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Theoretical insights for its Procedural Design

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ENFORCEMENT OF MERGER CONTROL: THEORETICAL INSIGHTS FOR ITS PROCEDURAL DESIGN

Andreea Cosnita-Langlais * #

Abstract

This paper reviews the theoretical underpinnings of the main procedural choices for merger control enforcement. At each relevant stage we highlight the economic trade-offs behind the corresponding procedural choices: mandatory vs voluntary pre-merger notification, ex ante vs ex post merger review, and the type of decision eventually made, binary or not. The paper also identifies the missing debates that still need formal treatment. Our study provides insight for the optimal procedural design of merger control, and as such may be useful to understand the different choices made by the various jurisdictions for merger policy enforcement.

Keywords: merger control enforcement, procedural design

LA MISE EN OEUVRE DU CONTROLE DES CONCENTRATIONS: UNE APPROCHE THEORIQUE DES PROCEDURES

Résumé

Cet article passe en revue la littérature théorique portant sur les aspects procéduraux du contrôle des concentrations. Il discute donc les arbitrages justifiant les choix institutionnels tels que la notification obligatoire avant la fusion, ou l'examen de la concentration après sa matérialisation, ou bien le type d'acceptation accordée par l'autorité de la concurrence, avec ou sans mesures correctives. L'article identifie également les aspects procéduraux qui n'ont pas encore fait l'objet d'analyses théoriques formelles. En plus d'aborder la question des procédures optimales du contrôle des concentrations, l'exercice peut s'avérer utile pour comprendre les choix institutionnels des différents pays dans ce domaine.

JEL Codes: K21, L41, D82
Mots clé : contrôle des concentrations, règles procédurales

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INTRODUCTION

It has been long acknowledged that in an unregulated market, social and private incentives to merge may differ. This is why public entities are in charge of merger control, which may be viewed as the ability of the state to stop a merger deemed undesirable according to some legal criteria. The enforcement of merger control has been the object of increasing research focus over the years, with a substantial part of the merger policy literature studying the economic foundations of the substantive law applying to merger control, and concluding on the gradually greater convergence reached across jurisdictions[1]. In contrast, the procedural design of merger policies has been much less investigated, and at any rate the different jurisdictions still exhibit persistent differences in terms of institutional design of their respective merger policies (Kovacic et al. [2014]). For instance, the European Commission is the single investigator and decision maker in the European quasi-administrative procedure, whereas the US proceedings make more room for the judiciary, since the choice to prohibit a merger is made exclusively by a judge. Along a different line, almost all jurisdictions require certain mergers to be notified before consummation to the competition authorities, whereas Australia or New Zealand apply a voluntary mechanism where firms choose whether to report or not ex ante their merger.

Such lasting procedural differences are likely to impose substantial transaction costs on international mergers involving different jurisdictions[2]. One might therefore wish to understand what economic arguments favor one or another procedural choice. All the more so that the vast majority of competition laws adopted over the past three decades have preferred the European merger policy enforcement model over the alternative and quite different US procedural system (Bergman et al. [2007]). This again questions the relative costs and benefits of the different procedural choices made by the different countries for their respective merger policies.

This paper attempts to answer these questions by critically reviewing, where available, the economic theory underpinning the main procedural choices of merger control for each of its relevant stages.

To clarify what the paper is about, it helps to state what it is not about. Unlike Kovacic

[1] According to Kovacic [2008], the two largest and most important merger policy enforcement systems, the US and the EU, currently apply the same substantive standards to screen mergers and therefore converge in terms of outcome of merger control.

[2] The 2004 report of the International Competition Network holds that the average external cost per transaction, including the legal fees, merger filing fees, other advisory fees as well as translation and other miscellaneous costs, amounted to € 3.28 million (with a median of € 821,000), while the average external cost per filing was estimated at approximately € 540,000. More recently, the International Chamber of Commerce Recommendations on Pre-merger Notification Regimes (April 2015) highlight that 30% of their survey participants declared that "with respect for transactions for which they have made at least one merger control filing in the last five years, the approximate total costs exceeded USD 500,000" – at http://www.iccwbo.org/advocacy-codes-and-rules/areas-of-work/competition/premerger-control-regimes/.

et al. [2014], this paper will not detail the unfolding of a merger case according to the proceedings of the different jurisdictions, but focus instead on the main stages of merger control (pre-assessment, assessment, decision and post-decision) and discuss the economic trade-offs behind the respective procedures. We also leave aside the substantive issues, such as the legal welfare criterion used to review mergers, or the standard of proof required for merger efficiency gains, or even the amount and type of efficiency gains[3]. Instead, we concentrate on the optimal procedural design of merger control. Finally, note that we discuss separately the merger notification and merger assessment, although clearly they are closely related[4]. By so doing, we aim to better highlight their respective underlying trade-offs: discussing the (type of) notification allows to study the possibility for merging firms to signal information about their merger, whereas the discussion of the timing of the agency's assessment of the merger sheds light on how the agency deals with the information available on the merger.

In what follows we first discuss the choice of notification before assessment. Then we look into the timing of merger review itself, and go on to examine the type of decision eventually made. We conclude by listing the procedural choices still in need of formal analysis.

BEFORE ASSESSMENT: TO NOTIFY OR NOT TO NOTIFY?

Pre-merger notification is meant to leave the agencies enough time to prevent anticompetitive deals and possibly seek modifications before consummation. The dominant mandatory pre-merger notification procedure (Kovacic et al. [2014]) follows the Hart-Scott-Rodino (HSR) Antitrust Improvements Act of 1976, which created in the US the legal obligation for firms to report beforehand mergers above certain size thresholds, and imposed a waiting period before merger consummation. Unlike the US, that had no notification requirement prior to 1976, the EU has had a compulsory pre-merger notification system since the very beginning of its European Community Merger Regulation[5]. In contrast, Australia, Chile, New Zealand and the UK leave it up to the firm whether or not to report beforehand their planned merger in a so-called voluntary-notification system: the agencies can then challenge ex post and eventually undo an unreported merger found to be anti-competitive[6].

[3] See Renckens [2007] for a comprehensive survey on the efficiency defense in merger cases. See also Kovacic [2008] for a discussion of the substantive merger law convergence between the various jurisdictions.

[4] The mandatory pre-merger notification typically entails the ex ante merger assessment, before the merger consummation, although in the US it is also possible that the review occur (also) ex post. With voluntary pre-merger notification, if the firms choose not to report the merger, then only the ex post review is possible – this is also the case for non notifiable mergers in the US for instance. Some rare countries (Japan, Argentina, Russia) exhibit post-merger notification regimes. See the OECD [2014] for the whole range of possible combinations notification-assessment in the different countries.

[5]Commission Regulation 139/2004, OJ of 29 January 2004, amending Reg. 4064/1989 OJ L/395 of December 30, 1989.

[6] See the Tesco/Coop merger in the UK, for which the Competition Commission found a substantial lessening of competition after consummation, and was ordered the full unscrambling - http://www.competition-commission.org.uk/assets/competitioncommission/docs/pdf/noninquiry/rep_pub/reports/2007/fulltext/534.pdf.

The main argument in favor of mandatory notification is the opportunity to modify the merger prior to its consummation, through remedy negotiation, and thus avoid costly ex post merger undoing and court litigation on this account. But this is an expensive regime: it involves the notification and filing costs for the firms, as well as a reviewing cost for each and every notified merger for the agency[7]. In contrast, the voluntary mechanism involving ex post monitoring of consummated mergers avoids a large part of these costs and enhances the information available. Basically, the firms' choice to notify beforehand signals private information on their merger type, which the agency can then use when selecting which unreported mergers to control ex post. A rational procedural choice between mandatory or voluntary pre-merger notification should result from balancing these relative costs and benefits, and below we discuss the conclusions reached on this point by the existing models[8].

Choe and Shekhar [2010] offer both a theoretical analysis and an empirical study based on Australian data. Each merger is privately informed about its type, i.e. the couple private benefit-social welfare. Firms maximize private gains from merger net of notification and antitrust litigation costs, whereas the competition agency (CA) maximizes social welfare net of enforcement cost. The firms' initial decision to notify or not prior to consummation entails two distinct subgames. Without ex ante notification, the CA chooses whether to investigate ex post the merger. This review perfectly reveals the merger type, at a cost, and leads either to merger clearance or challenge, that the firms may then litigate in court. Litigation is costly, and involves an exogenous risk for the firms to pay a fine and especially to see their merger undone. The firms' opposite choice of pre-merger notification entails an immediate filing cost for them. Then the CA has to always review the merger, but at a lower cost, since part of the necessary information comes from the firms themselves. If the CA does not clear the merger, the firms face a triple choice: propose costly remedies to make their merger less anticompetitive and thus acceptable, or go on with the merger but then face risky litigation, or simply abandon. Therefore, if allowed, firms weigh the costs of ex ante remedies against those of ex post litigation, given its likelihood, in order to make their signaling choice whether to notify or not.

The compulsory notification yields a pure-strategy separating Bayesian perfect equilibrium in which the mergers with small private benefits are cleared with remedies, those

[7] In Europe, the European Commission received 5742 notifications since 1990 (as of January 2015), but initiated extensive, Phase II, investigations in only 228 cases (3.97%). In the US, the Workload Statistics for the Department of Justice for the fiscal years 2004-2013 indicate that from a total of 14885 HSR notifications received, the Antitrust Division initiated investigations in only 682 cases (4.58%). The others were cleared based on the preliminary review.

[8] Note that the articles discussed in this section do not consider identical frameworks: Choe and Shekhar [2010] compare the pre-merger compulsory notification with the voluntary one. Gonzalez and Benitez [2009] provide an extension by comparing three pre-merger notification regimes: the mandatory notification of all mergers, the mandatory notification of mergers beyond a size threshold, and the voluntary notification. Finally, Johnson and Parkman [1991] consider a completely different setting for their discussion, by comparing the no-reporting regime with the compulsory pre-merger notification.

with large private benefits but anticompetitive are litigated, whereas those with large private benefits but pro-competitive are unconditionally cleared. The voluntary notification leads in turn to a mixed-strategy equilibrium where the CA randomizes the review of un-reported mergers and only the anticompetitive mergers with small private benefits randomize between notifying or not, only to be cleared with remedies eventually. All other merger types pool and do not notify, but face different outcomes if assessed afterwards: pro-competitive deals obtain unconditional approval, anticompetitive deals with large private benefits are litigated, whereas anticompetitive deals with low private benefits are abandoned. Choe and Shekhar [2010] concludes that both the firms and the CA save costs with voluntary notification. This is consistent with their empirical study of Australian data, and a calibrated numerical example even shows that the overall cost savings from the voluntary regime can outweigh the welfare gains from negotiating ex ante remedies under compulsory notification.

Gonzalez and Benitez [2009] use a fairly similar theoretical framework to show that one notification regime may dominate the other, albeit without proposing an empirical validation. Mergers are characterized by their size, which is public information, and their competitive effect, which is the firms' private information, possibly learned by the CA through investigation. The merger review generates hard information at a fixed and exogenous cost. The CA does however observe the anticompetitive risk associated with a merger, but this parameter is not verifiable in front of a third party such as a court of law for instance. The CA is assumed to minimize the total cost from judgment errors and investigation. A further crucial assumption is that the merger size amplifies its welfare effect. The paper compares three possible regimes: the ex ante mandatory notification of all mergers, the ex ante compulsory reporting for beyond-a-threshold deals, and the voluntary pre-merger notification. The last two configurations highlight best the trade-off between the compulsory and voluntary ex ante reporting.

With mandatory pre-merger notification beyond a size threshold, the CA has to determine the latter. For this it takes into account the average competitive risk of the whole population of mergers, since only the size parameter is verifiable. This explains the resulting judgment errors: some mergers with low anticompetitive risk are reviewed only because of their size, while others creating a large competition concern are not reviewed due to their small size. In case of voluntary notification, firms learn their true type and choose whether to notify or not, whereas the CA decides whether to assess unreported consummated mergers. Again, the threat of ex post review and fine is meant to provide firms with incentives to self-select. At the Bayesian Nash equilibrium, the CA commits to a probability of investigation, function of the size of the merger, which induces separation of types: all anticompetitive mergers are ex ante reported and reviewed, whereas all pro-competitive projects are not notified but some of them are controlled ex post.

In this setting, Gonzalez and Benitez [2009] find that the voluntary notification can be welfare dominated. The result relies on the strength of the self-selection incentives. If the fine for unlawful omission to notify is too low and fails to induce self-selection, then the purely voluntary system is dominated by a mechanism contingent on the unique verifiable parameter in the game, the size of the transaction: the voluntary notification is optimal only below a certain size threshold, while the mandatory notification is optimal beyond. Finally, and similarly to Choe and Shekhar [2010], the possibility to solve ex ante the anticompetitive concern through remedies further enhances the optimality of the voluntary regime: the remedies relax the incentive compatibility constraint and help to self-select. Thereby they save on the enforcement cost of the voluntary regime, since the costly investigation effort ensuring self-reporting of anticompetitive projects will now be lower.

Johnson and Parkman [1991] takes a different stand: it supports the mandatory notification regime by arguing the positive impact of the 1976 HSR Act on the duration of merger control proceedings and associated litigation costs in the US, and ultimately on the firms' incentives to merge in the first place[9]. To do so, it compares, both theoretically and empirically, the mandatory pre-merger notification introduced by the HSR Act with the previously existing legal regime of no-reporting, in a model of delayed litigation where the negotiation of remedies prior to consummation will be again crucial[10].

The bottom line of Johnson and Parkman [1991] is that the firms themselves may prefer the pre-merger notification. Prior to the HSR Act, US firms consummated their merger before it was, if ever, reviewed by the agencies. Therefore they were eager to engage in lengthy albeit costly litigation to preserve the acquisition gains in case of a challenge. Instead, the HSR Act reduced the firms' uncertainty w.r.t. a future merger challenge, prior to its consummation. Given the key assumption of endogenous mergers, this model establishes a link between the decision to merge and the duration of antitrust proceedings, hence their cost for the merging firms.

Explicitly, the firms' expected value from the acquisition they plan, net of acquisition costs, depends on the probability of challenge and then for a complaint to be filed. The firms' chances to win in court depends on their litigation expenditures. If the CA prevails, firms will divest assets. Therefore, when the resale value of the initially acquired assets is relatively low, consummating a merger may give the firms strong incentive to engage in protracted litigation, so as to delay the date of divestiture and be able to capitalize on the initial acquisition gains. In that case, if the firms knew in advance that a complaint would be filed, they would likely abandon the merger, unless the acquisition cost is substantially reduced or if the merger is fixed first to avoid the antitrust violation. The remaining mergers would have continued regardless, because they would not fear substantial divestiture in case of challenge, so they would not expect high gains from delayed litigation. In other words, the mergers not deterred and actually materialized are less prone to be engaged in lengthy litigation, which explains that

[9] This is in stark contrast to Choe and Shekhar [2010] and Gonzalez and Benitez [2009], who only consider exogenous mergers.

[10] Note however that, to the extent that ex post studies on the performance of merger remedies commissioned by the FTC [1999] or the European Commission [2005] cast some doubts on their effectiveness, it is likely that the remedy-based arguments in favor of the voluntary notification regime be less striking in reality.

the HSR shortened the duration of antitrust proceedings. The litigation costs savings and the deterrence of "worst" mergers are both arguments in favor of the mandatory ex ante notification.

It thus seems that the theory provides strong arguments in favor of both pre-merger notification regimes. If the agency favors the self-selection effect, which basically allows it to remedy ex ante the anticompetitive mergers, then the voluntary notification regime seems better. But if the agency favors the incentive effect, i.e. deterring firms from undertaking anticompetitive mergers, then the mandatory notification may be a better choice. Therefore the compulsory reporting helps to save on litigation costs, but actually on screening costs as well, thanks to this deterrent effect. This might explain why most countries prefer the mandatory pre-merger notification. One further explanation may be the related procedural choice of the timing of merger review itself, before or after consummation, which we address in the next section.

MERGER ASSESSMENT: WHEN TO REVIEW?

Merger assessment answers the question whether a given merger poses a threat for competition. For this, agencies process the available information on the competitive effect of the merger. The timing of assessment appears crucial for the amount and/or quality of information to process, and thereby for the ultimate decision.

Reviewing mergers ex post, or the "wait and see" approach, allows a more accurate knowledge of the actual merger competitive effect. Its cost is the risk of irreversible market change through the merger's consummation, and the impossibility to "unscramble the eggs" and return to initial market conditions. The "safer" alternative is to review mergers beforehand, so as to be able to prevent the anticompetitive effects. But then the agency has only limited information to process, and needs to forecast the future, since by definition the merger's effects have not yet materialized.

Ottaviani and Wickelgren [2011] offer a model of endogenous merger to address the choice between ex ante and ex post merger control. The firms' expected profit depends on the merger efficiency gains, assumed to be publicly known, but also on the market power effect of the merger, which is uncertain: it can be either high or low, depending on the state of the world. It is socially optimal for the merger to take place only in the "good" state. Should the merger materialize in the "bad" state, the agency will undo it at a cost both for the firms and for social welfare.

Two cases are discussed. First, both the firms and the agency learn the true state of the world after the merger. The benefit of ex post review comes from minimizing the cost of decision errors, since post-merger there is complete information on the merger’s competitive effect, which enables the optimal enforcement decision. The corresponding cost stems from a chilling effect: the risk of costly ex post unscrambling may discourage some mergers which are ex ante socially desirable in expectation. In contrast, the ex ante assessment would allow these mergers to go on. Thus Ottaviani and Wickelgren [2011] highlights a time consistency issue, where the CA’s commitment not to review such mergers ex post can possibly increase social welfare in expectation. The social welfare gain in the good state of the world may even compensate for the social loss in case the bad state occurs and the merger does reduce competition. The opposite case, involving asymmetric information ex post about the merger effect, makes room for signaling and unravels a yet different argument in favor of the post-merger assessment. Basically, the agency is left to infer the true state of the world ex post from the firms' post-merger pricing behavior. The pooling equilibrium of this signaling game yields the same price in both states of the world, and thus the ex post investigation does not offer an informational advantage. Neither does the separating equilibrium, for which the good state exhibits a pricing pattern low enough to discourage mimicking in the bad state. The ex post review gives firms incentives to distort their post-merger behavior in order to enhance chances of approval, which actually yields a welfare gain: this discipline effect leads to an even lower price in the good state of the world.

Cosnita-Langlais and Tropeano [2015] complement and extend the above analysis by considering the effect of remedies and by endogenizing the information available. Here firms are not allowed to choose whether to merge or not, but instead whether to modify their merger project ex ante through remedies[11]. The latter are shown to impact the trade-off between ex ante and ex post assessment, because they affect the agency's decision to exploit the available information.

Cosnita-Langlais and Tropeano [2015] supposes that mergers have both pro- and anticompetitive effects, and the resulting impact for competition is the firms' private information. The key assumption is that the merger control involves the confrontation of hard evidence, which takes place either before or after the merger itself. In order to gain unconditional merger approval, i.e. without costly remedies, the firms need to provide enough hard evidence on the merger's pro-competitive effect to counterbalance the anticompetitive threat identified by the agency. In addition, remedies are less costly for the merging firms if they are undertaken before rather than after the merger[12]. The game allows the CA to decide whether to control mergers ex ante. Then, having observed this, and knowing their true merger type, more or less anticompetitive, the firms privately decide whether to undertake remedies to modify their merger before assessment. Finally, the merger control takes place, with the CA challenging the merger and the merging firms providing counterbalancing information with endogenous probabilities respectively.

The Bayesian perfect equilibria of the game show that the ex post merger control has a twofold impact. First, the threat of ex post control leads certain merging firms to fix the merger

[11] Thus it is not the merger decision but the type of the merger that is endogenous.

[12] Typically, unwinding a consummated merger found to be unlawful is deemed to involve substantial costs for the merging parties, in particular when "unscrambling the eggs" through structural remedies is very difficult due to the strong integration reached by the insiders. See Eckbo and Wier [1985] for instance.

project before its completion, by adopting remedies ex ante. This triggers changes in the population of mergers actually submitted. As a result, the effectiveness of post-merger review relies on its potential screening effect: as long as remedies are costlier for pro-competitive mergers, the risk of costlier ex post divestitures induces a self-selection of mergers according to which the anticompetitive projects will undertake remedies ex ante. This will improve the outcome of merger control if enforced ex post. Second, whenever the merging firms have the opportunity to invest in evidence provision, their investment will be higher in case of ex post enforcement, due to its higher expected cost. As a result, the CA is also induced to collect more proof on the consummated merger's impact, which leads overall to better information in the case of ex post enforcement.

Cosnita-Langlais and Tropeano [2015] concludes that if either the merger’s anticompetitive effect or the risk of overfixing is the dominant concern for the CA, then the ex post assessment is optimal. Indeed, if the CA fears more the risk of anticompetitive effects, the ex post control is preferable because the threat of a "tougher" ex post assessment through costlier remedies will force the anticompetitive mergers to undertake fix-it-first remedies, and may not necessarily push the pro-competitive ones to do the same, i.e. provided that remedies are sufficiently costly for them. If instead the CA wishes to avoid above all overfixing pro-competitive mergers, then again the ex post control will be preferable, because the risky prospect of costlier remedies ex post will encourage the pro-competitive merger type to provide more information than ex ante, thereby helping the CA avoid the very risk of overfixing. As a result, the ex ante assessment will only be preferred whenever clearing anticompetitive mergers without remedies or overfixing pro-competitive ones lead to relatively similar welfare losses.

To sum up, both Ottaviani and Wickelgren [2011] and Cosnita-Langlais and Tropeano [2015] may help to explain why in reality the ex ante review is the preferred choice of most agencies: the uncertainty that the merging firms face w.r.t. their post-merger profits in the first model, and the relatively equally costly decision errors (clearing anticompetitive mergers or overfixing pro-competitive ones, respectively) in the second one.

MERGER DECISION: TO NEGOTIATE OR NOT TO NEGOTIATE?

Having previously established that a given merger raises a competition threat, the agency needs to determine next how that threat can be best eliminated. Basically, it has the choice between a binary decision, involving either a ban or clearance, and a third, intermediate solution, the conditional approval of the merger based on the negotiation of merger remedies[13].

[13] Since 1990, only 6.13% of all mergers notified to the EC have been cleared with remedies. However, 46.9% of the 228 Phase II investigations ended in a conditional approval (as of January 2015). In the US, 142 public challenges in merger cases by the Department of Justice out of 229 HSR 2nd requests for the period 2004-2013 led to 38% of 2nd requests being solved with fix-it-first remedies.

We examine next this non trivial procedural choice by reviewing the theoretical analyses that discuss the opportunity of merger remedies in view of deriving the optimal design of merger policy enforcement.

Cosnita-Langlais and Tropeano [2012] studies the optimal implementation of merger remedies given their interaction with the efficiency defense. This paper questions to what extent it may be optimal for the CA to give up remedies, or, alternatively, the efficiency defense, in order to improve the outcome of merger review.

The model assumes that a merger improves welfare only if it entails efficiency gains. The probability for the merger to create such cost savings or synergies depends on a costly ex ante merger-design effort made by the merging firms. After privately observing the outcome of their effort, the firms submit their merger and possibly also a remedy proposal. In its turn, the CA accepts or bans their proposal. The efficiency defense means that the merger decision takes into account the expected merger efficiency gains. But a merger may be accepted even ignoring efficiency gains if the firms propose to undertake costly remedies. Three enforcement regimes are compared throughout the Bayesian perfect equilibrium of the game: a first regime where the merger decision hinges on both the expected efficiency gains and the submitted remedies, a second one where firms cannot propose remedies and only efficiencies matter, and a third where regardless of efficiency gains firms are constrained to submit remedies for merger approval. The three regimes differ in terms of incentives provided: the first encourages information revelation on efficiency gains, the second gives the highest incentives to exert the ex ante effort necessary to achieve the efficiencies, whereas the third avoids any type of errors. A crucial result is that the first regime enables the self-selection of merger projects: inefficient anticompetitive projects undertake remedies, whereas efficient pro-competitive ones are submitted without. Moreover, the welfare-maximizing choice of regime is conditioned by the quality of information available to the CA as follows. With good information on efficiency gains, it may be optimal for the CA to commit to disregard remedies, i.e. the second regime dominates. With poorer information it is optimal to use both remedies and the efficiency defense, meaning that the first regime is optimal. Finally, with very poor information it can be optimal for the CA to disregard efficiencies and only consider the submission of remedies, i.e. apply the third regime. Thus the paper argues that the optimal use of merger remedies results from the trade-off between their impact on the ex ante merger design and that on the quality of merger review.

Cosnita-Langlais and Sørgard [2014] focus instead on deterrence to examine the welfare effect of introducing merger remedies. The paper considers the firms' decision to merge in the presence of enforcement errors by the agency due to asymmetric information. Basically, the CA commits ex ante to a probability to investigate mergers, and firms decide in their turn whether to merge, which implies a private cost for them. The CA then determines which mergers to control. The enforcement decision involves, for simplicity, exogenous probabilities of unconditional and conditional approvals as well as ban, making room for enforcement type I and II errors[14]. The remedies are supposed to be costly for the merging firms.

Solving the game backwards shows that allowing for merger remedies has a non-trivial effect on the incentives to merge, on the agency's merger control activity level as well as on the welfare impact of merger control. In particular, if the conditional approvals mostly replace former unconditional bans, and the profit difference between conditional and unconditional approval is low enough, then introducing remedies as an option will make mergers in general more profitable for the firms[15]. For a given investigation rate, this will lead to more mergers being proposed. This also means that to obtain the same deterrence as with a "stricter", no-remedies regime, the CA will have to be more active and review mergers more often - hence an additional social cost of conditional approvals. Moreover, because the enforcement involves decision errors, it may encourage the submission of additional mergers that are more likely to be anticompetitive. It thus takes an accurate enough merger control to make sure that the worst, most detrimental mergers are still deterred when remedies are used. But even assuming that the worst mergers get deterred, Cosnita-Langlais and Sørgard [2014] shows that allowing for conditional approvals is likely to reduce welfare. Indeed, the conditional approvals are also subject to type I and II decision errors, which leads to a possibly ambiguous welfare effect of merger control enforcement based on remedies: some beneficial mergers that would have been banned in the absence of remedies will get a conditional approval, but some beneficial mergers that would have been cleared unconditionally will now be cleared conditional on remedies. The paper stresses that the remedies may easily be welfare dominated when the conditional clearances replace many previously unconditional ones, as well as a lot of former bans[16].

This conclusion may be particularly relevant for the current merger policy enforcement that relies heavily on merger remedies. In addition, it restates the importance of the underlying trade-off also identified by Cosnita-Langlais and Tropeano [2012]: the optimal use of merger remedies needs to take into account both their ex ante and ex post effects, i.e. their impact on the merger design and that on the outcome of the merger review.

CONCLUDING REMARKS

This paper has briefly examined the theory on the optimal design of merger control procedures. We discussed the welfare trade-offs behind the pre-merger notification, the timing of merger review, and the type of merger decision. The existing literature is relatively scarce,

[14] Type I errors occur whenever pro-competitive mergers are banned, whereas type II errors involve anticompetitive mergers being cleared.

[15] See Seldeslachts et al. [2009] and Duso et al. [2013] for empirical studies suggesting that introducing remedies as an option may signal a "soft" merger policy and thereby encourage firms to merge.

[16] This result is obtained despite neglecting the cost of public enforcement of merger control and assuming that the worst merger do get deterred by public intervention. Therefore the application of remedies can lead to even lower welfare in case of positive enforcement cost and without deterring the most welfare-detrimental mergers.

does not unconditionally support one particular enforcement regime, and much is left to be done: below we list some "missing points", i.e. procedural and institutional choices yet to be accounted for.

Whatever the relevant jurisdiction, the unfolding of merger control always follows the same four steps (Lyons [2004]): the decision whether to review the merger, the merger review, the enforcement decision and the appeal. The latter is the only occasion for judicial involvement in the administrative, European-type merger policy enforcement. In contrast, a court ruling is indispensable to block a merger in the judiciary US merger control system, where neither the DoJ nor the FTC can issue prohibition decisions. The welfare trade-off behind the choice between the administrative and judiciary regimes has not been yet explored, although the different incentives they provide have already been hinted at (Kovacic et al. [2014]).

Another procedural choice to be formally explained is that between unique vs multi-agency setting. This is yet another striking difference between the EU and US merger policies. According to the one-stop-shop principle, the EC is the only authority in charge of controlling European-size mergers. In contrast, the US merger control process exhibits a vast multiplicity of entities that can enforce it at the national, federal level (Robertson and Roush [2013]): not only do the Antitrust Division of the DoJ and the FTC share federal authority to review mergers, but this does not prevent state level enforcement, even for national-scope mergers. Furthermore, US sectoral regulators (such as the Federal Communications Commission for instance) also review mergers both at the federal and state levels.

Finally, even in case of federal approval or remedy-based settlement, private parties such as rivals and even customers may bring case against the merging firms under the US antitrust laws (Balto [2004]). In contrast, European merger control relies exclusively on public enforcement, but then again the relative costs and benefits of private vs public enforcement are yet to be fully explained.

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