

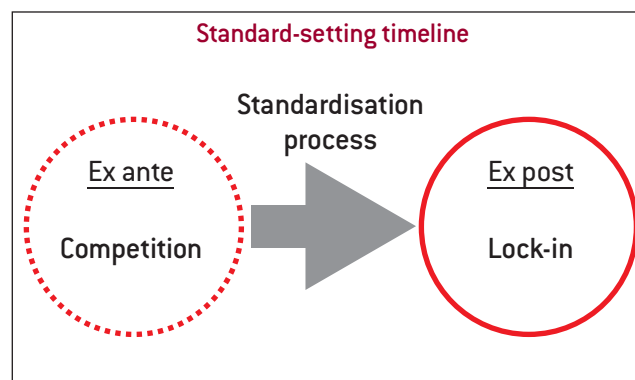
STANDARD-SETTING ABUSE: THE CASE FOR ANTITRUST CONTROL

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THE ISSUE Standards reduce production costs and increase the value of products to consumers; ultimately they significantly contribute to economic development. Standards however entail risks of anti-competitive abuse. After the adoption of a standard, the elimination of competition between technologies can lead to consumer harm. Fair, reasonable, non-discriminatory (FRAND) commitments made by patent holders have been used to mitigate that risk. The European Commission recognises the importance of standards, but European Union competition policy is still seeking to identify well-targeted and efficient enforcement rules.

POLICY CHALLENGE

This Policy Brief identifies and discusses the main sources of direct harm to European consumers that can arise as a consequence of standardisation. Harm can occur through too-high prices for consumers, but can also be incurred if incentives to innovate are undermined. A consistent policy by the European Commission capable of tackling all sources of harm should simply be based on Article 102 of the Treaty on the Functioning of the European Union regardless of whether FRAND commitments are given. Antitrust enforcement should hinge on the identification of a distortion in



Source: Bruegel.

the bargaining process around technology access prices, if it can be shown that the distortion is determined by the adoption of the standard and is not attributable to the pro-competitive merits of any of the involved parties.



STANDARDISATION plays a crucial role in fostering economic development. Standards ensure interoperability of networks and often bring about significant reductions in transaction and production costs due to economies of scale and scope. They increase efficiencies and limit asymmetric information between producers and consumers. They can promote competition, making entry easier into industries with strong network externalities. By tailoring the evolution of the development of a production technology and by spreading relative information, they make investment in innovation more viable, thus reducing the uncertainty surrounding the outcome of research and development. Economic studies have attempted to qualify the macro-economic impact of standards, suggesting that a one percent increase in the overall stock of standards in a country can be correlated with up to one percent GDP growth¹. There has been a constant expansion in the portfolio of European standards, from 1,280 deliverables in 1990 to 18,286 deliverables in 2009 (Figure 1). Most are industry-initiated. The proportion of standards mandated by the European Commission has also increased, reaching 34 percent in 2009.

The European Commission recognises the crucial role of standardisation, but has also been wary about the risks that standardisation might entail, particularly in respect to potential loss of competition. Guidelines published in 2011 on the application of Article 101 of the Treaty on the Functioning of the European Union (TFEU) to cooperation

agreements dedicate an entire section to standardisation². The guidelines lay down the conditions under which standard-setting organisations may not, normally, infringe competition rules, that is: when they minimise the risk of abuse by allowing unrestricted participation by any willing party and by ensuring that the process is fully transparent and that access to standardised patents is provided on fair terms (see the next section). The Commission's Directorate-General for Competition, which is in charge of enforcing competition law in the EU, is also investigating, or has investigated, a number of cases of abuse of dominant position (Box 1 on page 3).

However, it is uncertain if antitrust, or competition law, is the right instrument for correcting distortions of the market induced by the adoption of standards³. Abuses are very difficult to identify. Even when patent holders are required to provide access to their essential patents on fair, reasonable and non-discriminatory (FRAND) terms,

the definition of the fair level for the price to access the standardised technology is an extremely complex task and competition authorities may simply lack the tools to perform it. FRAND commitments moreover have a contractual nature and should normally be enforced via contract law, rather than competition law. The timing of enforcement against unilateral abuse is also an issue, since under EU law only 'dominant' companies can be pursued for abuse. But the adoption of a standard can occur when the company in question does not yet have market power. It therefore does not necessarily follow that abuses related to standards should result in EU competition policy enforcement.

This Policy Brief discusses the competition concern and how that concern can translate into harm for European consumers (section 1). The economics of unfair pricing abuse and a proposal to expand the scope of Commission antitrust enforcement against exploitative abuse are detailed in section 2. Section 3 concludes⁴.

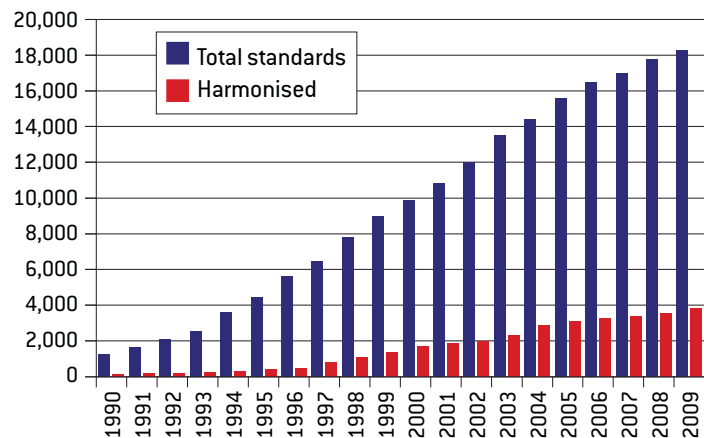
1. Commission Staff working paper: <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=SEC:2011:0671:FIN:EN:PDF>.

2. Guidelines on the applicability of Article 101 TFEU to horizontal co-operation agreements, section 7: <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:C:2011:011:0001:0072:EN:PDF>. Article 101 TFEU lists agreements between undertakings that are prohibited under EU competition law.

3. See, for example, Teece and Sherry (2003).

4. This policy brief is based on the Bruegel working paper: 'The case for European antitrust control in standard-setting' (Mariniello, 2013). The technical discussion of the literature is to be found there.

Figure 1: Evolution of standards in Europe



Source: European Commission, Staff Working Paper SEC (2011) 671 final.



1 EX-POST ABUSE AND EU COMPETITION POLICY

The discussion about the role that competition policy enforcement should play in correcting market distortions arising from the adoption of standards has been dragged into case-specific matters. Contributions by practitioners and academics have been sponsored to support patent-holders' and licensees' opposing views, given the lack of scientific consensus on a unique methodology to enforce antitrust control. Companies have often been accused of using courts or competition authorities for strategic purposes, in order to enhance

their bargaining positions relative to counterparts while negotiating patent access prices. Understanding the role that competition authorities can play therefore requires taking a step back.

1.1 FRAND and the ex-post/ex-ante comparison

After the adoption of a standard (ie ex-post), the chosen technology normally lacks credible substitutes: switching to competing technologies becomes relatively too expensive for manufacturers. The owner of the patented technology might thus have additional market power relative to locked-in licensees, and

might exploit this power to charge higher access rates. In the economic literature this phenomenon is referred to as 'hold-up'⁵. To reduce the risk of hold-up, standard-setting organisations often require patent holders to disclose their standard-essential patents before the adoption of the standard (ie ex-ante) and to commit to license on FRAND terms.

Arguably, the primary purpose of FRAND is to render the adoption of the standard 'competition-neutral' in that it should aim at stripping players of any additional market power accruing to them solely because the standard de-facto rules out any other potentially competing technology. At the same time, patent holders should not be deprived of the reward they are entitled to for their R&D efforts under normal competitive conditions. Making that effective in practice is a tough challenge for academics and practitioners since it requires being able to disentangle the effect on prices due to the restriction of competition from the effect due to the quality of the new technology. Swanson and Baumol (2005) have suggested benchmarking FRAND to the price that would have emerged ex-ante in the context of an auction-like setting in which technologies bid (in the form of lower access prices) to become the standard. Although that approach has some merits, it has an intrinsic limit: ex-ante, little is known about the value of the technologies at stake (see Mariniello, 2011). The value of technologies materialises only when the standard is effectively implemented, when patent holders weigh the relevance of their

BOX 1: THE MAIN EU ANTITRUST CASES

A brief description of the main antitrust cases investigated by the European Commission is given below. No substantial precedent has yet been set, and clear-cut guidance on enforcement against unilateral abuse is still missing. For more on types of infringements, see section 1.

The Rambus case: A case of patent ambush. Rambus was accused of having intentionally withheld information about patents that later were claimed to be relevant to the standard. Rambus settled with the Commission, agreeing on a five year cap on its royalty rates.

The Qualcomm case: Qualcomm was alleged to have infringed its FRAND commitments relating to UMTS*, the 3G mobile phone standard set by the European Telecommunications Standards Institute (ETSI). After three years of investigation, the Commission closed the proceeding with no decision.

The Nokia vs ICom case: ICom was accused of not abiding by the FRAND commitment given to ETSI by the previous owner of its essential patents, Bosch. After Nokia's complaint to the Commission, ICom declared it was ready to abide by FRAND. The Commission welcomed ICom's public declaration without formally opening an investigation.

The Samsung case: Samsung was accused of not abiding by its FRAND commitment by seeking injunction relief in an attempt to block Apple's handset sales. In December 2012, the Commission sent a formal Statement of Objections to Samsung.

The Google-Motorola case: As in the Samsung case, Google-Motorola were accused of not abiding by its FRAND commitment by seeking injunction relief against Apple and Microsoft. In January 2013, a settlement between Google and the Federal Trade Commission in the US limiting Google's ability to seek injunction relief was signed.

* Universal Mobile Telecommunications System

5. See, for example, Shapiro (2001), Layne-Farrar *et al* (2007), Farrell *et al* (2007), and Mariniello (2011).



6. By way of example: the UMTS standard for 3G mobile phone communication was adopted by ETSI, the European Telecommunication Standard Institute, at the end of 1999. 3G networks however started to roll-over in Europe only three years later, in March 2003.

7. Competition authorities maximise consumer welfare, but economists debate whether that, or total welfare, should enter the object function of competition policy (see Motta (2004) for a discussion). Some argue that, under certain conditions, maximising consumer surplus yields optimal social outcomes. See Neven and Röller (2005).

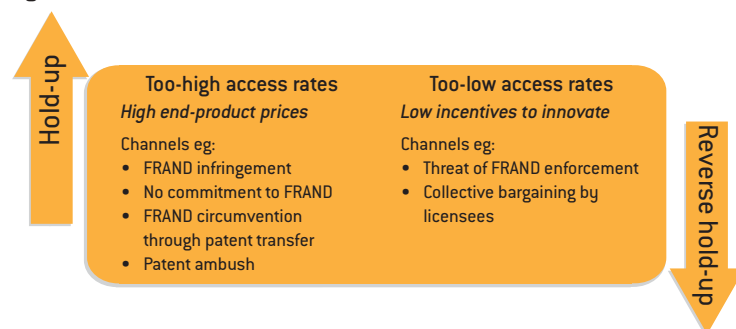
8. Striking the balance between short-term benefits (eg lower end-product prices) and long-term benefits (eg higher expected innovation) is a broad and complex exercise that has been tackled by researchers from different angles (see Aghion et al, 2002). That exercise is outside the scope of this paper.

portfolio relative to other patent holders' portfolios and licensees' production strategies, and when the market gets started and end-customers finally reveal their preferences⁶. The impossibility of ex-ante complete contracting means that FRAND commitments must be flexible enough to allow the technology's price to adapt to its value as revealed ex-post, when information is enhanced and uncertainty minimised. Notably, FRAND is not supposed to be associated with a specific price ex-ante. But the intrinsic ambiguity of the meaning of 'fair' in FRAND leaves ample scope for interpretation, and therefore, for litigation.

1.2 Channels to harm

In current practice, a behaviour is deemed anti-competitive only in so far as it negatively impacts consumer welfare⁷. In this context, consumers might be harmed in essentially three ways. Compared to a situation of fair competition, consumers could face higher product prices, lower quality or variety of products, or reduced expected innovation in the future. The first two types of harm can be an effect of hold-up. The third type of harm is, instead, an effect of 'reverse hold-up' (Figure 2).

Figure 2: Potential sources of harm



Source: Bruegel.

To illustrate the difference between hold-up and reverse hold-up, consider the following stylised example. A certain technology is selected as the standard. A company owns a portfolio of patents essential to that technology. If there is still to be competition between technologies after the adoption of the standard, the patent holder would be able to charge an access rate of four percent per unit sold by a manufacturer using that technology (everything else being equal). Four percent is the FRAND rate, according to the definition explained above. The patent holder however uses the additional market power gained through the adoption of the standard to force the licensee to accept a six percent rate, meaning higher prices for consumers. This is a case of hold-up. In an alternative scenario, the licensee threatens to go to court to force the patent holder to abide by its FRAND commitment, expecting that the patent holder will not be willing to undergo the financial distress caused by a court proceeding, and obtains a two percent rate, ie below the FRAND level. Anticipating that risk, patent holders refrain from investing in innovation in first place. This is a case of reverse hold-up⁸.

1.2.1 Hold-up

In hold-up cases, a patent holder extracts rents that it would not be able to obtain if it still faced competition ex-post (Rey and Salant, 2012). The bluntest case of hold-up is by FRAND infringement. However, not all patent holders that could perpetrate a hold-up abuse should be expected to be bound by FRAND ex-post. A patent holder might simply be unaware that it holds essential patents at the time the standard is selected and, therefore, not required to commit to FRAND. Likewise, it might choose not to participate in the standard-setting process in order not to be forced to commit to FRAND. The EU/US standard-setting process for the Third Generation (3G) mobile standard stalled between March 1998 and March 1999 because two major patent holders for the candidate technologies, Qualcomm and Ericsson, refused to give FRAND commitments, arguably using them as leverage in their negotiations on the development of the standards. Until March 1999, when the companies reached an agreement, the 3G standard-setting process could not make real progress, given the level of uncertainty about the commitments. Patent holders' participation in standard-setting process cannot be taken for granted.

A patent holder may likewise attempt to circumvent FRAND commitments by transferring its patents to a different entity. It would then be unclear if the new owner is bound by FRAND, if no binding rule is provided by standard-setting organisations. A patent holder may also



deceptively hide its ownership of essential patents ex-ante. This is known as ‘patent ambush’, an instance of which was investigated by the European Commission in the context of the Rambus case (see Box 1).

1.2.2 Reverse hold-up

In reverse hold-up cases, the licensee is able to squeeze out from the licensor rates that are lower than what was expected ex-ante for a successful innovation. In that case, the effect is to reduce the future incentive for investment in R&D, therefore depriving consumers of future consumption opportunities. Since only essential patent holders are required to commit to FRAND, little attention has so far been paid to the potential obligations for prospective licensees⁹. Reverse hold-up may appear counterintuitive. Elimination of competition at technology level would naturally be associated with an increase in the market power of the gatekeepers that own patents essential to the technology that won the standardisation contest. Economic theory however points out channels through which a licensee may see its bargaining position enhanced relative to an essential patent holder after the adoption of the standard. Theoretical analysis suggests that reverse hold-up can occur because, ex-post, the parties face an asymmetric risk: the patent holder is bound by its FRAND commitment while the licensee clearly is not. The threat of litigation related to FRAND commitments can thus be used as bargaining leverage, particularly when the counterparty is unlikely to be able to afford the court pro-

ceedings (see Ganglmair *et al*, 2012). Empirical evidence suggests that, particularly for small, financially constrained innovators, the difficulty of accessing litigation might lead to inefficient equilibria in which the patent access price is too low to guarantee optimal innovation¹⁰.

Another channel through which a reverse hold-up abuse can materialise derives directly from the collective nature of the standardisation process. As Farrell (2011) has indicated, when entering into negotiations with licensees, a patent holder has already made its sunk investment in R&D. Since standard-setting is essentially a coordinated process, even if negotiations are bilateral, they are still exposed to biases arising from group dynamics, which can ultimately result in patent holders conceding unreasonably low access fees¹¹. For example, a patent holder may negotiate its access rates with an underlying threat of having its technology cut-off from the standard, despite its potential value to consumers, if licensees are (collectively) confident that no alternative products implementing a superior technology will likely appear in the future. The way in which a standard is shaped during the standard-setting process might also reflect the greater bargaining power of single players within the standard-setting organisations. In the European Telecommunications Standards Institute (ETSI), voting rights are attributed on the basis of yearly turnover. A big company might have up to 45 times the voting power of a small one.

2 FIGHTING ABUSE THROUGH EU COMPETITION POLICY LAW

The European Commission is well placed to intervene in cases in which the distortions arising from the adoption of standards imply an objective risk of harm for consumers. Article 102 TFEU allows for direct action against ‘unfair’ pricing practices¹². There are reasons however, for the Commission to exercise caution, and the Commission has indeed been prudent. So far, enforcement against unfair pricing has been anchored to infringement of FRAND commitments. Antitrust action has only been taken when FRAND commitments have not been infringed if an explicit abuse could be verified ex-ante (as in the case of patent-ambush). But anchoring intervention to FRAND commitments means that not all sources of harm are tackled, and may prove excessively cautious: if the standard introduces a distortion in competition that significantly alters the bargaining process between the parties, there could already be a legitimate justification for antitrust action.

2.1 Skepticism towards exploitative abuse enforcement

Despite the broad wording of Article 102 TFEU, generally speaking the European Commission is rightfully very careful in intervening directly against unfair pricing abuse. In more than 20 years of antitrust control, the Commission has taken only a handful of decisions related to excessive pricing abuse, most notably the General Motors, United Brands, Deutsche Post and Scandlines cases.

9. The fact that no case of alleged reverse hold-up abuse has been brought into the public domain should not be taken as a signal that this not a problem. As Farrell (2011) puts it: “we... can’t assume that the absence of a dispute means the absence of a problem... So, looking to the frequency of disputes to gauge whether there is or is not a pervasive or serious problem, it seems to me, quite a leap”.

10. See Lanjouw and Schankerman (2004). Other literature is discussed in Mariniello (2013).

11. “The other thing we should think about... is what’s sometimes called the reverse hold-up problem... it could happen that the SSO or its implementer members squeeze the patent holder down to a penny for its intellectual property... There are two things going on there. One is the fact that the patent holder has sunk its research expenses before that negotiation takes place... And the other is the fact that for this to happen, probably you have to have the SSO implementer members



Unless markets are protected by insurmountable and long-lasting entry barriers, high prices are self-correcting: they signal that the market is profitable; entry should therefore be expected to eventually occur and over time erode the monopolist's market power. High prices may also be the necessary reward that, ex-post, justifies the risky investments made when the market was still in development. It is extremely difficult to establish if a price is 'unfair', and competition authorities, as compared to regulatory bodies, lack the expertise to intervene in price-setting matters. Direct price intervention is a tool likely to be subject to political pressure¹³. By intervening, competition authorities risk undermining the natural competitive process, reducing the incentive to enter a market, to innovate or invest in the development of new products, altering the allocation of economic surplus in such a way that the most efficient firms are no longer rewarded for their efforts, and subverting consumers' interests to the interests of rent-seeking politicians.

There exists, however, a grey area where there is a blurring of the boundaries between competition policy and other tools for welfare maximisation, such as regulation, which more naturally encompasses direct price intervention. In situations in which regulatory means are absent or cannot be implemented in a timely way, market power is stably shielded from competitive pressure in the long run, and the observed price effect is due to a past failure of competition policy control, then competition authorities can exert

direct pressure on prices [Motta and de Stree, 2007]. Röller (2007) named those cases in which competition control could not be exerted when it was in effect needed as 'gap' cases. The economic logic underlying the reasoning that supports ex-post intervention in gap cases responds directly to the core critique of non-interventionists. Assuming that no other source of mitigation of market power exists [ie future entry or regulation], the fundamental problem with intervention is that the strength of market power that allows unfair pricing can be the legitimate prize that rewards previous investment. Competition policy cannot take that reward away without undermining dynamic incentives to innovate. But if the abuse originates in a distortion of competition, then lowering the ex-post reward is not undermining a healthy process that fosters innovation. It is discouraging anti-competitive behaviour.

Anchoring intervention to FRAND infringement or a specific ex-ante abuse could therefore seem a reasonable compromise to avoid the risk of harmful antitrust action. It follows the same logic of gap cases: the risk of displacing incentives to innovate is minimised if something wrong in the past behaviour of the company lies behind the observed price.

However, this approach has two critical limits on (a) legal and (b) substantive grounds. In the first case, FRAND commitments have a contractual nature and would seem to be more properly enforced through private law. Competition policy enforcement cannot be conditional on contrac-

tual arrangements between players, without running the risk of losing universality and dragging authorities into market players' private disputes. In addition, even if action is brought when a specific abuse committed ex-ante is verified, such as in the case of patent ambush, there is still a legal hurdle to face. EU antitrust law [Article 102 TFEU] applies only to dominant companies. But if the abuse is committed before the adoption of the standard in order to acquire dominance after adoption, *a fortiori* the player cannot be liable under Article 102 TFEU, because the player was not dominant at the time of the abuse.

The second limit is substantive. Not all sources of harm as described above can be tackled in this way. This applies particularly to the case of reverse hold-up, in which no FRAND infringement can occur, because licensees are not required to commit to FRAND, and no abuse is necessarily identifiable ex-ante.

2.2 Solution: disentangling antitrust action from FRAND

Article 102 guarantees a legal basis for intervention against unfair pricing. At the same time, it is not necessary to link enforcement to ex-ante abuse or FRAND infringement. It is sufficient to verify that the adoption of the standard artificially altered the normal competitive dynamics and empowered a player with significant additional bargaining power, which it would not have been able to enjoy without the adoption of the standard. That is consistent with the underlying logic of the ex-post/ex-ante com-

in some sense negotiating jointly," Farrell (2011).

12. Art. 102 TFEU prohibits "any abuse by one or more undertakings of a dominant position... in so far as it may affect trade between Member States... Such abuse may, in particular, consist in: (a) directly or indirectly imposing unfair purchase or selling prices or other unfair trading conditions" (<http://eur-lex.europa.eu/LexUriServ/LexUriSrv.do?uri=CELEX:12008E102:EN:HTML>).

13. See eg Motta (2004), Motta and de Stree (2007) and Röller (2007).



parison: it is the change in the balance of bargaining powers from ex-ante to ex-post which is potentially harmful and should lead to the antitrust authorities paying attention. That is the underlying logic of Swanson and Baumol (2004) and Mariniello (2011): by comparing ex-ante to ex-post dynamics (conditional on the information which is available ex-post), the authors suggest a methodology to pin down the change in the bargaining power of patent holders. The four screening conditions suggested by Mariniello (2011) aim at identifying the cases in which an abuse could not be identified since there was no increase in bargaining power from ex-ante to ex-post¹⁴. Additional conditions can be conceived of to identify when the bargaining power is effectively and significantly enhanced by the adoption of the standard.

Focusing on the shift of power resulting from the adoption of the standard allows the risk most feared by non-interventionists to be avoided: that the rewards arising from investment in innovation will be wiped out. In fact, if a technology is already recognised ex-ante as the only truly viable technology for the industry, the adoption of the standard might not lend any significant additional market power to patent holders. De facto, patent holders already held market power before the adoption, if their invention was already so successful. If that is the case, then no ex-post abuse can be considered to have taken place. Or, in other words, pursuing an abuse would, under those conditions, run the risk of unduly penalising an already successful

technology, just because it had been formally recognised as the standard. Likewise, the adoption of a standard might not empower a licensee that objectively lacks the financial strength to credibly threaten a patent holder with litigation over a FRAND commitment during the negotiation process, thus forcing it to accept a too-low access price. In those circumstances, reverse hold-up cases should not be pursued.

It follows naturally that antitrust authorities might have a comparative advantage relative to regulatory bodies in implementing this approach. While regulators are better equipped than antitrust authorities to identify the price which maximises social welfare, antitrust authorities are better equipped to assess the impact of an actual or potential loss of competition, and therefore are better placed to reconstruct a competitive counterfactual and identify the existence of an increase in bargaining power due to the adoption of the standard. Despite lacking the deep sectoral knowledge that regulators may have, competition authorities have powerful inquiry tools and are less likely to suffer from industry capture. Inspecting companies' internal documentation and correspondence before, during and after the adoption of the standard can give a good overview of the marginal impact of the adoption on the players' relative bargaining positions¹⁵.

3 CONCLUSIONS

This Policy Brief has explained why practitioners are sceptical about competition authorities'

direct intervention against unfair pricing practices. In particular, economists fear that intervention can further distort competition by penalising operators that might consider monopoly rents as the reward that justifies their initial research investment. That explains why the Commission has been cautious, by linking intervention to the existence of FRAND commitments by patent holders. However, FRAND commitments are contractual agreements between private entities and do not provide for the necessary degree of universality required by competition authorities to tackle all sources of potential market distortion caused by the adoption of a standard.

The key factor that should trigger an antitrust inquiry is if the adoption of a standard has significantly altered the distribution of bargaining power between patent holders and prospective licensees. When such a distortion is identified, antitrust scrutiny should be warranted, regardless of the existence of FRAND commitments. An increase in bargaining power that is only due to the restriction of competition and not to the pro-competitive merits of a market operator should not be used to extract better pricing conditions without being considered a breach of competition law. Identifying the increase in market power and establishing the correct competitive counterfactual is a complex but not unfeasible task that competition authorities are capable of performing, given the powerful inquiry instruments they are endowed with.

14. The suggested conditions are: (1) ex-ante, a credible alternative to the adopted technology exists; (2) ex-ante, prospective licensees cannot reasonably anticipate the licensor's ex-post requests; (3) ex-post, the licensor requests worse licensing conditions than ex-ante; (4) ex-post, the licensee is locked into the technology.

15. See Mariniello (2011) for an overview of the implementable inquiry methodologies.



16. Art. 101 TFEU could in principle address that issue (see also the guidelines for the application of Art. 101 TFEU to horizontal cooperation agreement, <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:C:2011:011:0001:0072:EN:PDF>). However, that is very difficult in practice, particularly when ex-post abuses have an unilateral nature.

17. To give an example from the market for mobile phones: on the licensees' front, in the third quarter of 2012, 25 percent of the global market was supplied by small manufacturers each with less than two percent share (see <http://www.fiercewireless.com/europe/special-reports/analyzing-worlds-11-biggest-handset-makers-q3-2012>). On the licensors' front, a study by iRunway suggests that about 20 percent of patents for 4G technology are held by small and medium-sized companies or NPEs (see <http://www.irunway.com/images/pdf/iRunway%20-%20Patent%20&%20Landscape%20Analysis%20of%204G-LTE.pdf>).

Delinking antitrust enforcement from FRAND commitments while focusing just on the increase in bargaining power induced by the adoption of a standard would therefore avoid legal pitfalls while still responding to the skepticism of non-interventionists.

This approach has several other major advantages. It eliminates the dependency link between competition authorities and the rules of standard-setting organisations, which might not always minimise anti-competitive risks¹⁶. Moreover, any potential distortion of the incentives to participate in the standard-setting process

would be eliminated, if antitrust action is no longer conditional on FRAND commitments. Most importantly, this approach would make it possible to tackle reverse hold-up abuse. While no cases have become public (since FRAND commitments do not bind licensees), there is a clear risk of harm to consumers in the form of lower future innovation.

There exist a significant number of potential or actual market players that could be strongly affected by ex-post hold-up or reverse hold-up abuse. This is particularly true in the case of smaller players, which are more

vulnerable to abuse (they are more sensitive to changes in revenues or costs and they find it more difficult to access the courts to preserve their legitimate claims), and which may represent a significant share of the market¹⁷.

A symmetrical approach towards excessively high and excessively low access prices is the best way to achieve competition policy's ultimate objective: maximisation of consumer welfare, in the form of lower prices today and greater innovation tomorrow.

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