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INTERIM MEASURES IN ANTITRUST INVESTIGATIONS: AN ECONOMIC DISCUSSION

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ABSTRACT

After a period of dormancy, the topic of interim measures (IMs) in antitrust investigations has been brought back into the spotlight in the context of fast-moving digital markets. We analyze historical practices and criteria surrounding IMs in the United States and Europe. Then we present an economic model of the parameters underlying IMs, which can inform the decision of whether to pursue them. The two key parameters needed to determine the benefits of taking an IM are the relative magnitudes of irreparable harm to each party and the probability that the conduct is found to be anticompetitive. A resulting insight is that the overall size of the irreparable harms is not as relevant as their relative size (that is, asymmetry). Increasing both types of harm in the same proportion would not change the decision to use an IM. However, an increase in the overall size of irreparable harms increases the expected benefit from IMs as a tool, if they are used optimally. Finally, we examine the characteristics of the digital economy, finding that while such characteristics are likely to increase the benefits of IMs as a general tool, there is a need to carefully assess IM decisions on a case-by-case basis.

I. INTRODUCTION

After a nearly 20-year period of dormancy, the issue of when and how to apply interim measures (IMs) in antitrust investigations has been brought back into the spotlight. In Europe and the United States, IMs—accelerated procedures for awarding injunctive relief to plaintiffs[1]—have been used only

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[1] Relief of this nature can include conservatory measures, emergency measures or procedures, temporary restraining orders, and preliminary injunctions (hereafter collectively referred to as IMs).

infrequently in cases involving abuse of dominant position, vertical restraints, or other antitrust matters.[2]

This conservative approach to the use of IMs has been rooted in the concern that their accelerated nature will lead to "false positives," that is, IMs forbidding conduct that, at the conclusion of the investigation, is not determined to be anticompetitive after all. In this case, the defendant's business is at risk of being unfairly and punitively constrained during the course of the investigation. Largely for this reason, the European Commission (EC) avoided using IMs for nearly 20 years (European Commission, 2019). Even the French antitrust authority, widely perceived as a champion of IMs, only used the tool eight times between 2008 and 2017 (Burnside, et al., 2018). Additionally, there may also be a perception that monetary damages are sufficient to compensate harm by the end of an investigation.

The question now being raised by some regulators is whether an abundance of caution regarding IMs results in too many "false negatives," allowing anticompetitive conduct to continue during an investigation and generating harm that cannot be compensated for (see, for example, Vasant, 2019; Rochelle Toplensky, 2019). If, ultimately, the regulator or court determines that a defendant's actions are harmful to the plaintiff or society, allowing the behavior to go unchecked may raise concerns that by the time the investigation is over, it will be too late to undo or repair the resulting harm. For example, some commentators criticized the six years it took for the EC to conclude its investigation into Google Shopping, claiming that, by that time, many rival comparison shopping sites had simply grown too weak to compete (Bershidsky, 2017).

The renewed debate over the appropriate use of IMs has been spurred in large part by investigations into the fast-moving digital sector, where network effects can accelerate both the growth and the demise of competitors. Indeed, criticisms of the Google case led European Commissioner for Competition Margrethe Vestager to state in 2017 that she was looking into broader powers to impose IMs (Toplensky, 2017). Subsequently, the EC imposed IMs on Broadcom in October 2019—the EC's first such use in 18 years.

In the UK, Jason Furman and other experts from the Digital Competition Expert Panel also recommended considering the use of IMs for digital markets (Digital Competition Expert Panel, 2019, pp. 103–105). And in France, the competition authority used two IMs against Google, one in January 2019 in a case related to Google AdWords, and more recently in April 2020 in a case related to news publishers. These IMs followed through on a stated desire to ramp up the use of IMs in abuse cases (see European Commission, 2019; Autorité de la Concurrence, 2019; Vasant, 2019). In the latter case, news

[2] Note that such measures may also be used in other types of litigation, for example, in intellectual property (IP) law. For instance, before 2006, they were frequently used in the U.S. in the context of IP disputes. See, for example, Seaman, 2015; Shapiro, 1993.

publishers requested that the search engine be forced to pay to display snippets of articles on Google News. The competition authority granted the request.[3]

Given the speed at which digital markets move, antitrust authorities now are seeking tools or mechanisms to avoid the pitfalls of either over-enforcement or under-enforcement. To help inform this renewed interest, in this article we begin by analyzing the historical practices and criteria surrounding the use of IMs in the United States, the European Union (EU), and France. Then we present an economic model of the parameters underlying IM decisions, which can be used to inform the decision of whether to pursue IMs. The model generates several insights that are relevant to competition policy. Mainly, our model demonstrates that the two key parameters needed to determine the benefits of taking an IM are the relative magnitudes of irreparable harm to each party—in other words, how asymmetric they are and the probability that the conduct is found to be anticompetitive. A resulting insight is that the overall sizes of the irreparable harms are not as relevant as the asymmetry of irreparable harms. Indeed, increasing both types of harm in the same proportion would not change the decision to use, or not use, an IM. However, an increase in the overall sizes of irreparable harms increases the expected benefit from IMs as a tool, if they are used optimally. We conclude by examining the characteristics of the digital economy that underlie the renewed debate over the use of IMs in antitrust investigations. We find that while such characteristics are likely to increase the benefits of IMs as a general tool, there is a need to carefully assess IM decisions on a case-by-case basis.

II. BACKGROUND ON INTERIM MEASURES: UNITED STATES AND EUROPE

Different jurisdictions apply different criteria to determine when to impose an IM. However, regardless of which criteria are used, a critical question in antitrust matters is how to determine the relative risk of harm resulting from either imposing or refusing to impose the IM.

To provide context for this question, we first explore differences and similarities in the guidelines for imposing IMs in antitrust enforcement in the United States, the EU, and France.

A. United States

In the United States, antitrust-related IMs may be requested by either the Federal Trade Commission or the Department of Justice.[4] The IM itself is

[3] The EU adopted a copyright law that required Google to pay publishers for displaying news snippets in Google News. Google responded by removing the snippets for those publications that refused to allow Google to display the article preview (Reuters, 2020).

[4] Private parties rarely move for IMs, and few are granted by the courts. (See Reichenberg, 2013.)

issued by the federal or state court hearing the matter. IMs can be very short and not appealable in the case of temporary restraining orders, or they may be of indefinite duration and immediately appealable in the case of preliminary injunctions (U.S. Department of Justice Antitrust Division, 2017, IV.8).

Before granting IMs, courts in the United States will generally consider four factors that were formalized by Judge Posner and Professor Leubsdorf in 1986 (*American Hospital Supply Co. v. Hospital Products Ltd.*, 1986; see also American Bar Association, 2014):

(1) the likelihood that the plaintiff will succeed on the merits;
(2) the threat of irreparable harm in the absence of IMs;
(3) the balance of irreparable harms to the plaintiff and to the defendant; and
(4) the effect on the public interest.

The first factor relates to the risk of making a mistake when promulgating an IM, whereas the second relates to the urgency behind the IM request (Leubsdorf, 1978). The third factor considers that, although promulgating an IM correctly would save the plaintiff from being harmed, promulgating an incorrect IM would hurt the defendant. This factor has been formalized as the Leubsdorf-Posner rule, which compares the potential benefits of using an IM (that is, reduced harm to the plaintiff, weighted by the probability that the conduct is anticompetitive) and its potential risk (that is, harm to the defendant if the IM is taken and the conduct is not anticompetitive).[5] A prerequisite to the use of IMs in an antitrust context is that harm to a firm stems from anticompetitive conduct.[6]

Finally, the fourth factor considers the effect of the IM on "nonparties" (for example, consumers). These harms would be included in the balance of harms calculation, along with the potential harms to the plaintiff and the defendant.

Both the second and third factors reference irreparability, which also factors into decisions made in the EU and France, and which we discuss in more detail in Section III.A.3.

[5] *American Hospital Supply Co. v. Hospital Products Ltd.*, 780 F.2d 589, 1986 ("[O]nly if the harm to the plaintiff if the injunction is denied, multiplied by the probability that the denial would be an error... exceeds the harm to the defendant if the injunction is granted, multiplied by the probability that granting the injunction would be an error").

[6] Competition authorities follow a two-stage process when assessing damages in antitrust cases. They first must determine if the injury is the type that antitrust laws were designed to prevent (that is, is the conduct anticompetitive?). They then quantity damages to the firm stemming from the anticompetitive conduct (for example, lost profits). See *Brunswick Corp. v. Pueblo Bowl-O-Mat, Inc.*, 429 U.S. 477 (1977), for a legal discussion of these issues.

B. Europe: European Union and France

1. European Union

The EC has promulgated IMs only nine times since 1980, none between 2001 and 2019 (Burnside and Kidane, 2018, p. 3).[7] After the suspension of its IMs in *IMS Health v. NDC Health* following IMS Health's appeal, the EC shied away from using them (Burnside and Kidane, 2018, p. 5) until June of 2019, when the EC declared its intention to impose IMs during its investigation of Broadcom's exclusivity practices (European Commission, 2019).

Since 1980, the EC has been allowed to use IMs only if two conditions are met: (1) the conduct must be *prima facie* anticompetitive, and (2) there must be "proven urgency" (that is, the plaintiff is at risk of serious and irreparable damages or the public interest is at risk of intolerable damages) (Burnside and Kidane, 2018, p. 2). In 2003, the European Parliament added that IMs could be imposed only in the presence of a "risk of serious and irreparable damage to competition" (Burnside and Kidane, 2018, p. 3). Unlike U.S. courts, the EC only considers the harm to the plaintiff or the public interest in the absence of IMs, but does not consider harm to the defendant from the incorrect imposition of IMs.[8]

2. France

France has been hailed as an IM champion, for several reasons. First, private parties often initiate requests for IMs, which are reviewed by the French Competition Authority ("FCA"). Between 2008 and 2016, the FCA reviewed 99 IM requests. However, IMs are still used sparingly: over these nine years, the FCA rejected all but eight of the requests.

Second, the FCA's definition of urgency is broader than those of the EC and the United States. Urgency characterizes situations in which a conduct generates serious and immediate harm to the economy, the at-issue market, consumers, or the plaintiff firm. Contrary to the standards used by the United States and the EC, in the FCA's definition harm does require not irreparability, only irreversibility.[9] This means that whether harms can be compensated at the conclusion of a full infringement investigation is irrelevant. Instead, what matters is whether the competitive landscape can be quickly restored following the investigation.

[7] The average duration of recent non-cartel antitrust investigations is about two and half years, sometimes extending beyond six years. The EC used to make IM decisions within three to eight months (Art, 2015; Burnside and Kidane, 2018).

[8] "In order to qualify as 'urgent,' the case must call for immediate action on the part of the Commission, in order to avoid either a 'serious and irreparable damage' to the party seeking the adoption of interim measures, or to avoid a situation that is intolerable for the public interest" (Moore, 2014).

[9] The FCA has systematically committed to a standard of irreversibility. See Deprez and Bonnet, 2013, pp. 25–32.

Following the new ECN+ Directive, the FCA is expected to increase its use of IMs (see Vasant, 2019).

III. THE ECONOMICS OF INTERIM MEASURES

Given the differences in the criteria underlying the use of IMs, it is useful to consider the fundamental components of an economic model that can be applied across jurisdictions to guide the consideration of IMs. These components are used to derive an "optimal decision rule" that minimizes the expected social harm from either issuing or refusing to issue an IM.

A. Main Features of an Economics Approach

In this subsection, we present a stylized model of IMs, using the Leubsdorf-Posner rule as a starting point. The goal of the model is to highlight the key features underlying IMs and provide insight into the relevant parameters for assessing IMs in a way that can be adapted across jurisdictions. As our model focuses on key features, it abstracts away from certain dimensions (for example, discount rate, uncertainty in measuring harm, timing of IMs), which might appropriately be incorporated within a more sophisticated model.

1. A Balancing Act

An antitrust authority or a court deciding whether to use an IM is faced with the following conundrum: Impose the IM during the investigation at the risk of over-enforcement—that is, make a Type I error—or wait until the end of the investigation at the risk of under-enforcement—that is, make a Type II error? (See, for example, Easterbrook, 1984.) If the decision is correct, there is no incremental harm—either the anticompetitive conduct is stopped early, or the legal conduct is appropriately allowed to continue. The authority or court therefore needs to assess the likelihood and the cost of a mistake, and balance the two alternatives. In other words, it needs to calculate the expected harm of an incorrect IM decision. The size of the harm mechanically depends on whose harm is considered.

2. Urgency

Not all situations warrant IMs—only "urgent" situations. Although the standard for urgency varies by jurisdiction—as discussed in Section II—urgency generally characterizes situations where harm is currently happening (or is imminent) and cannot be repaired (in the case of the United States or the EC) or reversed (in the case of France). If the harm is not imminent, it is optimal to wait so that a more informed decision can be made, thereby lowering the risk of

error. Similarly, if the harm can be reversed or repaired (that is, compensated), it is optimal to wait until a final decision is reached, making an IM unnecessary.

3. Irreparability of Harm

Harm is considered irreparable when it cannot be compensated for at the end of an investigation. Harm is reparable if (1) harm to the plaintiff and society is measurable; (2) the defendant can compensate for such harm; and (3) the legal system can ensure an outcome in which the defendant compensates for all harm.

Those conditions often require careful examination before determining their applicability. First, it can be difficult to accurately measure the full harm caused by a behavior, especially when innovation is harmed (see Lichtman, 2003, p. 3).[10] When measuring harm becomes too speculative, appropriate monetary damages may be difficult to assess and obtain compensation for, increasing potential irreparable harm. Second, even when harm is measurable, the defendant may not have the means to compensate for it. Anticompetitive behavior generally leads to inefficiencies, in both the short and the long terms, thereby destroying value and limiting the ability of the defendant to compensate for harm.[11] Third, even if harm was measurable and the defendant had enough reserves for compensation, the legal system may not always offer recourse or full monetary compensation for all harmed parties. For instance, courts typically do not recognize harm to consumers who avoided purchasing a product due to the inflated price caused by the anticompetitive behavior.

In the seminal U.S. case *American Hospital Supply Corp. v. Hospital Products Ltd.* (1986), which addressed the bankruptcy of a medical device manufacturer caused by the termination of a supply contract, harm was considered irreparable if it was difficult to quantify (Leubsdorf, 1978). More recently, irreparability was a decisive factor in the U.S. case *Healthcare Ventures Group LLC v. Premier Pharmacy, Inc.* (2017), which involved two pharmacy services providers. One of them sought an IM due to irreparable harm that would allegedly be caused by two executives moving to its competitor, taking customer relationships and contracts with them (Santoni, 2018). The court rejected the request for an IM on the basis that the harm could be calculated and compensated for, making the harm reparable and the IM unnecessary.

[10] See also *Smith v. Pro Football Inc.*, 593 F.2d 1173, 1189 (D.C. Cir. 1978) ("The computation of damages in antitrust cases invariably has a certain Alice-in-Wonderland quality to it").

[11] In the short term, anticompetitive behavior typically leads to higher prices and lower output, reducing total welfare. In the long term, entry and innovation may be suboptimal (such as when an incumbent prevents the entry of a lower-cost competitor). Although the defendant's profit is higher because total welfare is lower, the defendant's higher profit cannot compensate for the loss in consumer welfare and competitors' profits.

Harm to a defendant caused by incorrectly imposing IMs is also relevant, even though the law does not always consider it explicitly.[12] Symmetrically, for such harm to be reparable, there must be an opportunity for full compensation if the full infringement decision finds the at-issue conduct to be competitive.

B. Optimal Decision Rule for IMs[13]

1. Relevant Parameters

Five key parameters are critical in any IM decision:

1. the time when the IM decision is taken: t_{IM};
2. the time when the full investigation ends: T;
3. the irreparable harm to the defendant and consumers from incorrectly taking IMs at t_{IM} and removing them at T: Type I Irreparable Harm (H_I);
4. the irreparable harm to the plaintiff and consumers from incorrectly failing to take IMs at t_{IM} and then imposing an injunction at T: Type II Irreparable Harm (H_{II});[14] and
5. the probability that the conduct will be found to be anticompetitive at the end of the full investigation, given current information at time t_{IM}: p.

Using the framework laid out by Judge Easterbrook, Type I Irreparable Harm is the harm that results from an error of Type I, that is, failing to impose IMs when the plaintiff ultimately loses (over-enforcement of IMs), whereas Type II Irreparable Harm results from an error of Type II, that is, failing to impose IMs when the plaintiff ultimately wins (under-enforcement of IMs) (Easterbrook, 1984).[15]

The parameter $\boldsymbol{p}$ is an expected probability. At the time of the IM, the competition authority forms an expectation using current information regarding the likelihood that the alleged conduct is anticompetitive. This probability may differ from the actual probability at the conclusion of the investigation as the competition authority is not operating with full information.[16] The point of the IM is that, when some harms are high, the competition authority cannot afford to wait for the investigation to conclude.

[12] For instance, this is the case in the EU. See Section II.B.1.

[13] This section uses a framework in which the relevant criteria for harm are the irreparability. This framework can be adjusted to account for a different standard of harms, such as irreversibility.

[14] The time difference between t_{IM} and T removal underlies H_I and H_{II}.

[15] In the model, we abstract from measurement error relative to measuring harms. While harm may be difficult to measure, including measurement error in the model may not result in different conclusions. In particular, a mean-zero measurement error will not affect the model implications. Therefore, we omit it from the main discussion.

[16] Even with full information and the end of an investigation, judges, juries, or competition authorities may still make incorrect decisions. We ignore this type of error.

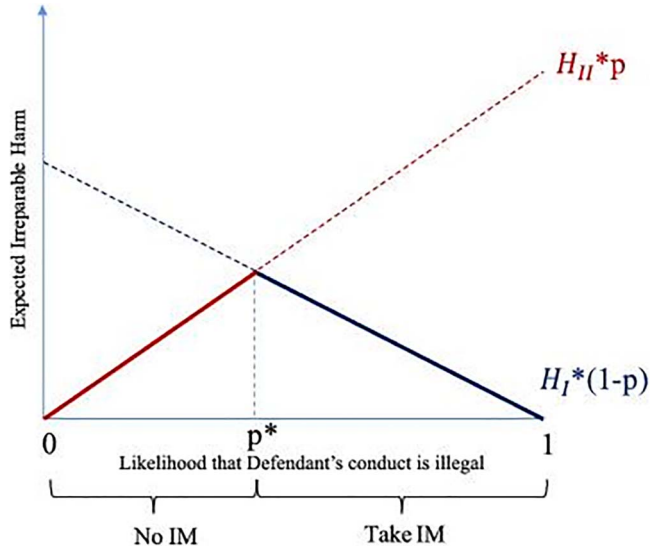

Figure 1. Optimal decision rule for given levels of harms H_{I} and H_{II} depending on the probability that the defendant's conduct is illegal.

2. The Optimal Decision Rule

IMs may be considered when the *expected* irreparable harm (to plaintiffs and consumers) from incorrectly failing to impose IMs (H_{II}) outweighs the *expected* irreparable harm (to defendants and consumers) from incorrectly imposing IMs (H_{I}). Because full information cannot be available when the IM decision is made, the expectation of irreparable harm reflects the probability that the conduct will be found to be anticompetitive. This decision rule can therefore be mathematically translated in terms of the key parameters as follows:

Optimal Decision Rule

$$H_{II}^{*} p > H_{I}^{*} (1 - p)$$

This optimal decision rule minimizes the expected harm in all cases. Figure 1 illustrates how the optimal decision rule varies for given levels of harms H_{I} and H_{II}, depending on the probability that the full investigation finds the conduct anticompetitive. Given fixed irreparable harms, Figure 1 represents the expected harms of imposing an IM (blue line) and not imposing an IM (red line) based on the varying probability that the conduct will be found to be anticompetitive. The probability at which the two lines cross, $p*$, represents the probability at which the antitrust authority should be neutral about whether to enact an IM. The area beneath the red line represents expected Type II harm, and under the blue line, expected Type I harm.

According to the decision rule, the balance is more likely to be tipped toward taking an IM if:

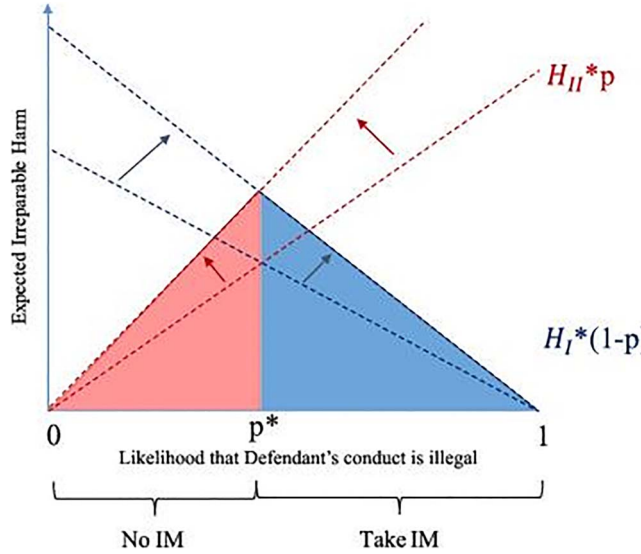

Figure 2. Symmetric increase in harms.

(a) the probability that the at-issue conduct is found to be anticompetitive, $\boldsymbol{p}$, is high; and
(b) there is an asymmetry of irreparable harms, that is, Type II Irreparable Harm, H_{II}, is relatively higher compared to Type I Irreparable Harm, H_{I}.

More formally, $p^* = \frac{H_{\mathrm{I}}}{H_{\mathrm{I}}+H_{II}}$. The probability that defines the optimal rule only depends on both types of harm. The competition authority's decision rule is therefore given as follows:

1) If p lies between 0 and p^* (including p^*), the competition authority does not impose an IM.
2) If p lies between p^* and 1, the competition authority imposes an IM.

An important—if unintuitive—result is that symmetric changes in the key parameters, which affect both sides similarly, do not tip the balance of the decision rule. For instance, if the irreparable harms on both sides doubled, the optimal decision rule would be unchanged. Figure 2 illustrates how symmetrical changes in harms do not affect the balance of harm and, therefore, the optimal decision rule.

For instance, increasing the time it takes to complete a full investigation relative to the time at which an IM decision would be made (that is, the difference between t_{IM} and T) would not tip the balance if it proportionally affects both types of harm. If the investigation lasted twice as long and both

types of harm doubled, there would be no change in the balance of harm. Because of this, the length of time between the IM decision and the conclusion of the investigation will not change the optimal decision rule. However, if the harm did not increase in the same proportions—for example, if one of the sides became likely to go bankrupt as the investigation dragged on while the other did not—the balance would be tipped in favor of the side for which the harm increases relatively more.

C. Transparency and Consistency in the Application of Interim Measures Regimes

Especially for jurisdictions that do not allow for IMs or use them only infrequently, it is important to understand the circumstances that make such tools—that is, an IM regime—most useful. To the extent that IMs are used as intended (even if mistakes are made, as long as the *ex ante* decision is expected to be beneficial), an IM regime will reduce expected irreparable harm (or irreversible harm, depending on the jurisdiction).

In contrast, Figures 3A and B illustrate how the proper use of IMs minimizes overall expected irreparable harm, provided that reliable estimates of the relevant parameters are available. The comparison also illustrates how different parties may endure the harm. In Figure 3A, the red triangle represents the expected Type II Irreparable Harm suffered by the plaintiff and consumers if the probability that the conduct is found illegal is below the threshold p^*. The blue triangle represents the expected Type I Irreparable Harm suffered by the defendant and consumers if the probability that the conduct is found illegal is above the threshold p^*. In a world without IMs, as shown in Figure 3b, the red triangle is unchanged, as not taking an IM is always possible. However, if the probability that the conduct is found illegal is above the threshold p^*, the expected Type II Irreparable Harm suffered by the plaintiff and consumers is represented by the sum of the purple and hashed triangles in Figure 3b. The purple triangle is the expected harm that would have been borne by defendants and consumers if the IM had been a mistake; the hashed triangle represents the total harm that would have been saved by taking an IM. In other words, the expected social benefit of an IM regime will be somewhere in the hashed triangle; the purple triangle represents a change in who is harmed. Regulators must have a consistent and rigorous methodology for making these calculations to assess the utility of IMs.

Everything else equal, if the expected Type II Irreparable Harm (red line) is greater, then an IM regime becomes even more useful. This holds true even if the expected Type I Irreparable Harm increases at the same time, as long as it remains below a certain threshold. For instance, although symmetric changes would not affect the outcome of the optimal decision rule, the larger total expected harm would make the application of an IM regime more beneficial. It is crucial to distinguish the factors that increase the value of the IM regime

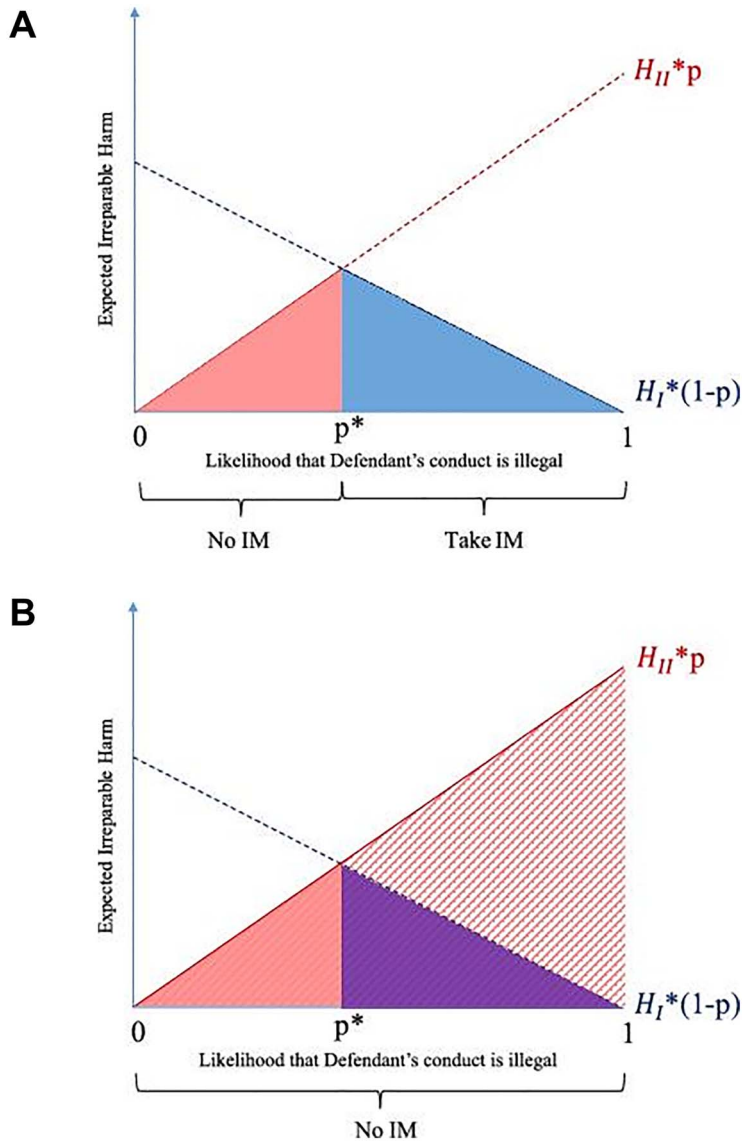

Figure 3. (A) World with optimal use of IM; (B) world without IM.

from those that affect the balance of the optimal rule, as they have different implications. For instance, following a symmetric increase in harm, the harm caused by using an IM incorrectly would also be greater.

The expected benefit of a correct decision, be it to use or not use an IM, grows larger when there is more potential irreparable harm to be minimized. The size of the harm increases if the time between the IM and the conclusion of the full investigation is greater, or if the harms themselves are larger (for

example, because of the particular industry or behaviors). In addition, in a world where anticompetitive conduct is more frequent, there are more occasions to minimize harm, making the IM a more valuable tool.

D. Interim Measures in Practice

The theoretical framework presented above can easily be adapted to assess the impact of the fixed and reputational costs that competition authorities may incur when implementing an IM.

1. Fixed and Reputational Costs May Limit the Use of Interim Measures

Competition authorities may restrict their use of IMs if they are costly to implement (for example, court costs, uses of public and private resources), or if they face reputational costs for incorrect decisions. This could particularly be the case if IMs are contradicted after a full investigation. The reputational cost to an antitrust authority may be higher when an IM proves to have been applied incorrectly (over-enforcement) compared to inaction when an IM would have been beneficial (under-enforcement). Because such costs are asymmetrical (they are only paid if an IM is taken, so that over-enforcement is more costly to the authority than under-enforcement), the balance is shifted toward fewer IMs. The specificities of the costs have different implications, which are modeled and discussed below.

IM-specific fixed costs: If there is a fixed cost, C_{IM}, to requesting an IM,[17] the optimal decision rule changes as shown below:

$$\text{Optimal Decision Rule (with fixed cost)}$$

$$p * H_{\text{II}} > H_{\text{I}} * (1 - p) + C_{\text{IM}},$$

where $p^*_{\text{IM}} = \frac{H_{\text{I}}+C_{\text{IM}}}{H_{\text{I}}+H_{\text{II}}}$ is the probability under which the competition authority is indifferent to adopting an IM when there are fixed costs. Note that $p^*_{\text{FC}} > p^*$ if $C_{\text{IM}} > 0$; that is, the probability that the alleged conduct is anticompetitive must be higher to adopt an IM when there are fixed costs. When the IM cost is fixed (that is, it does not vary depending on the outcome of the investigation), the risk of incorrectly not taking an IM is lower if the stakes (possible harms) are greater. However, if the cost is proportional to the stakes, the status quo will be the same across cases.

Reputational costs: Suppose that instead of fixed costs of implementation, there are reputational costs that are borne only when an IM is incorrectly requested.[18] Reputational costs may vary across jurisdictions and over time depending on, for example, how well established IMs are as a practice; how well

[17] Fixed costs would generally involve all costs, both social and private, necessary to request the specific IM, although an authority may choose to only consider certain costs (for example, on the use of their own resources).

[18] Note that it is enough for the reputational costs to be asymmetric in order for the competition authorities to limit their use of IMs.

a competition authority communicates about the intrinsic costs and benefits of IMs—in particular, their intrinsic uncertainty; and how pro-defendant or pro-plaintiff the jurisdiction is.[19] When these costs exist, the optimal decision rule changes as follows:

Optimal Decision Rule (with fixed reputational cost)

$$H_{\mathrm{II}} * p > (H_{\mathrm{I}} + C_{\mathrm{R}}) * (1 - p),$$

where $p^*_{\mathrm{R}} = \frac{H_{\mathrm{I}}+C_{\mathrm{R}}}{H_{\mathrm{I}}+H_{\mathrm{II}}+C_{\mathrm{R}}}$. With positive costs, $p^* < p^*_{\mathrm{R}}$. As a result, both fixed costs and reputational costs would reduce the use of IMs. The extent to which this occurs depends on the relative magnitude of these costs to the amount of irreparable harm. If, for example, $C_{\mathrm{IM}} \ll H_{\mathrm{I}}, H_{\mathrm{II}}$, then the existence of these costs is immaterial. On the other hand, if fixed and reputational costs are high, they can substantially limit the use of IMs. We illustrate how these additional costs increase the threshold probability of anticompetitive behavior necessary to take an IM in Figures 4A and B.

2. *Interim Measures with Thresholds for Anticompetitive Behavior*

Our model would suggest that the competition authority should, under certain conditions, adopt IMs even when the probability of finding anticompetitive behavior is quite low. In practice, the competition authority may have an intervention standard, that is, a rule that requires the probability of anticompetitive behavior be above a certain threshold, for example, at least 20%.

To illustrate the effect of such a threshold, consider the following example.[20] Let $H_{\mathrm{I}} = 10$ and $H_{\mathrm{II}} = 90$. Under this scenario, the irreparable harm to plaintiffs and consumers of not taking an IM is considerably higher than the irreparable harm to the defendant of incorrectly taking an IM. With these levels of harm, $p^* = \frac{H_{\mathrm{I}}}{H_{\mathrm{I}}+H_{\mathrm{II}}} = 10\%$, that is, if the probability the conduct is anticompetitive is greater than 10%, the competition authority should adopt an IM. However, if the competition authority has a constraint that says it will adopt an IM only if $p \geq 0.2$, they will choose not to adopt an IM in this context. The decision rule would then be to impose an IM only if $p \geq \max(p^*, 0.2)$.

The consequence of this type of rule is that there are scenarios under which IMs are not taken, even when the expected harm could be reduced. Specifically, no IM would be taken if p lies between p^* and 0.2. If the threshold was higher (for example, $p \geq 0.8$), there may be a considerable range of probabilities and corresponding harm levels where IMs would reduce expected harm but are not used.

In practice, having a minimum threshold has several benefits. First, it limits the use of IMs in situations where the conduct is unlikely to be found to be anticompetitive but the relative magnitude of the irreparable harm suggests an

[19] In certain cases, the use of IMs—in particular, if they are held up in the final investigation—could also result in short-term reputational benefits to the competition authorities.

[20] For simplicity, we abstract from any fixed or reputational costs in this example.

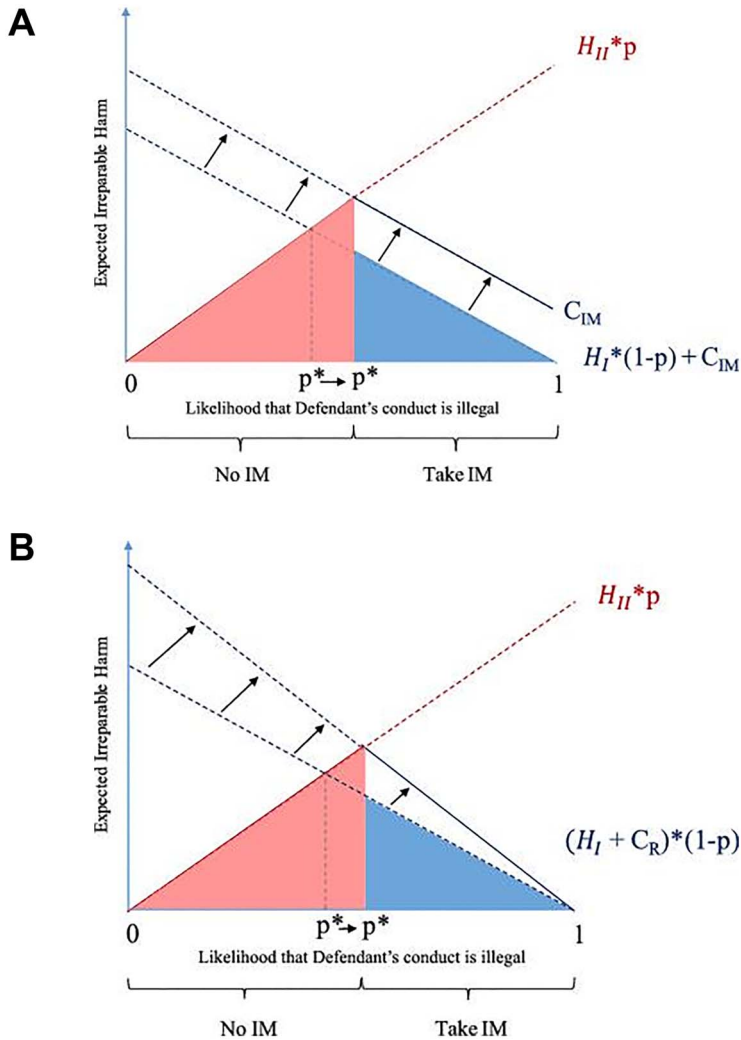

Figure 4. (A) Fixed costs; (B) fixed reputational costs.

IM should be taken. To take an extreme case, suppose $H_{II} > 0$ and $H_I = 0$. Our model then suggests that an IM should be adopted as long as $p > 0$. However, for extremely low values of p, an IM may be overly controversial to adopt.

3. Non-Linear Probabilistic Frameworks

The stylized model presented in Section III is based on a linear probabilistic framework. Although such a framework is standard and well accepted, competition authorities or courts may use a different framework when weighing harm, thereby changing the optimal decision rule. For instance, antitrust

authorities or courts may want to avoid risk or particularly bad outcomes. The stylized model can be modified to account for non-linear probabilistic frameworks. For instance, under risk aversion, the competition authority or court would tend to favor the side with the highest expected irreparable harm.

IV. INTERIM MEASURES IN THE DIGITAL ECONOMY

This section evaluates how the framework established above may be used to account for some common features of digital markets. Digital markets are often characterized by economies of scale or scope combined with network effects. This tends to result in winner-takes-most situations, and in quick growth and fast declines that may pose the risk of increasing the amount of potential Type I and Type II Irreparable Harm over a shorter time period (Tucker, 2018). As a result, there may be more asymmetry in harms in certain cases, and greater harms in general. In particular, digital markets are often characterized by the presence of one or a few larger players and several smaller disrupters. These characteristics make it all the more important to apply a rigorous and standard framework for evaluating potential risks and benefits of either imposing or forgoing IMs, to make the most of the tool while avoiding possible strategic demand by some parties. It would be inefficient and harmful to systematically adopt IMs in digital markets without a careful case-by-case analysis. Digital markets require an extremely cautious application of IMs, as both types of harm can lead to significant damage.

A. Greater Irreparable Harms

Faster growth and decline may increase the size of both Type I and Type II Irreparable Harms, for two reasons. First, in a fast-paced market characterized by network effects and rapid technological change, there are increased concerns about the amount of Type II harm that may occur before a full investigation can be concluded, but also about the amount of Type I harm that may occur if an IM is used. In other words, in winner-takes-most situations, the structure of the market can be altered for the foreseeable future, and more profoundly so, by an incorrect IM decision in either direction in the digital market than in regular markets.

As a concrete example, faster dynamics may increase the chance that a plaintiff could go bankrupt, or lose significant market share, before an investigation concludes. Symmetrically, an incorrect IM could cause a defendant to go bankrupt or lose significant market share. Such bankruptcies or changes in the market structure can have long-lasting consequences with enduring effects such as lost innovation.

As a result, in digital markets characterized by winner-takes-most situations, with fast growth and decline, the need for accurate IMs is even more evident because both under- and over-enforcement have more enduring negative

consequences. In this context, it may be important to remember that the role of IMs is to increase competition, not to pick the market winner. If the conduct is likely to be found to be anticompetitive, IMs may be very beneficial. On the other hand, if the conduct is unlikely to be found to be anticompetitive, an incorrect IM may have long-lasting negative effects. The often-greater harms in digital markets do not imply that IMs should always be used or even used more often, but rather that an IM regime may be more valuable for a competition authority (see III.C); the purpose of the model is to illustrate how relative magnitudes of irreparable harm, as well as the probability the conduct is anticompetitive, factor into an IM decision.

B. Tipping the Balance: A More Asymmetric Sector?

Digital markets often comprise one or a few larger firms along with any number of smaller entrants, which may increase the risk of dominant players influencing markets. Additional concerns may arise when some digital products are part of a larger ecosystem in which multiple markets are interwoven. Such ecosystems may create further opportunities for anticompetitive behavior, but they can also provide significant benefits to their consumers through their integration.

A key element in the use of IMs is the asymmetry of irreparable harms. The features of digital markets can lead to more asymmetry in harms, in two opposing ways. On the one hand, when network effects are strong and winner-takes-most situations are common, small differences in usage may inhibit the growth of or permanently harm a new entrant, while they may affect an established player less severely. In other words, the market may tip to monopoly without a necessary IM. This asymmetry can be illustrated with the hypothetical example of a large social media platform with 500 million users and a new social media platform with 20 million users. If potentially anticompetitive conduct by the incumbent platform causes 10 million users to switch from the new social media platform, the entrant's platform is more likely to be affected by negative indirect network effects than the incumbent's platform. Startups also are more at risk of bankruptcy, which, depending on the circumstances, could be viewed as an irreversible loss of future competition in the marketplace. In this type of scenario, an IM in favor of the smaller party—or, symmetrically, refraining from taking an IM against the smaller party—will ensure that when a decision is made, both firms are still in business.

On the other hand, incorrect IMs against a large firm may lead to harm to a great number of consumers as the investigation proceeds. Even though the harm to each individual may be small, aggregate harm across all individuals through multiple years may be large. For instance, if an IM forces the social media platform with 500 million users to turn off a procompetitive feature that benefits customers, a small harm to each consumer still results in a considerable amount of harm in the aggregate. So while an incorrect IM may

result in a small amount of irreparable harm to the larger firm, a large number of consumers may still suffer greatly from a degraded product.

Any IM decision in a digital market should take into account both possible sources of asymmetry and determine which are relevant and dominant in the particular context of the case.

Additionally, the features of digital markets may lead to more asymmetric irreparable harm stemming from the difficulty of appropriately accounting for the potential harm from a dominant player blocking entry, for example, through degraded quality and lack of innovation. For example, if an innovator is prevented from entering a market, it may prove more difficult to quantify harm from the loss in innovation than from lost profits, potentially resulting in greater irreparable harm.

Finally, it is worth noting that individual countries may not face the same benefits from using IMs or the same harms related to the incorrect use of IMs. This statement is particularly true for smaller countries, whose IMs may not be able to affect the global competitive conditions significantly if they were justified, but would harm their domestic consumers if they were incorrectly taken. In such a context, the incentive to use IMs will be lower.

C. Rigorous Individualized Analyses to Limit the Risk of a Harmful or Strategic Use of Interim Measures

Although there may be good reasons to consider the *possibility* of using IMs more often in cases involving the digital economy, this does not mean that *deciding* in favor of IMs should be automatic—in particular, when a larger player is involved. Careful and rigorous economic analyses of the facts at hand to establish the likelihood that conduct will be found to be anticompetitive, and the magnitude of irreparable harms on both sides, are still prerequisites. Forgoing such analyses could lead to competition authorities or courts incorrectly "picking winners" in winner-take-all markets, or increase the number of requests to use IMs in the digital economy, even though there is no real justifications for them (for example, because the harms to plaintiffs are reparable or limited in magnitude). There would be a serious risk that a firm behaving legally would be harmed by such use of IMs and that market structures would be permanently affected. Perhaps as important, a large number of consumers may also be harmed by the overuse of IMs.

V. CONCLUSION

IMs are neither beneficial nor harmful in and of themselves; they are simply another tool in the toolbox available to regulators during an investigation. As with any tool, it is crucial that they be used in the right way and for the right reasons.

Historically, IMs have been used only sparingly, if at all, in antitrust investigations in the United States, the EU, and France. However, an increase

in investigations into digital markets has spurred renewed interest in IMs, making it all the more important to have available methodologically sound tools for weighing the potential benefits and drawbacks of IMs to stakeholders.

In this paper, we develop a framework that can be used to guide decisions regarding the use of IMs. Our model suggests that the two key parameters to consider are the relative magnitude of irreparable harms among the opposing parties, as well as the probability that the conduct is found to be anticompetitive. We demonstrate that the magnitude of the irreparable harm is, perhaps counterintuitively, not as relevant as the asymmetry in irreparable harms to the use of IMs. Specifically, we show that increasing both Type I and Type II harms in the same proportion would not change the decision to use, or not use, an IM. However, an increase in the overall size of irreparable harms increases the expected benefit from IMs as a tool, if they are used optimally. Finally, we show that reputational costs of incorrectly taking an IM may inhibit their use. We analyze the implications of our model in the context of digital markets, where IMs have become increasingly relevant. Our model suggests that in winner-takes-most industries, which often describe digital markets, special care must be taken in the use of IMs.

The model is designed to be simple to isolate key mechanisms. The cost of this simplicity is that we abstract from several factors that may be relevant to the use of IMs. Future work can add complexity to this general framework. For example, it would be useful to incorporate uncertainty into the size of the irreparable harms, or the probability that the conduct is found to be anticompetitive. Moreover, more consideration regarding the timing of the model may enhance some of the policy implications. Lastly, there are certain contexts where distinguishing between harm to consumers and harm to the plaintiff or defendant firm may be beneficial. A more complicated model could investigate such considerations.

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