that the firm is guilty of infringement, the firm avoids a variety of supplementary costs in the form of fines, follow-on damage actions and reputational stain. As a result, some have praised commitments decisions as a "win-win"instrument for both the Commission and the alleged infringer (Bellis, 2013).

In this paper, we show that the commitments procedure is not simply a fast-track replica of the infringement procedure, that enables the Commission to achieve equivalent market results without, however, being constrained by similar procedural inefficiencies.[4] Rather, our main finding is that the outcomes and remedies imposed differ significantly in the two procedures.

To that end, we represent the interaction between the Commission and market players as a game with three main features. First, the Commission potentially faces different infringers i.e. firms responsible for a major or minor harm and there is asymmetric information relative to the harm. We refer to this uncertainty as Factual (or F) uncertainty. Second, the illegality of the conduct is not certain i.e. it is *a priori* not clear for both parties that the conduct meets the applicable legal test of liability. We refer to this uncertainty as Legal (or L) uncertainty. Third, the Commission has two

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[1]See Schweitzer (2008) for a complete description.

[2]Even though in some cases commitments cases last longer than conventional infringement cases, e.g. *Rio Tinto* which lasted almost 5 years.

[3]In *Alrosa*, the leading case on commitments, the EU Court of justice justified the use of the commitments by "consideration of procedural economy"(Wagner-Von Papp, 2012).

[4]This result is standard in models of non-judicial litigation, (Bebchuk, 1984; Shavell, 1989).

categories of procedural tools: the standard infringement procedure under Article 7 of Council Regulation 1/2003 and the commitments procedure under Article 9 . With the infringement procedure, the Commission establishes precisely the infringement as a matter of law and measures the consumer harm as a matter of fact. With the commitments procedure, the Commission enters into a settlement with the firm. The procedure does not formally establish the infringement as a matter of law and leaves possibly the harm undetermined.

Against this background, the Commission can and does follow three types of enforcement policies: a generalized infringement policy, a selective commitments policy, a generalized commitments policy. In the generalized infringement policy, the Commission fetches under Article 7 all or most of the cases where the suspected infringement, the relevant markets and the potential remedies are similar. In the selective commitments policy, the Commission makes a mixed use of Article 7 and Article 9 for cases of a similar category.[5] This is the policy that was followed in *Microsoft I* (Article 7) and *Microsoft II* (Article 9) cases (related to the tying of Windows with complementary softwares). Finally, in the generalized commitments policy, the Commission uses predominantly Article 9 in all cases of a similar category.

In this paper, we seek to assess the costs and benefits of those various policies in terms of type-I (over-enforcement), type-II (under-enforcement) errors and procedural costs. We show that when the Commission applies generalized commitments, this leads to both over and under enforcement of competition law. Over enforcement because all firms systematically settle whilst not all of them would have been guilty in the formal procedure. In other words, the Commission applies remedies to non cases. Under enforcement because remedies are lower compared to those that would be imposed in the infringement procedure. In order to convince all firms to settle, the Commission must accept commitments that are set *a minima*. Put differently, there is a sort of "race to the bottom" effect with generalized commitments to convince firms to settle. As a result of this, we conclude that, under a generalized commitments policy, the Commission remedies too often but remedies are too weak. This under enforcement effect could be mitigated if the commitments procedure was used selectively, with the Commission agreeing to settle with firms offering strong remedies and launching

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[5]This is the model initially suggested in the Regulation 1/2003 as interpreted by most competition scholars. In this variant, firms that have violated the antitrust rules know that they can face both types of proceedings.

the infringement procedure for those offering weak or no remedies. Being selective in the use of commitments is a tool to bridge the information gap and limit the under enforcement problem associated with commitments.

With this background, the originality of our model is to show that the choice of a generalized commitments policy, of a selective commitments policy or of the standard infringement policy should hinge on the underlying case uncertainty. When there is little F-uncertainty surrounding the importance of the consumer harm, there is a limited race to the bottom effect. Surely, there remains the risk of remedying a non-case but this, essentially, is linked to the importance of the L-uncertainty. Thus, when there is little F and L uncertainty, a generalized recourse to the commitments procedure is apposite. When the case is more uncertain, it is optimal to use a procedure that is able to screen between types: the selective commitments when there is more F-uncertainty, the infringement procedure when there is more L-uncertainty. When there is a lot of L-uncertainty, for instance because the case raises novel issues, it is recommended to treat the case under the Article 7 infringement procedure.[6] Commitments should be used for mature cases and not to address novel legal issues.

We then attempt to review the Commission's decisional policy in the light of our model. For that, we regroup antitrust cases that can be deemed to belong to a similar category, and we identify the enforcement policy followed by the Commission for each group.

2   Related literature

Our paper cuts through three distinct fields of the law and economics literature. First, the paper can be traced to the early literature on judicial settlements (Landes, 1971), in particular in relation to the parties and defendants' choice between a settlement and a trial in the criminal justice system. The paper shares analogies with contemporary models that have flourished following the development of game theory and the economics of information (Wang *et al.*, 1994). In essence, those models review the trade-off between litigation and negotiation under asymmetric information. Some assume that the plaintiff is informed (Png, 1987), others that the defendant is (Reinganum and Wilde, 1986; Nalebuff, 1987). Private information could be related to the importance of the damage (Bebchuk, 1984) or to the likelihood of conviction (Shavel, 1989) and the literature analyzes differ-

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[6]As suggested by Wagner-Von Papp (2012) and Botteman and Patsa (2013) among others.

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ent frameworks for organizing settlement talks (Daughety and Reinganum, 1993).

Second, our paper's seeks to enrich the literature on optimal law enforcement focusing on the specificities of the EU antitrust regime. Few papers have so far devoted extensive economic treatment to the question of what is the optimal mix between the infringement and commitment procedures in EU antitrust policy. Choné *et al.* (2014) characterize the agency choice to resort to a certain degree of commitments in terms of a trade-off between the early restoration of competition (systematic use of commitments) and the lost deterrent effect of applying the commitments procedure (no fine)[7] and they derive an optimal commitment policy. We approach it distinctly, through a trade-off between the full but costly restoration of competition and the partial but costless remediation of infringement, leaving aside the (important) issue of deterrence.

Third, our paper can be tied to the emerging literature on antitrust agency discretion. An increasing number of studies in both the US and the EU has been devoted to the question of how agencies discretionarily channel their limited administrative resources, and prioritize cases, procedures, and remedies (Wils, 2011). Hyman and Kovacic (2012, 2013), for instance, discuss how agencies with a complex policy portfolio apportion their resources. Schinkel *et al.* (2014) study the welfare effects of task prioritization in an agency where the head has a discretionary power over the use of budgetary resources. Our paper contributes to this literature by making recommandations on the use of commitments negotiations in antitrust, emphasizing the importance of legal and factual uncertainties.

3   The model

We analyze a game between a competition authority (the "Commission") and a firm. The game starts with the Commission opening an investigation against a firm suspected of abuse(s) of dominance. The reasons underpinning the opening of investigations are manifold: complaints from rivals, customers, suppliers or trade associations, notification of a possible infringement by national competition authorities or sector specific regulators, allegations of abuse in the public domain (press, academic research, etc.). The Commission normally opens formal proceedings with a view to adopting a decision, be it an infringement or a commitment decision.

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[7]The different deterrent effect of settlements and trials has been recognized by Polinsky and Rubinfeld (1988).

To enforce EU competition rules, the Commission must establish an infringement based on a theory of harm, measure its actual or likely anticompetitive effects, and design a suitable remedy. In stylized terms, the Commission therefore needs two inputs to make a case, law and facts. The law means the ability of the Commission to frame the suspected practice under a clear, foreseeable and administrable precedent in positive law. The facts means the ability of the Commission to establish and measure anticompetitive harm, as a matter of fact. A remedy is then imposed to end or correct the anticompetitive practice. In addition, if the Commission takes an infringement decision, a fine can be imposed to punish and deter infringers.

3.1 Factual (F) and Legal (L) uncertainty

3.1.1 F-Uncertainty

The firm under investigation can be of two possible *types*. We represent the type of the firm by a parameter $\theta \in \{\underline{\theta}, \overline{\theta}\}$. Irrespective of its type, the firm realizes a profit equal to π. The firm with type θ causes a consumers "harm". This harm can come in the form of reduced consumer surplus due to supra-competitive prices, rival foreclosure, delay in the introduction of new products, etc. Firm with type θ is responsible for a harm amounting $H(\theta)$ and we assume that $H(\overline{\theta}) > H(\underline{\theta}) \geq 0$. In other words, the firm with type $\overline{\theta}$ is responsible for a major harm $H(\overline{\theta}) = \overline{H}$ while the firm with type $\underline{\theta}$ is responsible for a minor harm $H(\underline{\theta}) = \underline{H}$.

Several factors affect the importance of the harm: size and number of relevant markets affected by the conduct, size of the suspected firm's market shares, size of barriers to entry and scale, inelasticity of demand, duration of the alleged anticompetitive abuse, interest rates on financial markets, etc. The importance of the harm is *a priori* unknown from the Commission and this uncertainty is linked to the factual setting of the case. We will refer to it as factual or F-uncertainty. At the beginning of the procedure, there is an initial asymmetry of information between the Commission and the firm in respect of the facts. Due to its greater proximity from the markets, the firm possesses private information on its type that the Commission does not have.[8] At the initial investigation stage, the Commission is unaware of the firm's type. Nevertheless, it is common knowledge that $\theta \in \{\underline{\theta}, \overline{\theta}\}$ and that $\nu = Prob(\theta = \overline{\theta})$.

In the model, the F-uncertainty can be measured simply by the difference

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[8]This modeling is similar to Bebchuk (1984).

between a major and a minor harm $(\overline{H} - \underline{H})$.[9]

3.1.2 L-Uncertainty

The harm is caused by a practice that can be deemed legal or illegal. The practice is illegal if it fits within a known precedent, and if it fulfills the requirements defined in the judgement to that end i.e. if it meets what legal practitioners call the "legal test" or "legal standard".

The firm and the Commission do not know *a priori* whether the infringement can be established as a matter of law. If the Commission investigates the case under the standard adversarial procedure (Article 7), it will be able to establish the infringement with probability $p \geq \frac{1}{2}$. With the complementary probability $(1-p)$, the infringement cannot be established and the Commission closes the case.[10]

A high probability p means that, given the applicable case-law, the firm's liability for an unlawful abuse is more likely, or easy, to be established. Thus, a high p means that there is little legal uncertainty (L-uncertainty). In the following sections, our measure of the L-uncertainty will be the probability $(1-p)$ that ranges from 0 when the infringement can be established for sure (no L-uncertainty) to $\frac{1}{2}$ when the legal issue of the case is highly uncertain. The L-uncertainty depends on a range of factors: absence of judicial precedent, divergences in precedents, weakness of precedent, inaccuracy of precedent, age of precedent, inconsistency in precedents, existence of a repeated and/or ongoing proceedings on a similar legal issue before the review and appeals courts, etc.

3.1.3 States of the world

To summarize, combining L and F uncertainty, there are four possible "states of the world".

1. In State 1, the firm has caused a major harm and an anticompetitive infringement can be established as a matter of law. The probability of being in State 1 is $p\nu$.

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[9]Or alternatively by the variance of the harm variable $VAR(H) = \nu(1-\nu)(\overline{H} - \underline{H})^2$.

[10]For instance, in the *Velux* case, the Commission concluded that the rebates offered by the suspected dominant company were not anti-competitive (Neven and de La Mano, 2010). *Qualcomm* (2009), *Apple iTunes* (2008) and *MathWorks* (2014) are other examples of cases that the Commission closed without finding an unlawful anticompetitive practice, sometimes after long investigations.

2. In State 2, the firm has caused a minor harm and an anticompetitive infringement can be established as a matter of law. The probability of being in State 2 is $p(1 - \nu)$.

3. In State 3, the firm is responsible for a major harm but an anticompetitive infringement cannot be established as a matter of law. The probability of being in State 3 is $(1 - p)\nu$.

4. In State 4 the firm is responsible for a minor harm but an anticompetitive infringement cannot be established as a matter of law. The probability of being in State 4 is $(1 - p)(1 - \nu)$.

At the beginning of the game, the Commission is unaware of the state of the world while the firm has private information on the importance of the harm but not on the (il)legality of the conduct.

3.2 The Commission

The Commission has several tools *to remedy* anticompetitive practices. The Commission can impose to the firm a change in its structure (e.g asset divesture) or a change in its behavior (e.g licensing obligations) with the aim of restoring competition. In the model, we will denote by R, the structural or behavioral remedy imposed by the Commission (without formally distinguishing the two). These remedies can be imposed both in the adversarial and the commitments procedures. Remedies aim at correcting the harm but they represent a cost for the firm. Formally, we suppose that, when the Commission imposes a remedy R to the firm, both the harm H and the firm's profit are reduced by an equal amount R. The fact that the remedy equally affects the firm's profit and the harm is a simplifying assumption to keep the model tractable. The Commission may additionally seek to punish established infringers by imposing a fine F. When a fine F is imposed to the firm, its profit is reduced by F but it has no impact on the harm. In our model, we suppose that fines are exogenously given and independent of the firm's type though the model may easily be accommodated for that.[11]

The first best policy then consists in setting a remedy equal to the harm $H(\theta)$ when the infringement can be legally established and nothing otherwise. Formally, the first best consists in setting $R = \overline{H}$ in State 1, $R = \underline{H}$

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[11]In practice, fines includes a basic amount for committing the infringement, an amount related to the value of sales connected with the infringement multiplied by the number of years the infringement has been taking place and a possible adjustment for mitigating or aggravating circumstances.

in State 2 and $R = 0$ in States 3 and 4. Departing from this first best policy implies type-I error when a remedy is applied in states 3 or 4 or type-II error when a remedy different from respectively $\overline{H}$ and $\underline{H}$ is applied in states 1 and 2. Like any decision maker, the Commission seeks to avoid type-I and type-II errors. In the sequel, we will measures the cost of making errors by the distance between the first best and the actual policy. This means that if a remedy R is imposed in states 1 or 2, the cost of applying this remedy is $|R - H(\theta)|$, while if a remedy R is applied in states 3 or 4, the associated cost is R. In addition to the error cost, the Commission may incur a procedural cost c (see after).[12] The objective of the Commission is to minimize its total enforcement cost i.e. the sum of the error and the procedural costs.

4 Two procedures, three policies

4.1 The procedures

4.1.1 The infringement procedure (Article 7)

The Commission operates on budget constraints and following the standard infringement procedure is costly. The cost of the procedure is set to $c > 0$ for the Commission. If the Commission agrees to invest c, it will either establish the infringement (with probability p) and quantify the harm H or discover that no infringement can be established (with probability $(1 - p)$). This means that at cost c, the Commission discovers the state of the world. If an infringement is established then, the Commission can impose a remedy and a fine. If the infringement cannot be established, the case is closed by the Commission.

Irrespective of the outcome, it is costly for the firm to be involved in an infringement procedure. It must remunerate lawyers and consultants and it suffers from an intangible cost of being under the scrutiny of an antitrust agency and possibly under negative media exposure (reputational damage). This cost for the firm is set to $d \geq 0$.

4.1.2 The commitments procedure (Article 9)

As an alternative to the infringement procedure, the firm and the Commission can enter into commitments talks, with a view to closing the case

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[12]On the contrary, fines that are mainly imposed for deterrence purpose do not influence the agency's payoff.

in exchange for behavioral or structural concessions. This negotiation process, formally enshrined in Article 9, has several important features. First, the Commission has the option to return to the standard infringement procedure at any time i.e. if the parties fail to reach an agreement. Second, under Article 9, commitments should be proposed by the firm, implying that the firm is not obliged to participate in the negotiation.[13] Third, with the commitments procedure, the parties and the Commission avoid lengthy oral and written proceedings and, in line with that, we assume that negotiating settlements is costless for both parties. In other words, the costs c and d represent the additional cost of the infringement procedure.

The negotiation of commitments takes place under asymmetric information and we will (by assumption) consider that the Commission has all the bargaining power. The firm has the option to refuse the negotiation. In that case, the Commission has the option to start the infringement procedure.

If the firm agrees to start the negotiation, we suppose that it takes place as follows:

1. The Commission makes a take-it-or-leave it offer R to the firm,

2. The firm accepts or refuses the offer,

   - If the firm accepts the offer, the Commission makes the commitments legally binding and the remedy R is implemented.
   - If the firm refuse the offer, the Commission may launch an infringement procedure or abandon the case.

4.2 The policies

4.2.1 Generalized infringement policy

In the generalized infringement policy, the Commission exclusively uses the infringement procedure of Article 7. With this procedure, the Commission pays the cost c and discovers the state of the world. In the infringement procedure, only unlawful conduct by the firm can be remedied in which case the Commission implements a remedy $R(\theta) = H(\theta)$ and imposes a fine F.

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[13]Whilst in theory, the commitments must be offered at the parties' initiative, and the Commission has little choice over this, the practice is that the Commission will often manifest that it is ready to receive settlement proposals from the parties. For instance, in the *Google* case, the former Commissioner for competition explicitly asked Google to formulate commitments proposals. In the literature, most observers confirm that the Commission has some control over the choice of the procedural route (Mariniello, 2013).

The enforcement cost for the Commission is then equal to:

$$\hat{V} = c. \tag{1}$$

The payoffs to the firm with type θ are $\pi - R(\theta) - F - d$ if it is found liable of an infringement and $\pi - d$ otherwise. The *expected* payoffs to the firm with type θ are then equal to:

$$\hat{\pi}(\theta) = \pi - pH(\theta) - pF - d. \tag{2}$$

If instead of launching the infringement procedure, the Commission closes the case immediately without further investigation or negotiation, its cost would be equal to $V = (\nu p\overline{H} + (1 - \nu)p\underline{H})$. This cost represents the cost of leaving anticompetitive harm non remedied i.e. the cost of no intervention. In the sequel, we assume that the Commission prefers to start an infringement procedure, that is:

Assumption 1 $\nu p\overline{H} + (1 - \nu)p\underline{H} > c.$

4.2.2 Selective commitments policy

With selective commitments, the Commission screens, eventually imperfectly, the two types of firm. To that end, it leaves the option of two different tracks to solve the case: the commitments procedure or the infringement procedure. The selective use of the two procedures is used as a screening device to separate the two types. In a fully separating equilibrium, the firm responsible of a minor harm refuses the commitments and the Commission opens an infringement procedure, while the firm responsible of a major harm negotiates commitments successfully; in a partial pooling equilibrium, a firm responsible of a major harm negotiate commitments successfully with probability γ and the Commission opens an infringement procedure with probability $(1 - \gamma)$.

To screen between different types, the proposed commitments $\overline{R}$ must be such that the type $\overline{\theta}$ does not reject the commitments while the type $\underline{\theta}$ definitely refuses them. Formally, $\overline{R}$ must satisfy:

$$\pi - \overline{R} \geq \hat{\pi}(\overline{\theta}), \tag{3}$$
$$\pi - \overline{R} < \hat{\pi}(\underline{\theta}). \tag{4}$$

These equations imply $\overline{R} \in (\pi - \hat{\pi}(\underline{\theta}), \pi - \hat{\pi}(\overline{\theta})]$. The following lemma describes the equilibrium in the game played by the Commission and the firm.

Lemma 1 *For all possible commitments $\overline{R} \in (\pi - \hat{\pi}(\underline{\theta}), \pi - \hat{\pi}(\overline{\theta})]$, we have:*
(i) If the Commission proposes $\overline{R} = \pi - \hat{\pi}(\overline{\theta})$, there exists $\tilde{\gamma}$ such that there is a continuum of partial pooling equilibrium in which a firm with type $\overline{\theta}$ accepts the proposed commitments with probability $\gamma \in [0, Min[\tilde{\gamma}, 1]]$ and refuses them with probability $(1 - \gamma)$ and a firm with type $\underline{\theta}$ always refuses them. In case of refusal, the Commission suits the infringer in the formal procedure. If $p\underline{H} \geq c$, $\tilde{\gamma} \geq 1$ and a fully separating equilibrium exists.

(ii) If the Commission proposes commitments $\overline{R} < \pi - \hat{\pi}(\overline{\theta})$, then there exists a fully separating equilibrium if and only if $p\underline{H} \geq c$.

Proof: see Appendix.

The commitments agreed upon by the firm $\overline{\theta}$ are at most equivalent to the expected remedy imposed in the infringement procedure but commitments are negotiated at no cost. In a nutshell, the selective commitments procedure uses the threat of going back to Article 7 to extract strong commitments from the firm. The threat of moving back to the Article 7 procedure is the cornerstone of the selective commitment policy.[14] Without this threat, firms have no incentive to agree on strong commitments. Clearly enough, the Commission can extract stronger commitments when the the likelihood of conviction in the infringement procedure is high (a high p), when the cost for the firm of the adversarial procedure is high (high d) and when fines are important.

The partially or fully separating mechanism works if –when commitments are refused– the Commission decides to return to the infringement procedure at cost c. Otherwise, anticipating a termination of the case after having refused strong commitments, no firm will ever agree to settle. For this reason, a fully separating equilibrium does not always exists. A fully separating equilibrium is feasible only if the Commission is better off start-

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[14]In a speech to the European Parliament, the former Commissioner in charge of competition policy clearly announced that if Google refuses to improve its third commitments proposal, the Commission will switch to the standard infringement procedure. *As part of our standard practice in an Article 9 procedure which leads to a commitments decision and in response to our pre-rejection letters sent before the summer, some of the twenty formal complainants have given us fresh evidence and solid arguments against several aspects of the latest proposals put forward by Google. At the beginning of the month, I have communicated this to the company asking them to improve its proposals. We now need to see if Google can address these issues and allay our concerns. If Google's reply goes in the right direction, Article 9 proceedings will continue. Otherwise, the logical next step is to prepare a Statement of Objections.* Presentation of the Annual Competition Report to the European Parliament by the Commissioner J. Almunia, Sept. 23, 2014.
$http : //europa.eu/rapid/press - release\_SPEECH - 14 - 615\_en.htm$. In April 2015, the Commission sent a SO to Google.

ing an infringement procedure when it knows that it faces for sure a firm with type $\underline{\theta}$. Formally, the condition writes as follow:

$$p\underline{H} \geq c. \tag{5}$$

If this condition does not hold true, the only equilibrium is a semi-pooling equilibrium where the Commission offers the highest possible commitments and the firm with type $\overline{\theta}$ accepts commitments with probability $\gamma < 1$. At equilibrium, γ should be small enough to guarantee that when the firm refuses the proposed commitments, the Commission prefers to start the infringement procedure.

With selective commitments, the enforcement cost of the Commission is equal to:

$$\overline{V} = \nu\gamma(p|\overline{H} - \overline{R}|) + \nu\gamma(1 - p)\overline{R} + [\nu(1 - \gamma) + (1 - \nu)]c. \tag{6}$$

This cost can be decomposed in three terms: a cost of type-II error, a cost of type-I error and a procedural cost. There is a cost of over/under enforcement if the remedy does not perfectly match the harm $(\overline{R} \neq \overline{H})$. This cost, measured by the first term in Equation (6), is the cost of making type-II errors. There is, in addition, a *cost of commitments* which is the cost of remedying non-cases. With commitments, the L-uncertainty is not resolved and, with probability $\nu\gamma(1-p)$, the Commission remedies a case for which the infringements would not have been legally established i.e. a non case. This type-I error entails a cost $\overline{R}$ for the Commission, measured by the second term in Equation (6). Finally, with the selective commitments, the Commission pays the procedural cost c when it uses the formal procedure. This cost is measured by the last term in Equation (6).

With selective commitments, the Commission has the lowest cost when the remedy proposed perfectly match the harm: $\overline{R} = \overline{H}$. This is formally established in the following Lemma.

Lemma 2 *The function $\overline{V}$ satisfies $\frac{\partial \overline{V}}{\partial \overline{R}} < 0$ for $\overline{R} < \overline{H}$ and $\frac{\partial \overline{V}}{\partial \overline{R}} > 0$ for $\overline{R} > \overline{H}$.*

Thus, whenever possible (see the conditions in Lemma 1), the optimal selective commitments policy consists in setting $\overline{R} = \overline{H}$.

4.2.3 Generalized commitments policy

The alternative for the Commission is to propose commitments $\tilde{R}$ that would be accepted by both types. Such commitments must satisfy:

$$\pi - \tilde{R} \geq \hat{\pi}(\overline{\theta}), \tag{7}$$
$$\pi - \tilde{R} \geq \hat{\pi}(\underline{\theta}). \tag{8}$$

From these equations, it must be clear that the proposed commitments are softer in the pooling case as the two conditions imply $\tilde{R} \leq \hat{\pi} - \pi(\underline{\theta})$. With this pooling mechanism, all firms agree on the proposed commitments. Those who are responsible for a high harm because the remedy is less severe (in average) compared to the infringement procedure (and the selective commitments). Those who are responsible for a minor harm because commitments are at most equivalent (in average) to the remedy that would be imposed with the infringement procedure. Assumption 1 guarantees that generalized commitments are credible i.e. should a firm refuses the commitments, it will be formally investigated by the Commission at cost c. Finally, note that neither type finds it profitable to refuse the commitments.

With the generalized commitments, the enforcement cost of the Commission is equal to:

$$\tilde{V} = p(\nu|\overline{H} - \tilde{R}| + (1 - \nu)|\underline{H} - \tilde{R}|) + (1 - p)\tilde{R}. \tag{9}$$

Like for selective commitments, the cost for the Commission can be decomposed into a cost of type-II errors and a cost of type-I errors, measured respectively by the first and the second term in Equation (9). Notice that, regarding type-II errors, if the proposed commitments are in the range $[\underline{H}, \overline{H}]$, there are both under and enforcement of law: under enforcement as major harm are under remedied ($\tilde{R} < \overline{H}$) and over enforcement as minor harm are over remedied ($\tilde{R} > \underline{H}$). Therefore increasing the remedy above $\underline{H}$ may decrease or increase the enforcement cost depending on the relative importance of the over and under enforcement i.e. the likelihood of facing the two types. But in any case, increasing the remedy reinforces the cost of type-I error. Combining these effects, the enforcement cost is minimized for either $\tilde{R} = \underline{H}$ if $\nu p < \frac{1}{2}$ or for $\tilde{R} = \overline{H}$ if $\nu p > \frac{1}{2}$ as it is stated in the following Lemma.

Lemma 3 *The cost $\tilde{V}$ satisfies $\frac{\partial \tilde{V}}{\partial \tilde{R}} < 0$ for $\tilde{R} < \underline{H}$, for $\tilde{R} \in [\underline{H}, \overline{H}]$, $\frac{\partial \tilde{V}}{\partial \tilde{R}} > 0$ if $\nu p < \frac{1}{2}$ and $\frac{\partial \tilde{V}}{\partial \tilde{R}} < 0$ if $\nu p > \frac{1}{2}$ and $\frac{\partial \tilde{V}}{\partial \tilde{R}} > 0$ for $\tilde{R} > \overline{H}$.*

5 Comparisons

5.1 Resolving L and F uncertainty

The resolution of L and F uncertainty is different in the three policies. While the model postulates that there is no longer F and L uncertainty with the general infringement policy, uncertainty –legal, factual or both– remains with the two other policies. Table 1 summarizes that. When the L-uncertainty is not fully resolved, the Commission makes type-I errors as it cannot distinguish "cases" and "non-cases". When the F-uncertainty is not fully resolved, the Commission makes type-II errors as it cannot distinguish major and minor harms. The cost of these errors should be traded-off with the procedural costs.

	F-Uncertainty	L-Uncertainty	Procedural cost
Generalized infringement	yes	yes	c
Selective commitments	partial	yes	$((1 - \nu) + \nu(1 - \gamma))c$
Generalized commitments	no	no	0

Table 1: Resolution of F and L uncertainty under the three policies

5.2 Comparing policies

As we have shown, the expected outcome of the adversarial procedure determines the default point for negotiating commitments. Hence, higher fine that reduces the firm's expected payoff $\hat{\pi}(\theta)$ increase the range of admissible remedies in the commitments procedure. Lemma 2 and 3 determine the Commission's preferred remedy in the selective and general commitments policy. Whether this preferred policy is feasible depends on the fine level, as well as on the cost d and the level of legal uncertainty. For making comparisons, we will assume that the preferred remedy in selective (part i) and generalized (part ii) commitments is implementable:

Assumption 2 *(i)* $\overline{H} \leq \frac{pF+d}{1-p}$, $p\underline{H} \geq c$ *(ii)* $\nu p \leq \frac{1}{2}$ *and* $\underline{H} \leq \frac{pF+d}{1-p}$.

With selective commitments, the enforcement cost for the Commission is:

$$\overline{V} = \nu(1 - p)\overline{H} + (1 - \nu)c. \tag{10}$$

Comparing with the cost under generalized infringement $(\hat{V})$, the selective commitments policy is preferred if:

$$\overline{V} \leq \hat{V} \Leftrightarrow (1-p)\overline{H} \leq c. \tag{11}$$

This equation shows that a selective commitments policy is preferred to a generalized infringement policy when $(1-p)$ is small enough i.e. when L-uncertainty is limited. Indeed, with the preferred remedy $(\overline{R} = \overline{H})$, the Commission eliminates type-II errors. What remains is the risk of type-I errors and the cost of these errors is limited when there is little L-uncertainty. Hence, in those situations, a selective commitments policy is recommended.

Under Assumption 2, the enforcement cost with generalized commitments is equal to:

$$\tilde{V} = \nu p(\overline{H} - \underline{H}) + (1-p)\underline{H}. \tag{12}$$

Comparing with generalized enforcement, our first result is to show that if there is a lot of F-uncertainty –measured by the difference $(\overline{H} - \underline{H})$– then a generalized commitments policy cannot be optimal. The cost of type-II errors is prohibitive and it is dominated by a general infringement. Our second result is to show that if the F-uncertainty is limited, then a generalized commitments policy can be preferred to a general infringement policy when the L-uncertainty is limited.

Lemma 4 *(i) If $\nu(\overline{H} - \underline{H}) \geq \underline{H}$ then, a generalized commitments policy is dominated by a generalized infringement policy. (ii) If $\nu(\overline{H} - \underline{H}) \leq Min[c, \underline{H}]$, there exists $\tilde{p} \leq 1$ such that for $p \geq \tilde{p}$, a generalized commitments policy is preferred to a generalized infringement policy.*

Proof: see Appendix

Last, we compare selective and generalized commitments. Similarly to Lemma 4, we can establish that:

Lemma 5 *(i) If $\nu(\overline{H}-\underline{H}) \geq (1-\nu)c$ then, a generalized commitments policy is dominated by a selective commitment policy. (ii) If $\nu(\overline{H} - \underline{H}) \leq (1-\nu)c$, there exists $\bar{p} \leq 1$ such that for $p \geq \bar{p}$, a generalized commitments policy is preferred to a selective commitment policy.*

Condition (11) and lemmas 4 and 5 describe the optimal enforcement policy for the Commission. Despite their analytical complexity, our comparisons produce clear-cut qualitative results that can be summarized as follows. First, there is a specific cost associated with the negotiation of

commitments, and this cost increases with L-uncertainty. So a large degree of L-uncertainty is against commitments, in general. Second, there is a specific under enforcement cost when commitments are generalized and this cost increases with factual uncertainty. So, an important F-uncertainty is against generalized commitments. Commitments therefore are only recommended when there is little L-uncertainty. If this limited L-uncertainty is associated with a large factual uncertainty, selective commitments are recommended. If it is associated with a limited F-uncertainty, generalized commitments are recommended. The figure below offers a quick summary of these policy recommendations. Finally notice that Assumption 2 guarantees that the preferred commitments are implementable. If this should not be the case then, the enforcement cost associated with selected and generalized commitments would be higher and the parameter space where these policies are optimal would be reduced. Despite that, our qualitative results –summarized in Figure 1– would continue to hold true.
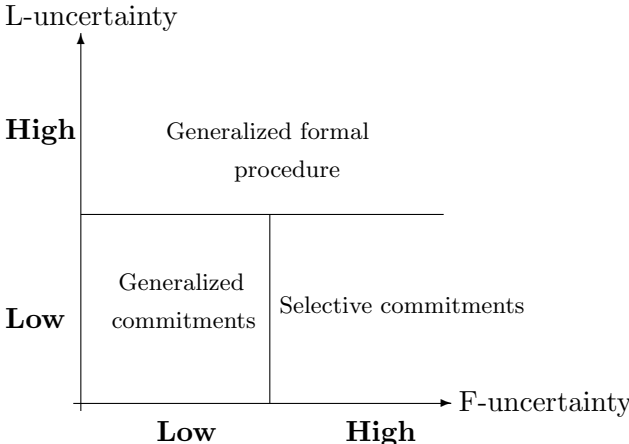

Figure 1: Recommended procedural choice

5.3 Discussions

5.3.1 The role of fines

The fines imposed in the adversarial procedure play a double role. Firstly, fines are imposed to punish illegal behavior and to deter future illegal conduct. Choné *et al.* (2014) compare the commitments and the infringement

procedures considering that commitments immediately restore competition but have no deterrent effect while the adversarial procedure and the fine is more time-consuming but it reduces the probability of future illegal behavior. The optimal decisional policy trades-off these two dimensions.[15] Secondly, fines determine the default point for negotiating commitments. Higher fines or a more systematic use of the fines[16] decrease the firm's expected payoff in the infringement procedure and thereby increases the commitments that the firm is ready to accept. In turn, higher commitments decrease enforcement costs (Lemmas 2 and 3). Fines thus play a critical role as they determine the effectiveness of the commitment policies. If firms are expecting lower fines, they will be more reluctant to accept strong commitments and enforcement costs increase.

5.3.2 Alternative objectives for the Commission

It is important to note that the Commission may pursue other objectives than the one we considered in the above analysis. In particular, the costs of type-I and type-II errors may not be equally important. For an agency, extracting commitments and closing cases may have more importance than the content of these commitments as the press and the taxpayers pay more attention to the agency obtaining remedies rather than to the technical nature of remedies (Schinkel, 2014). In this case, the cost of type-II error would be less important for the Commission. Likewise, remedying anticompetitive harm irrespective of its unlawful nature may constitute an alternative objective for an authority that is consumer oriented and the Commission may use competition policy to pursue regulatory objectives. In this case, the cost of type-I error would be less important for the Commission.

If the Commission is less concerned with type-I and/or type-II errors, it is quite obvious that the optimal enforcement policy will be more based on commitments. Nevertheless, the model points two important restrictions on the generalized use of commitments.

Firstly, the selective commitments policy is used as a screening device to separate the two types of alleged infringers and, without the threat of moving back to the infringement procedure, the Commission will not be able to extract strong commitments from a firm with type $\overline{\theta}$.

Secondly, the cost of using commitments increases with L-uncertainty

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[15]Though it might be difficult to commit to a given decisional policy (see also Wils (2006) on this point).

[16]Actual decisional practices show that fines are not systematically imposed (e.g. *Motorola*).

that we considered to be exogenous. But L-uncertainty depends on a wide range of factors including the number and the precision of judicial and decisional precedents and the guidance provided by the Commission and the Courts. It is widely acknowledged that formal, Article 7, decisions contribute to the establishment of case law while commitments decisions do not. Therefore, when the Commission uses the formal procedure, resulting in an infringement or an inapplicability decision, this contributes to clarifying the law and the L-uncertainty is partially endogenous to the enforcement policies selected and implemented by the Commission. Thus, for making the commitments procedure more effective, the Commission should be concerned by reducing the L-uncertainty and produce case law that can be further validated by the Courts.

6 Discussion of the Commission's decisional policy

In this section, we provide a preliminary overview of the normative implications of our model. To that end, we have gathered a sample of representative antitrust cases (non cartel) decided by the Commission in the past ten years under Article 7 and Article 9. In that sample, we have identified several categories of antitrust cases that can be deemed to belong to a similar category, either in terms of the sector they concern (for instance, energy) or in terms of the theory of liability that was affirmed by the Commission (for instance, margin squeeze). In turn, for each category of case, we have attempted to determine which of the three enforcement policies had been followed by the Commission. This exercise has led us to build the following typology (see table). Our sample leaves aside a number of isolated cases, like for instance the *Ebooks* case, *Siemens/Areva* or *Rio Tinto* which are one off decisional interventions that do not seem to belong to a group of cases and which are thus unhelpful to track a specific enforcement policy pattern.

This crude empirical exercise is a prerequisite to gain a first understanding of whether the policy followed by the Commission is in line with the findings of our model, in particular given the degree of F and L uncertainty that prevailed in those cases. Meanwhile, we concede that we remain, as any outsider, exposed to errors of interpretation and constrained on publicly available information. Finally, our understanding of the determinants of F and L uncertainty is in current stage fragmentary, and further work will need to be done on this.

GENERALIZED COMMITMENTS	SELECTIVE COMMITMENTS	GENERALIZED INFRINGE-MENT
ENERGY CASES	STANDARD ESSENTIAL PATENTS CASES	MARGIN SQUEEZE
Article 9: 10 cases Article 7: 1 case	Article 9: 1 case Article 7: 1 case	Article 9: 0 case Article 7: 3 cases
List of Article 9: Distrigaz (2007), German Electricity Balancing Market (2008), German Electricity Wholesale Market (2008), RWE Gas Foreclosure (2009), GDF Foreclosure (2009), Long Term Electricity Contracts in France (2010), Swedish Interconnectors (2010), EON Gas Foreclosure (2010), ENI (2010) and CEZ (2013).	List of Article 9: Samsung (2014) List of Article 7: Motorola (2014)	List of article 7: Telekomunikacja Polska, 2011; Tele- fonica S.A. , 2007; Slovak Telekom, 2014
EXCESSIVE PRICING CASES	SMULTILATERAL INTERBANK FEES	PAY FOR DELAY CASES
Article 9: 2 cases; Article 7: 0	Article 9: 2 cases Article 7: 2 cases	Article 9: 0 case Article 7: 3 cases
List: Rambus (2010), S&P (2011)	List of Article 9: Visa (2002 and 2010) List of Article 7: MasterCard (2007 and ongoing SO)	List: Lundbeck (2013), John-son&Johnson (2013) and Servier (2014)

6.1   Statistical overview

Since 1 May 2004, the Commission has officially adopted 11 antitrust decisions under the Article 7 infringement procedure and 29 antitrust decisions under the article 9 commitments procedure. These statistics do not include unpublished decisions.

Of the 11 decisions under Article 7, the Commission's search engine indicates that 5 related to anticompetitive agreements cases under Article 101 TFEU and 6 were abuse of dominance cases under Article 102 TFEU. In the 29 decisions under Article 9, the Commission's search engine indicates that 23 were abuse of dominance cases and 16 were anticompetitive agreements. This is because 10 of those cases were examined under both legal provisions.

6.2 Generalized commitments

As explained previously, there are generalized commitments when the Commission treats all the cases of a certain category under the Article 9 procedure. Put differently, there is a generalized commitments policy when the negotiation of commitments is the sole issue for a certain type of case. This is the policy followed in abuse of dominance cases in the energy sector or in relation to specific practices that the Commission has declared non-priority targets, such as exploitative abuses.

6.2.1 Energy

In the electricity and gas sectors, the Commission's decisional practice is clear. The conventional procedural route to handle such cases is the discussion of commitments (Wils, 2015). In 10 cases, the Commission closed abuse of dominance proceedings with commitments. Of course, there is an exception to this. In March 2014, the Commission adopted an Article 7 decision and inflicted a €1.031 m fine on *OPCOM*, the Romanian power exchange for having abused its dominant position. However, this only marginally alters the finding that abuse of dominance cases in the energy sector seems to be subject to a generalized commitments policy.

In so far as F-uncertainty is concerned, the Commission's asymmetry of information with the firm may be less marked than in other sectors. First, the Commission's investigations in this sector often deal with incumbents' conduct whose dominant position is so obvious, that a large component of potential harm is established. Second, in the energy sector, the Commission enjoys a historically rich factual expertise, following the wide ranging "sector inquiry" that was completed in 2007. This exercise led the Commission to amass an incredible amount of information on energy markets across Europe. Third, in energy markets, the Commission works in complementarity with 28 national regulatory authorities in gas and electricity and with a European-wide regulator (ACER) whose purposes are to stimulate market competition. This unique institutional specificity has informational merits,

for the Commission can rely on the assistance of those institutions to gather updated market data and expert opinions on energy-related issues.

In so far as L-uncertainty is concerned, of course, there are endogenously not many precedents from the EU courts in the energy sector. On close examination, most if not all of the practices at hand in the energy sector seem to concern classic theories of antitrust liability.[17] We therefore consider L-uncertainty to be limited in the energy sector.

Our model suggests that a low level of F and L uncertainty makes the generalized commitment policy appropriate for the energy sector.

6.2.2 Non-priority cases (excessive pricing)

A second illustration of the generalized commitments policy can be found in non-priority cases. These "non-priority" cases relate to conducts or sectors for which the Commission has explicitly manifested disinterest in public statements. A good illustration of this relates to exploitative abuses, and in particular excessive pricing for which the Commission expressly manifested a lack of interest in its 2009 Guidance Paper on enforcement priorities and all cases (*S&P* and *Rambus*) were thus handled under the Article 9 procedure.

In *S&P*, the Commission scrutinized the prices charged by Standard & Poor's for the distribution of International Securities Identification Numbers (ISINs) in Europe to information service providers (news agencies) and financial institutions (banks, etc.). ISINs are the international key identifiers for securities based on the international standard ISO 6166. ISINs are indispensable for a number of operations such as interbank communication, clearing and settlement, custody, reporting to authorities and reference data management. S&P has been designated by the American Bankers Association as the competent National Numbering Agency and as such enjoyed a monopoly for distribution of US ISINs. The ISO however provided for cost-recovery principles, the fair pricing of ISIN, and the absence of charge for indirect users (i.e. financial institutions that source their ISIN from information service providers, together with other data). S&P however levied charges on indirect users, and applied charges in excess of costs on direct users. Moreover, S&P charged for access to the full ISIN database rather

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[17]In *CEZ*, the pre-emptive reservation of transmission capacity that was deemed to deprive rivals from means of competing, and to limit entry, was akin to an exclusive purchasing contract. In *RWE gas foreclosure*, the Commission took objection to a plain vanilla refusal of access by RWE to its transport network, and to the setting of excessive prices that squeezed rivals. Finally, in *Distrigaz* and in *Long term electricity contracts* in France, the Commission combatted a classic example of exclusive dealing, by remedying to long duration contracts with energy customers.

than to the relevant ISIN number. The Commission had concerns that S&P may have charged unfairly high prices for the distribution of US ISINs in Europe in breach of EU antitrust rules on the abuse of a dominant market position. However, it brought the case to a settlement, under which S&P committed to abolish all charges to indirect users for the use of ISINs within the EU. In respect of direct users and ISPs, S&P committed to distribute ISIN records separately from other added value information at an initial price of $15,000 per year.

In a second case, *Rambus*, the Commission expressed concerns that Rambus Inc. might have abused a dominant position by intentionally concealing from the JEDEC SSO –in which Rambus participated– that it had patents and patent applications which were relevant to technology used in DRAM standards[18] being adopted by JEDEC, and subsequently claiming unreasonable royalties for those patents from suppliers of DRAM products. The Commission's view was that absent its intentionally deceptive conduct, Rambus would not have been able to charge the royalties it subsequently did. The Commission eventually closed its investigation by adopting an Article 9 decision that rendered legally binding commitments offered by Rambus including a promise to cap the royalties that it would charge for certain patents essential for those DRAM products.

Excessive pricing cases do not generate much discussion in terms of L-uncertainty. Article 102(a) prohibits dominant firms from *directly or indirectly imposing unfair purchase or selling prices or other unfair trading conditions*. And it is historically clear that this provision provides a textual legal basis to catch dominant firm's exploitative prices. Earlier scholars have stressed that the text of the Treaty is primarily concerned about exploitive conduct and not exclusionary one (Joliet, 1970). Since the late 1970s, the case-law has confirmed that EU competition agencies and courts could administer Article 102(a) to curb dominant firms' exploitative prices (*United Brands*, 1978). The fact that the Commission has made little use of it is simply a deliberate policy choice.

Excessive pricing cases generate more debates in terms of F-uncertainty. First, there is a widespread view that competition authorities lack the information and expertise necessary – particularly on the competitive price and on costs levels – to carry out price controls (Fisher and McGowan, 1983). This requires significant resources and expertise in a vast array of disciplines, including not only law and economics but also accounting and financial analysis. Accordingly, this task would be better left to sector-specific regulators

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[18] "Dynamic Random Access Memory" is a memory chip technology.

(Motta and de Streel, 2006). Second, there is a complete uncertainty on the incentive effects of high prices. In particular, the view that high prices are self-correcting remains quite widespread, and that if competition agencies were ever to apply Article 102(a) to dominant firms' prices, they might deter competitive entry, and therefore undermine the dynamic nature of the competitive process (Gal, 2004; Evans and Padilla, 2005).

Our model suggests that a high level of F uncertainty creates a risk of under-remediation. In *Rambus*, there was high F-uncertainty because licensing rates for patented products are in principle secret and the incentives effects are high when it comes to patented, technology-driven products. That explains why the Commission possibly under-remedied the case, by setting a 1.5% cap for future standards, leaving untouched the past harm inflicted by Rambus through patent harm. Moreover, there is evidence that many of Rambus' licensing rates were below 1.5%, so the remedy did not change much to the firm's licensing conduct. In contrast, in *S&P*, there was less F-uncertainty on the appropriate licensing level. ISIN are covered by the ISO policy. Under this policy, ISO-covered standards must be accessible on cost-recovery grounds, no more. The Commission could therefore do little harm by mandating in a decision a licensing level known by all market players to be the industry norm. Moreover, the supply of ISIN numbers is not a risky activity comparable to the production of patentable technology, but rather a regulatory rent conferred by decision of a public institution.

6.3 Selective commitments

The selective commitments policy is applied when the Commission entertains commitments talks with the parties, but maintains an effective threat to return to the infringement procedure . According to our model, the selective commitments policy is recommended when there is little L-uncertainty but possibly a large F-uncertainty.

6.3.1 Standard Essential Patents

The *Samsung* and *Motorola* decisions are a good example of a selective commitments policy. By way of reminder, those two cases arose in the context of the so-called smartphone war. Back in 2011, Apple ignited a worldwide patent war with Samsung for alleged infringement of several design patents. Apple contended before the US courts that Samsung's phones copied some features of its iPhone. In Apple's view, Samsung infringed 4 of its design patents on the shape of the initial iPhone, as well as a number of

design patents on various graphical user interfaces (icons for applications). Samsung replicated 6 days later by starting patent litigation in France, Germany, the Netherlands, Italy and the United Kingdom, and asking the court to remove Apple's allegedly infringing product from the market. Amongst the patents in suit were, however, a number of so-called standard essential patents (SEP) on 2G and 3G mobile telephony that Samsung had previously committed to grant access to on so-called FRAND terms. In defense, Apple thus argued that Samsung's actions for infringement were a violation of its FRAND promises and this was in turn akin to an unlawful abuse of a dominant position. Apple subsequently lodged abuse of dominance complaints against Samsung before the Commission, arguing that with Samsung was using courts proceedings as a bargaining device, to extract from Apple supra-competitive licensing terms, a strategy known as "patent holdup"(Shapiro, 2001). Apple also lodged similar complaints against Motorola.

In April 2014, the Commission adopted two decisions in those cases. The decision in the Samsung case is based on Article 9. With it, the Commission closed the case, in exchange for a commitment by Samsung to stop seeking injunctions in court, and to abide by a predetermined 12 months licensing framework. In contrast, the decision against Motorola is an article 7 decision that finds Motorola guilty of an infringement of Article 102 TFEU, and that orders Motorola to cease seeking injunctions in court on the basis of the litigious SEPs.

Interestingly, since Apple's initial complaints of 2011 the Commission ran both cases in parallel, though under distinct procedures. In this, the two cases are an example of selective commitments, because the firm that was discussing commitments with the Commission under Article 9 - Samsung - could credibly anticipate that a failure to reach commitments would expose it to a return to the Article 7 procedure, as this procedure was the one followed with Motorola in parallel investigation.

If we review those cases through the lenses of our model, it is strikingly clear that the L-uncertainty is important. As mentioned in several official papers, the legal standard applicable to the seeking of injunctions in Courts remained uncertain (European Commission Joint Research Center, 2015). Several tests competed in the case-law of the EU courts (Petit, 2013; Jones, 2013). Even more importantly, the legal uncertainty was empirically confirmed when two German courts in Dusseldorf and Mannheïm addressed requests for clarification to the Court of Justice of the European Union and to the EU Commission, respectively.[19]

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[19]In addition, some courts in the Member States have crafted new and distinct tests

In so far as F-uncertainty is concerned, the discussion is less easy. To some extent, one must consider that the facts are well-established, given that it is easy to prove whether the companies have, or not, sought injunctions and have, or not, made FRAND pledges. Moreover, the relevant markets and the dominant position should be easy to establish, because the existence of a SEP gives rise to a licensing market on which the patent holder is likely dominant. The main uncertainty concerns the harm inflicted to rivals. The rate of award of injunctions by courts is indeed unclear. There is thus some uncertainty as to whether SEPs holder can at all resort to injunctions in order to extract supra competitive royalties or cross-licensing terms (hold up) or exclude as efficient rivals (foreclosure).

On close examination, the outcome of the Article 9 *Samsung* case is more severe than the outcome of the Article 7 *Motorola* case. Whilst in *Motorola*, the Commission merely found an infringement and ordered Motorola to cease and desist without fines, in *Samsung*, the commitments decision forces Samsung to comply with a predefined licensing framework under the threat of fines. Moreover, Motorola has kept its right to appeal the decision before the General Court whilst Samsung has lost it with the commitments decision.

This is in line with our model that predicts that, with selective commitments, stronger remedies are applied for the cases closed with commitments and weaker ones for cases closed with an infringement decision. It remains to establish whether these different outcomes reflect some underlying factual differences between the cases or are due to another source of heterogeneity between firms.

6.3.2 Multilateral interbank fees

The *Visa* decision of 2002 and the *MasterCard* decision of 2007 are again illustrations of the selective commitments policy. In the first decision, the Commission exempted Visa's multilateral interbank fees model under conditions. In the second decision, it found that MasterCard had violated Article 101 TFEU, by setting on behalf of its members (i.e. banks) multilateral interbank fees (MIFs). Those are fees charged by a cardholder's bank (the issuing bank) to a merchant's bank (the acquiring bank) for each sales transaction made at a merchant outlet with a payment card. Those fees are in turn often transferred by the acquiring bank to the merchant, who subsequently pass them on to customers, thus inflating consumer price.

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to deal with such cases (the German Supreme Court has for instance elaborated a novel legal theory called the *Orange Book Standard* to deal with such cases).

Since then, the Commission opened two additional investigations against MasterCard and Visa, in relation to other types of MIFs and rules set by both cards' systems. Both investigations concerned similar practices, according to the Commissions own declarations. In 2010 (and subsequently in 2014), the Commission closed the Visa case yet with another Article 9 commitments decision. The case against MasterCard is still ongoing, under the Article 7 procedural route.

The MIFs cases primarily deserve discussion in terms of F-uncertainty. There is little L-uncertainty on the applicability of Article 101 to MIFs. As early as 2001, the Visa grouping had itself notified its regulations to the Commission, conceding the applicability of Article 101 to their regulations, but advocating a possible exoneration on the ground that the MIFs anticompetitive effects were unclear and outweighed by redeeming efficiency benefits.

In contrast, the degree of F-uncertainty surrounding those cases was high. Economist disagree on the opportunity to launch antitrust actions against card networks (Wright, 2012) and on the welfare effect of regulating MIFs (Rochet and Tirole, 2011). Furthermore, in several instances, the Commission admitted that it enjoyed a poor degree of factual information on the welfare effects of MIFs, and in particular on the possibility that MIFs yield efficiencies. This is strikingly clear from the decision of the EU Commission, in 2007, to open a sector inquiry into retail banking targeting, in particular, the level of interchange fees.

According to our model, when L-uncertainty is limited, using the commitments procedure selectively is appropriate even tough the F-uncertainty is important, as it is the practice for the MIFs-related cases. Conversely, when L-uncertainty is high as in the SEP-related cases, selective commitments are not appropriate even if F-uncertainty is limited.

6.4 Generalized infringement procedure

Besides cartels (they are excluded from the commitments procedure) the infringement procedure in modern EU competition law has been applied in two categories of cases, margin squeeze cases in the telecommunications sector and pay-for-delay cases in the pharmaceutical sector. According to our model, this enforcement policy is recommended when the surrounding L-uncertainty is important.

6.5 Margin squeeze

A margin squeeze occurs when a dominant infrastructure provider adjusts its wholesale access rates and its retail prices in order to force rival input purchasers to compete at a loss on the retail market. In the early 2000s, entrants in the newly liberalized EU telecommunications markets increasingly complained before the Commission that incumbent players were using margin squeeze strategies to force them off the market. After 2004, the Commission opened three distinct margin squeeze cases all being dealt with under Article 7 (*Telefonica S.A.*, 2007; *Telekomunikacja Polska*, 2011; *Slovak Telekom*, 2014).

From a F-uncertainty standpoint, those cases generated little discussion. In liberalized industries like telecommunications, sector-specific regulators monitor the industry on a daily basis, and are subject to EU oversight, under the Framework Directive on electronic communications. It can thus be safely assumed that the Commission enjoyed as much factual information as it needed on those cases.

However, from a legal standpoint, the early margin squeeze allegations lodged with the Commission did not fall neatly within existing theories of antitrust liability. In margin squeeze cases, the retail prices are above cost, so it is difficult to analyze them under the precedent applicable to predatory pricing cases. Moreover, in a margin squeeze case, the dominant firm actually grants access to its infrastructure, so the case-law on refusal of access to an essential facility is not applicable.[20] With this background, and absent a precedent of the Court of Justice of the EU confirming that margin squeezes could be deemed abusive, the Commission thus aptly chose to cast margin squeeze cases under the infringement procedure.

Interestingly, L-uncertainty dissipated dramatically in October 2010, when the Court of Justice held in *Deutsche Telekom v Commission* that margin squeezes could, under certain conditions, breach Article 102 TFEU. The Court of Justice repeated the statement in *TeliaSonera* in 2011, insisting at §56 that margin squeezes are a novel, "independent"form of abuse, "distinct"from the conventional abuses known in EU competition law, and in particular of refusals to supply.

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[20]The US Supreme Court confirmed the existence of high L-uncertainty in 2004 when it granted certiorari in the *Trinko* case, hinting that the margin squeeze theory was, at the time, a novel issue for which there was a need of guidance. It later held that margin squeeze was not a valid theory of antitrust liability under Section 2 of the Sherman Act.

6.6 Pay-for-delay

Similarly, the infringement procedure also appears to be the predominant one in pharmaceutical cases, and in particular in pay-for-delay cases. In *Lundbeck* (2013), *Johnson&Johnson* (2013) and *Servier* (2014), the Commission issued article 101 and/or 102 TFEU infringement decisions against pharmaceutical companies that sought to delay generic entry into the market. In those cases, a drug originator had paid generic entrants to stay off the market after the expiry of its patent (and possibly before). None of those cases were dealt with under the Article 9 procedure. And all gave rise to significant fines.

Like in the telecommunications sector, the pay-for-delay cases did not occur in a high F-uncertainty context. In 2007, the Commission launched a wide ranging sector inquiry in the pharmaceutical sector and published the findings of this investigation in 2009. Its report explained that it had garnered evidence that originators had entered into pay for delay settlements with generic firms. It announced that such settlements would in the future be subject to "focused monitoring", by subjecting pharmaceutical players to mandatory reporting requirements on a periodic basis.

In contrast, the pay for delay cases were started in a state of high L-uncertainty. In the scholarship and in practice, a fierce amount of discussion took place on the applicable legal test, and in particular on whether those new cases should be dealt with under the rule of reason or under a per se prohibition regime (Cotter, 2004; Carrier, 2009). The decision of the US Supreme Court to grant certiorari in the *Actavis* case in 2014 bears testimony to the high degree of L-uncertainty that prevailed at the time. It suggests that "pay-for-delay" were new for which an authoritative clarification was needed. The US Supreme Court eventually held that pay for delay cases ought to be treated under the rule of reason. In the EU, no similar judicial precedent exists. The Commission has thus safely decided to treat these cases under the Article 7 framework.

7 Concluding remarks

In this paper, we have shown that the commitments procedure does not fully replicate the outcome of the infringement procedure, and that under some conditions, it may lead to under and/or over enforcement of the EU competition rules. Under enforcement, because the remedies applied by the Commission do not entirely eradicate the anticompetitive harm caused by the impugned practice. In brief, the remedies administered by the Com-

mission are under-fixing (a type-II error). Over enforcement, because the Commission applies remedies too often. Put simply, with the commitments procedure, the Commission may be solving non-cases (a type-I error).

A critical feature of our paper is to explain that those enforcement errors may be caused by the legal uncertainty (L-uncertainty) and factual uncertainty (F-uncertainty) that surrounds the interaction between the agency and the firm. In particular, we show that the influence of L and F-uncertainty on the risk of enforcement errors depends on the type of enforcement policy followed by the Commission, i.e. a generalized commitments policy, a selective commitments policy, or a formal infringement policy. With this, we are able to formulate a number of policy recommendations that could help agencies refine their enforcement strategies with a view to achieving a more optimal enforcement mix.

More fundamentally, our findings pave the way for further research. Firstly, in the future, we intend to improve our understanding of the determinants of F and L-uncertainty, and provide a more exhaustive conceptualization of those parameters. For instance, we will try to integrate the existence of complaints in F-uncertainty. The existence of complaints is indeed likely to reduce F-uncertainty, because complainants can supply the Commission with whatever industry data it needs.[21] Similarly, the fact that the Commission has issued a Statement of Objections (or a Letter of Facts or Supplementary Statement of Objections) should also be integrated in our model, for it also likely diminishes F-uncertainty (in addition to increasing the reluctance of the Commission to abandon the Article 7 track). Finally, the presence in the industry of a sector specific regulator could be factored-in because it reduces both L-uncertainty (because companies are used to face regulatory constraints) and F-uncertainty (because regulators and antitrust agencies often cooperate).

Secondly, we tend to believe that our model could reach a higher degree of granularity in relation to L-uncertainty, in the sense that a distinction c ould be drawn between Article 101 and Article 102 TFEU cases. In particular, the application of *"rule of reason"?*-type analysis or the admission of efficiency defenses is more widespread in Article 101 cases than in Article 102 cases. In turn, this suggests that L-uncertainty may be higher in Article 101 TFEU cases than in Article 102 TFEU cases. On the other hand, there is a considerable amount of soft law guidance under Article 101 TFEU, and

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[21]On the other hand, Wagner-Von Papp (2012) argues that complaints give rise to a risk of the Commission becoming the agent of third parties, and in in turn of disproportionate remedies.

the rate of success of appeals in Article 101 cases is certainly higher than in Article 102 TFEU cases (which are almost never dismissed by the Court of Justice). Finally, our model could reach a higher degree of accuracy within the Article 102 cases by distinguishing between exclusionary abuse cases and exploitative abuse cases, for the later are often deemed to generate insuperable evidentiary issues. By the same token, our analysis of the Article 101 cases could distinguish between horizontal and vertical cases, for the later are generally smaller cases, where F-uncertainty is presumably lower. And in the same vein, the model could distinguish between restriction by object and restriction by effect cases, given that the degree of F-uncertainty is considerably smaller in "object" cases.

Finally, we hope to enrich our model so as to control for the bargaining dynamics inherent in the negotiation of commitments. For instance, we do not test the relevance of who is the first to make the offer to negotiate commitments, i.e. the Commission or the firm. Indeed, there may be some ground to believe that the bargaining power lies with the agent that does not solicit the opening of commitments negotiations. In the same perspective, the model should integrate parameters such as the intensity of judicial review, the presence of a Statement of Objections, the participation of formal complainants to the procedure, as well as their number, the existence of parallel cases with the same firm, be it before the Commission or before the EU Courts, etc. All those factors, and others, potentially affect the Commission and the parties' bargaining power.

8   Appendix

Proof of Lemma 1   Two conditions must be satisfied for a separating equilibrium. First, firm with type $\underline{\theta}$ should refuse the proposed commitments $\overline{R}$ while firm with type $\overline{\theta}$ should accept them with some positive probability. Second, the Commission should start the infringement procedure at cost c if commitments are refused.

(i) If the proposed commitments are such that $\overline{R} = \pi - \hat{\pi}(\overline{\theta})$, firm with type $\overline{\theta}$ is indifferent between accepting and refusing the proposed commitments while firm with type $\underline{\theta}$ refuses them.

Suppose that firm with type $\overline{\theta}$ accepts the proposed commitments $\overline{R}$ with probability γ. Then, we have :

$$Prob(\theta = \overline{\theta}|\overline{R} \text{ is refused}) = \hat{\nu}(\gamma) = \frac{\nu(1-\gamma)}{\nu(1-\gamma) + (1-\nu)}, \qquad (13)$$

with $\hat{\nu}(\gamma) \in [0, \nu]$ and decreasing in γ.

The Commission starts the infringement procedure if commitments are refused when

$$\hat{\nu}(\gamma)p\overline{H} + (1 - \hat{\nu}(\gamma))p\underline{H} \geq c. \tag{14}$$

Given Assumption 1, there exists $\hat{\gamma} > 0$ such that :

$$\hat{\nu}(\hat{\gamma})p\overline{H} + (1 - \hat{\nu}(\hat{\gamma}))p\underline{H} = c. \tag{15}$$

The value $\hat{\gamma}$ defined in Equation (15) satisfies $\hat{\gamma} < 1$ if $p\underline{H} < c$. Therefore, there exists a continuum of partially separating equilibrium where commitments $\overline{R}$ are accepted with probability $\gamma \in [0, Min[\hat{\gamma}, 1]]$.

(ii) If the proposed commitments are such that $\pi - \hat{\pi}(\underline{\theta}) < \overline{R} < \pi - \hat{\pi}(\overline{\theta})$, firm with type $\overline{\theta}$ is strictly better off if it accepts the proposed commitments and the firm with type $\underline{\theta}$ is better of it refuses them. The mechanism works however if when commitments are refused, thereby signaling a type $\underline{\theta}$, the Commission is better of it starts the infringement procedure. This is the case if $p\underline{H} \geq c$ i.e. for $\gamma = 1$, Condition (14) holds true. If not the case, there is no separating equilibrium with $\overline{H} < \pi - \hat{\pi}(\overline{\theta})$.

Proof of Lemma 4 A generalized commitment policy is preferred to a generalized infringement policy if $\tilde{V}$ defined in Equation (12) is smaller than $\hat{V} = c$. Solving $\tilde{V} = \hat{V}$ for p, the solution $\tilde{p}$ is given by:

$$\tilde{p} = \frac{\underline{H} - c}{\underline{H} - \nu(\overline{H} - \underline{H})}.$$

If $\nu(\overline{H} - \underline{H}) \leq \underline{H}$, then $\tilde{V}$ is decreasing with p. Then, $\tilde{V} \geq \hat{V}$ for $p \geq \tilde{p}$. This parameter set is non-empty if $\tilde{p} \leq 1$ which is equivalent to $\nu(\overline{H} - \underline{H}) \leq c$.

If $\nu(\overline{H} - \underline{H}) \geq \underline{H}$, then $\tilde{V}$ is increasing with p. Then, $\tilde{V} \geq \hat{V}$ for $p \leq \tilde{p}$. This parameter set is non-empty if $\tilde{p} \geq \frac{1}{2}$ which is equivalent to $c \geq \frac{1}{2}(\nu(\overline{H} - \underline{H}) + \underline{H})$. But this condition cannot be satisfied given Assumption 1.

Proof of Lemma 5 $\overline{V}$ and $\tilde{V}$ are both linear in p, so they cross at most once in the interval $p \in [\frac{1}{2}, 1]$. If we set $p = \frac{1}{2}$, $\overline{V} \leq \tilde{V}$ is equivalent to $c \leq \frac{\overline{H}}{2}$ which is true by Assumption **??**. If we set $p = 1$, $\overline{V} \leq \tilde{V}$ is equivalent to $c \leq \frac{\nu(\overline{H} - \underline{H})}{(1 - \nu)}$. If this condition holds true, then $\overline{V} \leq \tilde{V}$ for all the relevant values of p. If, on the contrary $c \geq \frac{\nu(\overline{H} - \underline{H})}{(1 - \nu)}$, then there exists a value $\tilde{p} \in [\frac{1}{2}, 1]$ such that $\overline{V} \leq \tilde{V}$ for $p \leq \tilde{p}$ and $\tilde{V} \leq \overline{V}$ for $p \geq \tilde{p}$.

References

[1] Bebchuk, L. A. (1984). Litigation and Settlement under Imperfect Information, The RAND Journal of Economics, 15(3), 404-416.

[2] Bellis, J.-F. (2013). Article 102 TFEU: The Case for a Remedial Enforcement Model along the Lines of Section 5 of the FTC Act, Concurrences, Issue 1, 54-61

[3] Botteman, Y. and A. Patsa (2013). Towards a more Sustainable use of Commitment Decisions in Article 102 TFEU Cases, Journal of Antitrust Enforcement 1(2), 347-374.

[4] Carrier, M. (2009). Unsettling Drug Patent Settlements: A Framework for Presumptive Illegality, Michigan Law Review, 108(37), 37-80.

[5] Choné, P., S. Souam and A. Vialfont (2014). On the Optimal Use of Commitments Decisions under European Competition Law, International Review of Law and Economics 37, 169-179.

[6] Cotter, T. (2004). Antitrust Implications of Patent Settlements Involving Reverse Payments: Defending a Rebuttable Presumption of Illegality in Light of Some Recent Scholarship, Antitrust Law Journal, 71(3), 1069-1097.

[7] Daughety, A. and J. Reinganum (1993). Endogenous Sequencing in Models of Settlement and Litigation, Journal of Law, Economics & Organization, 9(2), 314-348.

[8] Evans, D. and J. Padilla (2005). Excessive Prices: Using Economics to Define Administrable Legal Rules, Journal of Competition Law & Economics, 1(1), 97-122.

[9] European Commission (2014). To commit or not to Commit? Deciding between Prohibition and Commitments, Competition Policy Brief, Issue 3.

[10] European Commission JRC Science and Policy Report (2015). Innovation in the Digital Single Market: The Role of Patents, 17 March 2015.

[11] Fisher, F. and J. McGowan (1983). On the Misuse of Accounting Rates of Return to Infer Monopoly Profits, American Economic Review 73(1), 82-97.

[12] Gal, M. (2004). Monopoly Pricing as an Antitrust Offense in the U.S. and the EC: Two Systems of Belief about Monopoly, Antitrust Bulletin 49, 343-384.

[13] Gerard, D. (forthcoming). Negotiated Remedies in the Modernisation Era, in P. Lowe and M. Marquis (eds), European Competition Law Annual 2013, Hart Publishing, Oxford.

[14] Hyman, D. and W. Kovacic (2012). Competition Agency Design: What's on the Menu?, GWU Legal Studies Research Paper No. 2012-135.

[15] Hyman, D. and W. Kovacic (2013). Competition Agencies with Complex Policy Portfolios: Divide or Conquer?, GWU Legal Studies Research Paper No. 2012-70.

[16] Joliet, R. (1970). Monopolization and Abuse of a Dominant Position ? A Comparative Study of the American and European Approaches to the Control of Economic Power, Collection scientifique de la facult de droit de l'Universit de Liège, Martinus Nijhoff, La Haye.

[17] Jones, A. (2013). Standard-Essential Patents: FRAND Commitments, Injunctions and the Smartphone Wars, European Competition Journal 10(1), 1-36.

[18] Landes, W. M. (1971). An Economic Analysis of the Courts, Journal of Law and Economics, 14(1), 61-108.

[19] Mariniello, M. (2014). Commitments or Prohibition? The EU Antitrust Dilemma, Brugel Policy Brief, Issue 2014/1.

[20] Motta, M. and de A. de Streel (2006). Excessive Pricing and Price Squeeze under EU Law, in Ehlermann, C. and I. Atanasiu (eds.) European Competition Law Annual 2003: What is an Abuse of Dominant Position, Hart Publishing, Oxford.

[21] Nalebuff, B. (1987). Credible Pretrial Negotiation, The RAND Journal of Economics, 18(2), 198 - 210.

[22] Neven, D. and M. de la Mano (2010). Economics at DG Competition, 2009-2010, Review of Industrial Organization, 37(4), 309-333.

[23] Petit, N. (2013). New Challenges for 21st Century Competition Authorities, Working paper, University of Liege.

[24] Polinsky, A. M. and D. L. Rubinfeld (1988) The Deterrent Effects of Settlements and Trials, International Review of Law and Economics 8, 109-116.

[25] Png, I. (1987). Litigation, Liability, and Incentives for Care, Journal of Public Economics, 34(1) 61-85.

[26] Reinganum, J. and L. Wilde (1986). Settlement, Litigation, a nd the Allocation of Litigation costs, The RAND Journal of Economics, 17(4), 557-566.

[27] Rochet, J.-C. and J. Tirole (2011). Must-Take Cards: Merchant Discounts and Avoided Costs, Journal of the European Economic Association, 9(3), 462?495.

[28] Schinkel, M.-P., L. Tóth and J. Tuinstra (2014). Discretionary Authority and Prioritizing in Government Agencies, Amsterdam Center for Law & Economics Working Paper, no 2014-06.

[29] Schweitzer, H. (2008). Commitment Decisions under Article 9 of Regulation 1/2003: The Developing EC Practice and Case Law, EUI Working Paper LAW N°. 2008/22.

[30] Shapiro, C. (2001). Navigating the Patent Thicket: Cross Licenses, Patent Pools, and Standard Setting in Jaffe, A., J. Lerner and S. Stern (eds) Innovation Policy and the Economy Volume 1, MIT Press, Cambridge MA.

[31] Shavell, S. (1989). Sharing of Information Prior to Settlement or Litigation, The RAND Journal of Economics, 20(2), 183-195.

[32] Wagner-Von Papp, F. W. (2012). Best and Even Better Practices in Commitment Procedures after Alrosa: The Dangers of Abandoning the 'Struggle for Competition Law', Common Market Law Review, 49(3), 929-970.

[33] Wang, G. H., J.-Y. Kim and J.-G. Yi (1994). Litigation and Pretrial Negotiation under Incomplete Information, Journal of Law, Economics & Organization, 10(1), 187-200.

[34] Wils, W. (2006). Settlements of EU Antitrust Investigations: Commitment Decisions under Article 9 of Regulation No 1/2003, World Competition, 29(3), 345-366.

[35] Wils, W. (2008). The Use of Settlements in Public Antitrust Enforcement: Objectives and Principles, World Competition, 31(3), 335-352.

[36] Wils, W. (2011). Discretion and Prioritisation in Public Antitrust Enforcement, in Particular EU Antitrust Enforcement, World Competition, 34(3), 353-382.

[37] Wils, W. (2015) Ten Years of Commitment Decisions Under Article 9 of Regulation 1/2003: Too Much of a Good Thing? Concurrences Journal 6th International Conference 'New frontiers of antitrust' (Paris, 15 June 2015)

[38] Wright, J. (2012). Why Payment Card Fees are Biased Against Retailers, The RAND Journal of Economics, 43(4), 761-780.