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Revisiting Behavioral Merger Remedies in Turbulent Markets: A Framework for Dynamic Competition

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Abstract

Digital platforms, ecosystems, and R&D-intensive sectors pose distinctive challenges for merger control. In these fast-evolving markets, shaped by technological change and shifting competitive dynamics, traditional ex-ante reviews often fall short in anticipating long-term outcomes. This paper proposes a multi-step merger control model that includes a mechanism for remedy revision, allowing authorities to adjust behavioral commitments during their implementation. By embedding structured flexibility into merger decisions, our approach enables remedies to evolve in response to market reconfigurations, strategic conduct, or regulatory insights. The framework aims to ensure that remedies remain proportionate, effective, and legally predictable. By bridging ex-ante assessment and ex-post adaptation, it offers a policy instrument better suited to the uncertainties of dynamic competition.

Keywords

Merger control, merger remedies, dynamic competition, competition policy uncertainties, innovation, digital markets, mergers & acquisitions, merger waves.

JEL Codes

K21, L12, L13, L41.

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Introduction

Is merger¹ control conducive to beneficial innovation or does it unduly restrict (domestic) business expansion? This debate gained renewed attention in Europe after the European Commission's 2019 rejection of the *Alstom-Siemens* merger² and has since intensified amid growing calls for a competition policy that prioritizes industrial competitiveness.³ Traditionally designed to mitigate market foreclosure and dominance expansion, merger control is now increasingly scrutinized for its impact on innovation-driven efficiencies⁴ and, more broadly, on innovation dynamics (Petit and Teece, 2021; Bougette et al., 2024).

At the same time, a considerable number of empirical studies found a decreasing competition intensity across industries in North-American and Western Europe, accompanied by a rise in concentration and market power as well as the emergence of so-called superstar firms (inter alia, Autor et al., 2020; Gutiérrez and Philippon, 2018; Grullon et al., 2019; De Loecker et al., 2020; Affeldt et al., 2021; Koltay et al., 2023). Amongst other factors, lenient and weak merger control enforcement has been identified as one of the likely reasons for this development (inter alia, Baker and Shapiro, 2008; Budzinski, 2010; Farrell and Shapiro, 2010; Valletti, 2021). As a result, renewed regulatory initiatives aimed at curbing corporate dominance have emerged on both sides of the Atlantic.

In the United States, weak ex-ante merger control has long been seen as a key factor behind the consolidation of dominant firms, even before the decline in Section 2 Sherman Act enforcement (Kwoka, 2012). The Federal Trade Commission (FTC) has sought to reassess past mergers, and the new 2023 Vertical Merger Guidelines have curtailed efficiency-based defenses. In the European Union, recent reforms – including the Digital Markets Act (DMA)⁵ and a broad interpretation of Article 22 of Regulation 139/2004⁶ – reflect a (marginally) stronger stance on merger oversight, albeit with ongoing legal challenges. Additionally, the *TowerCast* ruling⁷ by the Court of Justice has opened the door for ex-post scrutiny of transactions that previously escaped notification. At the same time, the focus on competitiveness that the new European Commission embraces since late 2024 may include the

¹ Throughout this paper, the term *merger* is used broadly to encompass both mergers and acquisitions. Whether a concentration results from the integration of two firms into a single legal entity, or from the acquisition of control over an otherwise legally independent firm, the economic and legal implications are treated equivalently. In both theory and competition law practice, the distinction between mergers and acquisitions is generally not regarded as analytically significant.

² European Commission (2019) *Decision of 6 February 2019, Case No. M.8677 – Siemens/Alstom*.

³ European Commission (2025) *A Competitiveness Compass for the EU*, COM(2025) 30 final.

⁴ See, for instance, Perrone (2025) discussing potential competitive concerns surrounding market foreclosure, technological access, and exclusionary behavior in the *Arm-Nvidia* case.

⁵ Regulation (EU) 2022/1925 on contestable and fair markets in the digital sector (Digital Markets Act) and amending Directives (EU) 2019/1937 and (EU) 2020/1828. Official Journal of the European Union, L 265, 12 October 2022, pp. 1–66.

⁶ European Commission. (2021). Communication from the Commission Guidance on the Application of the Referral Mechanism Set Out in Article 22 of the Merger Regulation to Certain Categories of Cases 2021/C 113/01, C/2021/1959, J C 113, 31.3.2021, pp. 1–6.

⁷ Court of Justice of the European Union (2023) *Case C-449/21, Towercast SA v European Commission*, Judgment of 16 March 2023, ECLI:EU:C:2023:207.

acceptance of higher (domestic) concentration in favor of – the rather unclear and fuzzy concept of – competitiveness.

When embracing a dynamic look on merger control and related remedies, two dimensions of dynamics – beyond the fundamental conceptualization of competition as a dynamic process (inter alia, Clark, 1961; Hayek, 1978; Kerber, 2023) – need to be considered: the dynamics of mergers and acquisitions and the dynamics of remedial effects in competition.

Dynamics of Mergers & Acquisitions, Merger Waves, and Chains of Mergers

Companies engage in mergers and acquisitions for a wide range of reasons, which can be broadly grouped into three categories: synergy-related motives, market power considerations, and self-interested or behavioral drivers (inter alia, Trautwein, 1990; Hitt et al., 2001; Goel and Thakor, 2009; Budzinski and Kretschmer, 2016; Gaughan, 2017).

(i) Synergy-related motives rest on the expectation that the merged entity will outperform its predecessors through cost efficiencies, such as economies of scale and scope, the rationalization of administrative functions (e.g., consolidating HR or marketing departments), or improved access to financial capital. Gains may also stem from more efficient managerial structures or the combination of complementary R&D capabilities – an especially salient motive in innovation-intensive sectors.

(ii) Market power motives, in contrast, are driven by the pursuit of dominance. These include the ability to extract monopoly rents, enhance bargaining power within vertical chains, or strengthen rent-seeking capacity through increased political influence.

(iii) Finally, some mergers are shaped by managerial incentives or behavioral dynamics unrelated to firm-level efficiency. These include empire-building ambitions, reputational or career concerns, and the self-interest of consultants with a stake in continued deal-making. Mergers may also arise from herd behavior and imitation (“everyone merges, so do we”). Pre-emptive moves or white-knight strategies may reflect similar dynamics, with firms reacting defensively to ongoing consolidation in their sector.

Some of these motives – particularly those falling under the third category – help explain why the empirical record of mergers and acquisitions in terms of profitability and efficiency gains remains mixed at best (inter alia, Agrawal et al., 1992; Andrade et al., 2001; King et al., 2004; Cartwright and Schoenberg, 2006). Overconfidence, often fueled by deal-oriented consultants, along with well-documented difficulties in post-merger integration – such as internal resistance or conflicting organizational cultures – contribute to the frequent underperformance of merged entities. In many cases, this underperformance triggers further dynamics: the merger may be unwound, the acquired assets resold, or new acquisitions undertaken to pursue unrealized objectives. Moreover, several merger motives – such as herd behavior or strategic reactions to rival transactions (e.g., pre-emptive or white-knight mergers) – do not merely explain individual deals but actively contribute to broader sectoral patterns.

As a result, mergers and acquisitions rarely occur in a steady, linear fashion. Instead, they tend to cluster in so-called *merger waves* (Gugler et al., 2012; Harford, 2024), often fueled by

financial market cycles and major shifts in the competitive environment. External shocks – such as disruptive technological breakthroughs – can prompt strategic realignments and asset reconfigurations, leading firms to engage in waves of consolidation in response to evolving industrial dynamics (Federico et al., 2020). These episodes reflect what might be called *co-dynamics* – a co-evolution of business strategies and market structures.

While merger waves refer to the overall occurrence of M&A activity – encompassing both concentration and deconcentration trends – *merger chains* describe sequences of transactions within the same industry, affecting the same markets. The growing body of empirical evidence pointing to increased market concentration over recent decades (see above) is consistent with the presence of such chains, where later mergers often respond strategically to earlier ones. Merger chains thus represent another form of co-dynamics: a process of mutual reinforcement between business decisions and evolving market structures. Unlike merger waves, however, this co-evolution tends to produce unambiguous outcomes – namely, higher market concentration and a decline in competitive intensity over time.

Yet both merger waves and merger chains are typically overlooked in merger control, which continues to evaluate each transaction in isolation, largely detached from the broader dynamics shaping competition in the relevant markets.

Challenges of Behavioral Remedies in a Dynamic Competitive Environment

While merger control increasingly acknowledges that competition is dynamic in nature, current merger review time horizons – typically two to three years (Régibeau, 2023) – still may be insufficient to fully capture entry timelines, innovation cycles, merger chains, or shifts in service integration within digital ecosystems. Additionally, the predictive assessment of merger effects remains highly uncertain, as outcomes depend not only on merging firms' conduct but also on competitive responses (strategic interdependency), technological shifts, and evolving business models.

Behavioral remedies are particularly affected by these uncertainties. Designed to preserve long-term competitive dynamics, they impose constraints on firms' post-merger strategic behavior but are rarely subject to reassessment. In cases like *Google-Fitbit*,⁸ commitments have been imposed for ten years, renewable once. Such lengthy obligations raise concerns about their adaptability, particularly in markets undergoing rapid technological change.

One key challenge is asymmetric information between firms and regulators. Competition authorities lack full visibility over firms' strategic responses to corrective measures, increasing risks of hold up problems and moral hazard. While non-compliance can be sanctioned, even well-intended strategic shifts by firms may unintentionally undermine the remedies' effectiveness. Moreover, as markets evolve, corrective measures may become obsolete, excessive, or even counterproductive – for instance (but not only) through further M&A-activity.

⁸ European Commission (2020) *Google/Fitbit (Case M.9660)*, Decision of 17 December 2020.

Despite these challenges, competition authorities currently lack mechanisms for adjusting behavioral remedies beyond limited downward revisions upon request by the merged firm. This rigidity creates a risk of adverse selection, where the remedies imposed at the time of approval fail to address competition concerns in a rapidly changing market. The limitations of behavioral remedies are particularly relevant given the increasing emphasis on (dynamic) efficiency commitments in merger assessments, as highlighted in the Draghi Report (Draghi, 2024).

Towards a More Flexible Framework for Behavioral Remedies

Existing alternatives to behavioral remedies – such as strengthening ex-post enforcement or prioritizing structural remedies – each have limitations. Stronger ex-post enforcement can be costly and increase legal uncertainty, particularly when undoing a consummated merger (“*unscrambling the eggs*”; Kwoka and Valletti, 2021). Structural remedies, while reducing long-term oversight, may also suffer from rigidity and overreach if designed with imperfect information (Nocke and Rhodes, 2025).

A promising alternative is to introduce greater flexibility into behavioral remedies by incorporating revision mechanisms. These mechanisms could allow for remedies to be strengthened, modified, or replaced over time, based on predefined triggers such as changes in market conditions, competitive dynamics, or firm conduct. Our proposal, building on Bougette et al. (2024), advocates for moving from rigid behavioral remedies to adaptable ones, capable of responding to unforeseen market developments and considering the effects of merger chains.

This approach seeks to balance economic efficiency with legal certainty by defining ex-ante procedures for remedy reassessment, along with clear criteria for triggering revisions. The consequences of reassessment could range from adjusting behavioral remedies to activating structural measures if necessary. Ultimately, a flexible remedy framework would allow for competition policy to better account for dynamic competition, ensuring that corrective measures remain proportionate, effective, and relevant over time.

The remainder of the paper is structured as follows. The next part examines the challenges posed by market dynamics and remedy design in merger control, highlighting the limitations of current approaches. We then introduce our proposed framework for remedy revision, detailing the conditions under which behavioral remedies should be reassessed and the procedural safeguards needed to balance flexibility and legal certainty. This is followed by a conceptual discussion of different remedy regimes, contrasting adaptable remedies with more rigid or regulatory approaches. The paper concludes with implications for competition policy in dynamic and innovation-driven markets.

Merger Control between Ex-Ante and Ex-Post Approaches

The Limits of the Ex-Ante Approach in Merger Control

Merger control faces challenges related to the informational limitations naturally associated to the problem of making decisions at the time of the merger announcement about the impact it will have on competition in the future. This notorious issue causes the widespread inadequacy

of corrective measures accompanying conditional approvals (Ezrachi, 2006) and led to assessments that only merger prohibitions are effective to protect competition whereas conditional approvals under obligations (structural and/or behavioral remedies) are widely insufficient (Seldeslachts et al., 2009). Notably, Kwoka (2012) suggests that the phenomenon of excessive concentration in the U.S. tech sector stems more from the insufficiencies of merger control than from a highly restrictive application of Section 2 of the Sherman Act (Lancieri et al., 2023).

Recently, two contributions have underscored the specific limitations of ex-ante merger control in markets marked by technological and competitive turbulence. First, Lancieri and Valletti (2024) argue that traditional merger control practices are inadequate for modern markets, particularly in dynamic and innovation-driven sectors. The authors propose stronger rebuttable structural presumptions as a new approach to merger control, which would shift the burden of proof for exceptional concentration advantages onto merging parties. Under this framework, all mergers above specific thresholds would be presumed harmful unless the companies could demonstrate merger-specific efficiencies that would be shared with consumers and result in tangible welfare gains.

Their proposal draws attention to the structural weaknesses of current antitrust enforcement, particularly the informational and resource asymmetries between regulators and firms – disparities that are especially acute in fast-moving sectors such as digital platforms and pharmaceuticals. Under this approach, ex-ante presumptions would be adapted to the realities of innovation markets, where dynamic competition renders conventional market definition especially problematic (Budzinski and Stöhr, 2025) and where the nature of the combined innovation capabilities (Petit and Teece, 2021) may be decisive for the innovation potential of the merged entity. Such a framework would also mitigate the risks of both under- and over-enforcement in R&D-intensive environments by recognizing the endogenous and evolving nature of market structures shaped by innovation.

Second, Fischer (2024) examines a dual framework for competition law enforcement, integrating both ex-ante and ex-post controls, with a focus on the *Towercast* case. This case allows for ex-post merger control in instances where transactions fall below certain thresholds but still have significant competitive effects. This is particularly relevant in high-tech and innovation-driven sectors, where mergers may escape traditional ex-ante scrutiny but have substantial long-term impacts on market structure and innovation.

Fischer's analysis suggests that the ex-post review could serve as a second layer of protection in cases where the innovation potential of a market was not fully assessed during the ex-ante review. By empowering national competition authorities to invoke Article 102 TFEU to regulate mergers retroactively, this policy ensures that even sub-threshold transactions undergo scrutiny if they contribute to dominance or negatively impact residual competition in innovative markets.

Fischer's approach aligns with the need to adapt merger control to dynamic competition, acknowledging that in R&D-driven industries, mergers might reduce competition not just through immediate price impacts, but by stifling innovation and future market rivalry. Moreover, pre-merger and post-merger changes of the competitive landscape through merger

chains have relevant impact on the overall effect on innovation and social welfare which may be overlooked in a more stationary analysis of a single merger project. Taking these perspectives together advocate for a more comprehensive merger control regime, capable of adapting to the evolving nature of dynamic competition in high-innovation industries.

At the same time, it is important to recognize that an ex-post approach to merger control carries several significant drawbacks – most notably: (i) reduced legal certainty, (ii) potential economic inefficiencies, and (iii) the risk of irreversibilities.

(i) Enforcing a modification of a merger proposal – or even prohibiting a merger – constitutes a significant intervention into property rights. Under the rule of law, company ownership entails the fundamental right to dispose of property in accordance with the owners' interests and objectives. Merger control restricts this freedom to conduct business in the name of public and social welfare, with the aim of preventing the emergence of market power or a significant impediment to effective competition. Such intervention thus requires solid justification. This is one reason why mergers and acquisitions are generally permitted – unless they significantly harm competition – whereas cartels are prohibited outright.

Relying solely on ex-post enforcement would necessitate the frequent application of structural remedies such as divestitures, break-ups, or the unbundling of firms in order to safeguard competitive markets. This would entail a serious reduction in legal certainty, as company owners could face recurrent state interventions affecting their property rights, including forced sales of company assets. Beyond its legal implications, this approach is also economically problematic: it could reduce investment incentives and increase financing uncertainty. Ultimately, it may undermine confidence in the institutional foundations of the market economy.

(ii) Unbundling existing companies and splitting them into smaller units is an economically complex and costly process. For this reason, it is widely regarded as a measure of *ultima ratio*, not as a standard tool of merger control. Its limited appeal can be attributed to multiple sources of inefficiency:

- Designing appropriate smaller entities: Disentangling a corporate group requires public authorities to engineer new market structures from a distance – an endeavor emblematic of what Hayek (1975) criticized as the “pretense of knowledge.”
- Dealing with shared functions and departments: Asymmetric information, typically favoring the firm, raises the likelihood of flawed and ineffective restructuring.
- Finding willing buyers: Prospective purchasers of divested assets are fully aware of the forced nature of the sale, which can depress valuations and deter competitive bidding.

In sum, while unbundling may become necessary – particularly in cases where ex-ante merger control has failed to prevent harmful consolidation (Kwoka and Valletti, 2021) – its substantial economic drawbacks justify its use only in exceptional circumstances.

(iii) Irreversibility: Ex-post merger control is prone to fail in addressing certain irreversible effects. These include the foreclosure or deterrence of actual and potential competitors, long-term damage to rivals' investment incentives, and the creation of durable competitive advantages. Additionally, consumer behavior may become locked in due to scale effects, switching costs, or learning effects – rendering post hoc remedies ineffective. Once such

dynamics unfold, competition cannot be meaningfully restored through ex-post interventions. Moreover, enforcement procedures are often lengthy and complex, creating a window of opportunity for anticompetitive combinations to extract rents before any corrective action can be taken.

Overall, there are solid justifications for establishing and maintaining an ex-ante merger control regime, and it is certainly not the aim of this paper to undermine its foundational role. However, increasing awareness of the limitations and blind spots of a purely ex-ante approach calls for renewed attention to the potential of ex-post elements and their principled integration with existing tools. The characteristics of dynamic competition – still insufficiently incorporated into competition economics – further reinforce the relevance of this perspective.

The Demands by a Dynamic Competition Framework

Dynamic Competition and Strategic Adaptation. The conceptualization of competition as a dynamic process understands competition as a continual, strategic interplay among firms, where each firm's strategies evolve in response to the actions of its competitors (dynamic strategic interdependence). Regulatory interventions must therefore account for these dynamics, recognizing that the success of any intervention is contingent on firms' adaptive and creative responses which may align with or undermine the intended regulatory objectives (Wegner, 1997). This interdependent relationship positions competition authorities as active participants within the market, influencing and being influenced by firm behavior.

Competition authorities can engage in either ex-ante or ex-post interventions. Ex-ante measures aim to prevent anticompetitive behaviors before they arise, while ex-post interventions address such behaviors once they are detected, restoring competition and potentially deterring future violations. Although these intervention types may blend in practice, their theoretical distinction is valuable for analyzing the effectiveness of regulatory strategies.

However, intervention outcomes are inherently imperfect due to factors like limited regulatory knowledge, potential conflicts within the regulatory authorities' objectives, and firms' innovative capabilities in strategy adaptation. Firms may respond to regulations by either conforming to existing strategies or devising novel approaches that circumvent intended regulatory outcomes (Wegner, 1997). This adaptability underscores the challenges regulators face, as firm creativity can perpetuate anticompetitive conduct in new forms despite regulatory efforts. Therefore, the decision between ex-ante and ex-post interventions must consider the limitations and internal complexities of regulatory bodies, as well as the unpredictable strategic innovations by firms.

Limitations of Static Assessment in Merger Review. The literature has identified deficiencies in the profitability of mergers and acquisitions regarding different success measures, different timeframes, and different industries (see introduction). This points to the phenomenon that companies themselves regularly fail to accurately predict the post-merger performance of their merging companies, which may be due to the dynamic aspects of mergers as sketched in the introduction. Consequently, it cannot be assumed that each merger proposal creates an economic benefit if cleared by the merger control authorities. Moreover, ex-post analysis of

mergers and acquisitions demonstrate that competition authorities also fail to adequately predict post-merger performance, often giving scope to anticompetitive effects (Kwoka, 2014; Stöhr 2024). Starting from the default ex-ante systems of merger control, a number of challenges from dynamic competition aggravate a sound assessment of the proposed merger at the time of the proposal, i.e. before it is consummated, and before its performance can be observed in the market process. Most of the following aspects are related to previous and further M&A-activity in the industry or markets in question, i.e. to chains of mergers (see above):

First, competition authorities must evaluate the prospective competitive pressures exerted by products that are not yet directly substitutable. The emergence of new products with characteristics of imperfect substitutes (e.g., smartphones and tablets in relation to laptops) can significantly erode the market power of a firm that might otherwise be deemed dominant in a static framework. Competition may also arise from existing products within other relevant markets, or from currently complementary products that could gradually become substitutes due to technological advancements or shifts in the strategic positioning of firms introducing these products. Additionally, competitive pressure can stem from acquisitions by the same companies, allowing them to assume control over operators active in complementary markets or those developing technologies aligned with their own. This vertical integration of offerings can create substantial competitive pressure. A pertinent example is OpenAI, indirectly associated with Microsoft, which, through the ongoing development of ChatGPT, is increasingly positioning itself as a competitor in the online search services market.

Second, competition authorities, especially in forward-looking assessments like ex-ante merger control, may encounter significant challenges in predicting market convergence phenomena. These challenges arise from both technological and organizational innovations, as well as from the strategic choices made by firms.⁹

Third, authorities face substantial uncertainties regarding the impact of firms' bundling and tying strategies. Such practices could undermine the relative "independence" of distinct relevant markets. It is also essential to distinguish between two scenarios based on the stage of sectoral dynamics. When a digital market has tipped into a situation of ultra-dominance, the degree of certainty is high when evaluating the effects of an acquisition. Conversely, prior to tipping, the level of uncertainty can be substantial. As noted by Petit and Schrepel (2020), the complexity lies in the fact that a tipping situation cannot be assessed solely on the basis of market shares or barriers to entry and expansion; it also depends on the competitive dynamics as long as the market remains contestable.

Fourth, competition law enforcers may struggle to accurately anticipate firms' strategies that lead to the 'ecosystemization' of specific products or services. Such strategies might result in viewing an ecosystem itself as a relevant market, or in separating the relevant markets of two competing services that no longer directly compete, as they are integrated within distinct ecosystems and are no longer accessible as standalone products. Applied to digital activities,

⁹ See, for instance, the French TF1/M6 case: "*TF1/M6: The Autorité de la concurrence takes note of the decision to withdraw its planned acquisition*", Autorité de la concurrence, 16 September 2022. Available at: <https://www.autoritedelaconcurrence.fr/en/communiqués-de-presse/tf1m6-autorite-de-la-concurrence-takes-note-decision-withdraw-its-planned>

the notion of ecosystem may be defined as “set of products and services jointly provided by a common platform when these products and services are thought to exhibit supply side and demand side linkages between them.” (Garces et al., 2024). Three key characteristics account for the relative strength of digital ecosystems compared to conventional firms. First, they benefit from supply-side linkages that yield significant economies of scale and scope. Second, they capitalize on demand-side linkages arising from both direct and indirect network effects (demand-side size advantages). Finally, they may enhance these advantages through the technical integration of ecosystem services, which facilitates tying and bundling strategies. While these strategies can be welfare-enhancing to some extent, they also enable ecosystems to endogenously reshape market boundaries, reinforce entrenched market positions, and support envelopment strategies (Eisenmann et al., 2011).

Ecosystem Strategies and Competitive Lock-In. The strategic behavior of keystone ecosystem firms can also redefine market boundaries (Budzinski and Stöhr, 2025). Furthermore, these trends toward ecosystemization may reduce competitive pressure by limiting the interoperability of products and services, echoing the platform annexation strategy elaborated by Athey and Scott Morton (2022) in which the acquisition of a complementor serves to impose it to opting for single homing, in the short run, and, in the long run, deprive the competing platforms from the capacities to develop scale economies and network effects. Thus, integrating the complementor may impede multihoming strategies at the expense of competitors, business partners, and users. Strategic acquisitions may contribute to lock the ecosystem and impair the capacities of competing ones to scale. From the example of Google’s acquisition of Double Click,¹⁰ Athey and Scott Morton (2022) show some external growth operations may hurt the competition process by impairing interoperability e.g. by narrowing the relevant market, or through self-preferencing behaviors (Bougette et al., 2022). The acquirer’s post-merger strategy may actively redefine the relevant market to its own advantage.¹¹ Note that the overall effect of this strategy cannot be captured by looking at one of the chain of acquisitions alone. Instead, the *combined effect* of the chain of acquisitions only creates the competition-lessening effect.

In this vein, mergers may lead to consolidation through (in a complex way) interrelated chains of mergers (see additionally the cases of killer (or consolidating) acquisitions; Gautier and Maitry, 2024) or, by contrast, to market entries. It obviously matters for the assessment of competitive effects whether a merger is part of a larger dynamic concentration process or invites new competition, thus the co-evolution of business and competition dynamics matters. Similarly, a platform operator might easily engage in vertical expansion and compete with its own complementors. Envelopment strategies (Eisenmann et al., 2011) and ‘kill zone’ phenomena (Kamepalli et al., 2020) illustrate the different market dynamics generated by dominant operator vertical integration. Moreover, convergences may also result from ecosystemisation of products and services resulting from tying and bundling strategies or from

¹⁰ European Commission (2008) *Google/Double Click (Case M.4731), Decision of 11 March 2008*.

¹¹ Petit et al. (2024) advocate for a cautious approach to merger control from a dynamic competition perspective. A merger should only be approved if the anticipated efficiency gains cannot be achieved through internal growth. Given the foreclosure risks associated with mergers, approval should be conditional on demonstrating that the gains necessarily require the integration of the two firms’ capabilities.

the integration of new functionalities in existing services, functionality previously offered by stand-alone products.

Nevertheless, even if a service is only accessible within a specific ecosystem, competition can still occur, albeit between ecosystems. The intensity of this competition largely depends on the “stickiness” of users when transitioning from one ecosystem to another. This, in turn, is influenced by switching costs associated with sunk costs tied to complementary assets that cannot be transferred across ecosystems, considerations of service interoperability, data portability, as well as factors like network effects and user habits. For example, the EU Commission’s refusal to approve Booking’s acquisition of eTraveli¹² was based on ecosystem theories of harm. The potential efficiency gains were deemed insufficient to offset the lock-in risks for consumers – either due to their ‘natural’ inertia or the firm’s ability to employ dark patterns –, and the competitive effects of demand spillovers between the two products resulting from their integration in the same ecosystem.

Revisiting Market Definition and Remedy Design. Dynamic competition is fundamentally at odds with a static view of relevant markets – one that assumes fixed boundaries and evaluates each merger in isolation. First, innovation, convergence, and strategic repositioning make market boundaries inherently unstable. Second, firms’ conduct and the application of remedies can themselves reshape those boundaries. Third, chains of mergers produce cumulative effects that alter both structure and conduct over time. In such a context, merger control must evolve. Relying solely on ex-ante assessments is insufficient. Rebuttable presumptions regarding market definition and competitive effects should be complemented by flexible remedy revision mechanisms, allowing interventions to adapt as market conditions unfold (Lancieri and Valletti, 2024).

Reconciling Ex-Ante and Ex-Post Approaches in Merger Control

A Merger Control System with Ex-ante and Ex-post Elements: An Exemplary Concept

This subsection introduces a conceptual model of an *adaptive merger control system*, which incorporates the possibility of revising remedies during the implementation phase. The proposal is not intended as a legal blueprint, but rather as an analytical framework to explore the merits and potential drawbacks of integrating ex-post flexibility into traditionally ex-ante merger review procedures. The following subsection examines the parameters that could trigger the activation of such a revision clause before the third subsection outlines the actual revision procedure. Finally, the fourth subsection discusses the potential challenges associated with implementation.

Bougette et al. (2024) propose a two-stage merger control system, combining ex-ante review with the potential activation of a review clause (*rendez-vous* clause) that would allow for the intensification of behavioral remedies or even their substitution with structural remedies if market developments within a specific period call into question the effectiveness of the initially imposed corrective measures. Introducing flexibility clauses as part of the corrective measures

¹² European Commission (2023) *Booking Holdings/eTraveli Group (Case M.10615)*, Decision of 25 September 2023.

mandated by ex-ante merger control enables consideration of both firms' conduct during merger implementation (moral hazard) and the gradual revelation of information due to ex-ante informational imperfections (adverse selection linked to asymmetric and incomplete data at the time of decision-making).

Triggers for Activating the Ex-Post Option

To distinguish between cases where the traditional ex-ante model may suffice (perhaps with reinforced tools) and those that call for the integration of ex-post elements, it is useful –building on the notion of dynamic competition – to categorize mergers according to the extent to which they reshape market conditions and competitive dynamics.

(a) market-continuing, i.e. post-merger keeping the main competition mechanisms, market structure, and market boundaries; here calibrated merger simulations intrapolating the past into the future with the new post-merger entity are useful and ex-ante merger control should work,

(b) market-disrupting, i.e. the merger is a game-changer in regard of competition mechanisms, market structure, and market boundaries; because of the structural break, the pre-merger development tells us little to nothing about the post-merger development, even with the most sophisticated simulation tools. Therefore, pure ex-ante merger control does not work anymore and a second step/stage is required.

(c) concentration-continuing, i.e., the merger is part of a chain of mergers and acquisitions which step-by-step transforms a competition-intensive market in a supracompetitive-rents market. The strategically interdependent mergers and acquisitions – reacting to the merger or being a cause for the merger – may occur almost simultaneously but may also cover a longer time span. Especially, follow-up mergers may be impossible to anticipate by authorities.

(d) society-disrupting, i.e. the merger creates significant political power (lobby force) implying that its self-interest cannot be ignored by competition authorities/regulation in the future. Maybe, the merged company gains a systemic relevance so that jeopardizing its economic success would endanger the stability of significant parts of the economy. Or, it acquires/generates a gatekeeper position across markets, so that it becomes indispensable for the industrial organization of the involved markets/industries/businesses. Or, it simply acquires sufficient lobby force so that it can significantly influence political and social choice processes (Cowgill et al., 2021). Therefore, this company may turn from investment-orientation and competition-on-the-merits to rent-seeking and rent-securing as a profit-maximizing strategy (Tollison, 1982, 2012).

Triggers to include later review options at the time of the merger would be a sufficient probability of relevant post-merger breaks in at least one of the dimensions (type of competition, market structure evolution (including past mergers and incentive-changes post-merger for initiating further mergers, but also including the dynamics of internal growth), and market delineation) and/or the creation of significant political power. This would be a form of operationalization of market dynamics, and indicators could be considered for each dimension accordingly. Introducing review clauses triggered by product introductions, new competitors,

or market evolution and convergence phenomena could be understood as establishing hypotheses about the further development of markets and industries, based upon scenarios with different but sufficient probabilities of being realized. Under our proposal, the realization of these hypotheses or scenarios could serve as a basis for adjusting remedies, allowing for a re-evaluation of competitive assessment parameters to redefine the scope and nature of remedies as needed while maintaining a probabilistic ability for the market players to anticipate such adjustments (in the sense of: the emergence of scenario S_1 triggers remedy vector X_1 , the emergence of scenario S_2 triggers remedies X_2 , etc.).

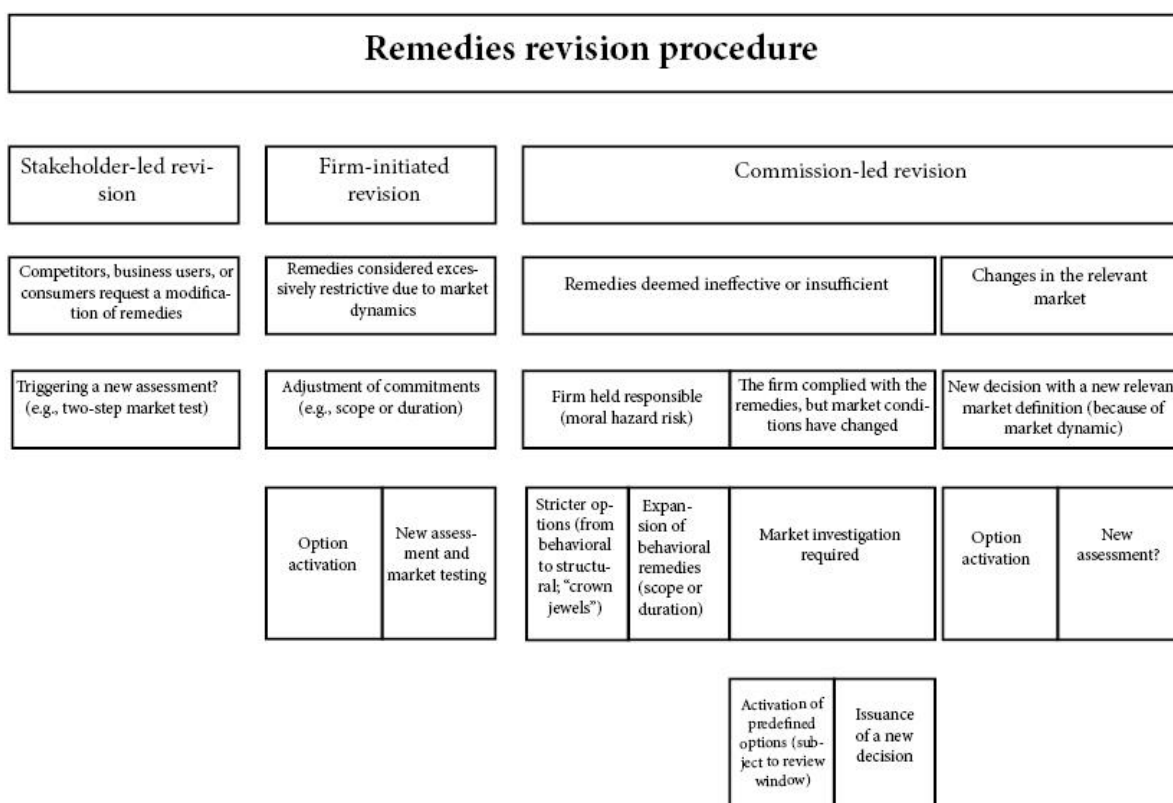
This approach is particularly pertinent in technological R&D-intensive sectors, where due to the development timeframes several potential technological trajectories can be predicted at the time of the merger, with different probabilities of realization – aligning with 1990s literature on innovation markets (Gilbert and Sunshine, 1994; U.S. Department of Justice and Federal Trade Commission, 1995). Furthermore, they also enable the assessment of indirect risks associated with concentration-rising chains of mergers or entry-preventing “killer” acquisitions (Gautier and Maitry, 2024) as well as the implications of integrating an acquired firm into the acquirer’s ecosystem, particularly where the acquired firm is developing potentially competing products. Limitations to this approach include markets where “spontaneous” creativity without long-run development pipelines drives competitive dynamics in truly unpredictable ways (like, for instance, in content markets of the media industries).

Thus, the uncertainty tied to R&D considerations in the initial competitive impact assessment of a notified merger is alleviated (though not perfectly dissolved) if competition authorities can establish scenario-based hypotheses about different paths and trajectories of market dynamics, hypotheses that could be revisited following an appropriate period of observation. This rationale can also be applied to, *inter alia*, multi-sided markets, markets characterized by ecosystem attributes or markets with substantial product differentiation or user-group discrimination. Moreover, it could explicitly be considered how market dynamics are suitable and likely to change market boundaries and, hence, market definition (Budzinski and Stöhr, 2025). For instance, product differentiation may evolve significantly, particularly through the integration of substitutable products into ecosystems (notably digital ecosystems). Strategies handicapping interoperability may reduce substitutability over time, whereas regulatory interventions may mandate its increase. Such shifts may justify upward or downward adjustments to the intensity of behavioral remedies or, in cases of excessive differentiation, structural remedies – based on modified and adjusted market definitions. Likewise, changes over time in platform discrimination among customer categories may necessitate a reassessment of a merger’s effects or the effectiveness of its remedies. Additionally, if firms’ operational architectures evolve – such as through multi-sided platforms or ecosystem models – it may be appropriate to revise remedies to account for changes in pricing structures, the influence of bundling or tying strategies, or the impact of complementary service mechanisms (or strategic reductions in service interoperability).

Proposal for a revision procedure of behavioral remedies

In our framework, the revision of behavioral remedies can be initiated by three key actors: the competition authority that imposed them in its initial decision, the firm responsible for their implementation, and stakeholders whose market activities are affected by these remedies (see Figure 1).

Figure 1. The remedies revision procedure



1) Revision initiated by the competition authority

The authority may request a revision in two scenarios. The first pertains to the effectiveness of the remedies, while the second involves changes in the definition of relevant markets.

- Ineffectiveness of Remedies

We first consider the challenges associated with remedies, distinguishing between two scenarios. The first scenario arises from insufficiently cooperative implementation by the firm, while the second stems from market developments that render the remedies either ineffective, inoperative, or unnecessary.

The first case for activating a remedies review clause may align with a responsive regulation approach extended to competition policy, as suggested by Makris (2023). Within this framework, remedies could be escalated if the merging parties fail to cooperate, for instance,

by not implementing them in good faith.¹³ Thus, the firm may bear responsibility for the lack of effectiveness of the corrective measures imposed as part of a conditional merger approval. Here, the issue is less about the dynamic nature of competition and more about informational asymmetries at the time of the Commission's decision. Specifically, the problem lies in the unobservability of the firm's conduct when implementing the commitments, allowing for opportunistic strategies such as bad-faith compliance or circumvention of obligations. This aligns with the responsive regulation framework, where the primary objective is to penalize non-compliance with corrective measures. The competition authority may initiate proceedings either through direct oversight of the firm's behavior or based on a report from the trustee. In such cases, an additional financial penalty could serve as a deterrent, similar to commitment procedures. However, financial sanctions alone do not restore competitive conditions. Therefore, we propose modifying the imposed remedies to counteract the effects of strategic non-compliance.

Two approaches can be considered. The first consists in substituting behavioral remedies with structural remedies, such as divestitures. The second involves activating a second set of more stringent behavioral remedies that were included as a contingent tranche in the initial decision. This second tranche serves both a remedial and a deterrent function. In one case, the contingent remedy is explicitly defined in the initial decision. In another, the adjustment is left to the Commission's discretion. While the latter provides greater flexibility and better adapts to market dynamics, it also grants the Commission a high degree of discretion, which may raise concerns about the protection of defense rights.

In the second scenario, the ineffectiveness of remedies does not stem from the firm's behavior but rather from market turbulence. Several factors may render the initially imposed remedies inoperative or inefficient, such as further M&A activity and the entry or exit of competitors in the relevant market, market convergence driven by the integration of services into ecosystems (through tying, bundling, or feature integration), or innovation dynamics, which may cause remedies to become obsolete, excessively costly for the dominant firm, or even collectively counterproductive and harmful for consumers. In such cases, corrective measures must evolve to better align with new market conditions. The key challenge is to define both the triggering event for revision and the mechanisms for adjustment.

A revision trigger could be a sectoral inquiry identifying significant market shifts. The actual revision could then take the form of either a new decision by the competition authority, reassessing the appropriateness of the remedies, or the activation of a pre-defined remedy adjustment option included in the initial decision. In particular the formerly explained option to tie pre-defined sets of remedies to scenario-based hypotheses about possible trajectories offers

¹³ The approach could follow a logic similar to that of innovation commitments, as proposed in the Draghi report (2024). The scope, duration, or intensity of remedies could evolve depending on the degree of cooperation (or bona fide) demonstrated by the firm. When the European Commission conducts a preliminary impact assessment of a regulatory act, it adopts an approach that presents multiple options while acknowledging that their order of preference may be revised in response to changing circumstances. This was evident, for instance, in the Impact Assessment Report (IIA) accompanying the proposal for a directive on non-contractual liability related to AI (28 September 2022, SWD(2022) 320 final), where the Commission stated that the preferred option could evolve "in the light of the development of the technology and its uses".

an intermediate solution between a fixed set of alternative remedies and a completely free hand for the Commission. Thus, this may be a more adaptive approach.

- Evolution of Relevant Markets

We now consider the second scenario, in which changes in the definition of relevant markets necessitate a revision of corrective measures. As previously discussed, remedies may need to be revised due to market convergence driven by technological innovations or shifts in business models. However, the case considered here differs in that the trigger for the revision stems from decisions made in the context of antitrust proceedings or merger control.

If the competition authority establishes that certain scenario-based hypotheses about possible post-merger trajectories of the relevant markets are now met (like a change in market definition or an occurrence of a chain of mergers, etc.), a revision clause for corrective measures could be activated to ensure that the behavioral remedies imposed on the merged entity remain both appropriate and proportionate. As in the previous case, corrective measures may be adjusted either upward or downward in terms of their intensity or duration.

2) Revision at the Request of the Firm Subject to Corrective Measures

The firm itself may initiate a request to activate a revision clause concerning the remedies imposed on it. Corrective measures may appear disproportionate or unnecessarily restrictive in light of market developments and changes in the firm's competitive position. To a limited extent, such an option already exists in merger control (Bougette et al., 2024). Our proposal builds on this principle while incorporating procedural safeguards.

These safeguards could take the form of predefined downward revision options embedded in the initial decision, which the competition authority could activate as part of a revision procedure initiated by the firm. To further mitigate the risk of discretionary decision-making, an additional safeguard could involve conducting a market test, modeled on those used in the initial merger clearance process when commitments are required.

3) Revision at the Request of Interested Parties

The final scenario concerns cases where the request for revision comes from stakeholders affected by the remedies. Within a participatory approach to remedy monitoring, such stakeholders could include entities that responded to the initial market test, such as consumers, competitors, or business partners. Unlike the previous case, where firms seek a reduction in obligations, a revision initiated by stakeholders could lead to an upward adjustment of corrective measures.

From the perspective of the competition authority, this procedure offers the advantage of delegating part of the monitoring responsibilities to third parties, particularly business partners, who are directly affected by the remedies. However, to mitigate the risk of opportunistic behavior from these stakeholders, any revision should be subject to a new market test or, if necessary, a formal decision to ensure a fair and evidence-based reassessment of the remedies.

Discussion on Potential Implementation Challenges

The implementation of flexible competitive remedies procedure raises both economic and legal questions, as outlined above, with two key issues requiring further consideration. The first concerns the impact of potential merger chains within a given industry. The second relates to whether revision options should be explicitly included in the initial decision or whether it would be preferable to define parameters that would trigger a new assessment when necessary.

Addressing merger waves could prove particularly complex if the revision of corrective measures is not linked to the behavior of the firm subject to remedies or to market dynamics, but rather to merger decisions involving other companies in the relevant market. A remedy that was initially deemed sufficient in a moderately concentrated market may become inadequate if competing firms subsequently engage in their own consolidation strategies.¹⁴ Introducing greater flexibility in corrective measures raises concerns regarding legal certainty for the merged entity. A firm that has undergone a merger may face the risk of partial divestiture, not due to its own market behavior but as a consequence of its competitors' strategic decisions. This uncertainty could create instability for firms operating in industries prone to chains of mergers and acquisitions, where successive transactions reshape market dynamics. On the other hand, as long as a competitive process is interconnecting the firms in question, the original merger may be influenced by previous mergers and acquisitions and follow-up mergers may be a reaction to the merger in question. As such, in a chain of mergers, the mergers are economically not independent from each other but interconnected through strategic interdependency.

Unfortunately, there is a lack of research on these phenomena, driven by the ongoing dominance of looking at each merger project in isolation: even when multiple mergers occur within the same industry, a chronological assessment principle (or "timestamp logic") prevails. Each transaction is evaluated based on the market structure at the time of its notification. This means that the second merger notified is assessed in a more concentrated market environment, even if the first transaction has not yet been formally approved. However, the first transaction is evaluated independently of the second, without considering its potential market effects. While this approach may be debated, it ensures legal predictability for merging firms by preventing a

¹⁴ To illustrate the potential complexities of remedy revision in the context of merger waves, consider a market initially composed of five competitors. Firm A, holding 45% of the market, merges with firm D, which has a 5% share. The competition authority may choose to impose behavioral remedies rather than structural measures, given that three other competitors remain in the market: B with 25%, C with 15%, and E with 5%. However, if B and C subsequently merge, the market structure shifts from four to three competitors, resulting in a new competitive landscape of 50% (A+D), 40% (B+C), and 10% (E). In reviewing the B-C merger, the competition authority might require structural remedies, such as divestitures benefiting firm E, to maintain competition. The question then arises as to whether such a rebalancing would be sufficient or whether the initial approval of the A-D merger should also be reassessed in light of these new market dynamics. This scenario highlights the potential need for a remedy revision mechanism that allows for adjustments when successive mergers alter competitive conditions. If the market becomes more concentrated than initially anticipated, the remedies imposed on A-D might need to be strengthened. This could involve shifting from light behavioral remedies to asset divestitures in favor of firm E to restore competitive balance. The challenge for competition authorities lies in determining when such a reassessment should be triggered and how to ensure consistency between separate merger reviews while maintaining legal certainty for the firms involved.

retroactive reassessment of remedies based on later market developments. The proposal to introduce ex-post remedy revision mechanisms could challenge this principle by making the remedies imposed on an earlier merger conditional on future competitive developments.¹⁵

The second issue raised by our proposal concerns the very nature of remedy revision. While it is possible to define triggering factors for a revision process, the actual mechanism can take two distinct forms.

The first approach consists of activating a predefined “option” embedded in the initial set of corrective measures. In this case, some remedies are immediately applicable, while others remain conditional, to be triggered only if certain market conditions materialize. Similar mechanisms already exist in EU competition law, notably through the upfront buyer requirement and, more significantly, the crown jewels mechanism, which provides for pre-identified divestitures in case initial remedies prove insufficient. However, a revision process that merely activates a pre-existing clause may fall short of effectively adapting remedies to the evolving constraints of dynamic competition, particularly when the remedies are meant to last over an extended period.

This raises a trade-off between adjustable remedies and fully flexible remedies. The first approach restricts the discretionary power of the competition authority and provides greater predictability for firms, allowing them to anticipate regulatory constraints more effectively. The second approach is potentially more efficient in responding to market changes but shifts the remedy framework towards a regulatory logic, where competition authorities exercise ongoing oversight rather than making a one-time decision. The choice between these two models involves balancing the stability of firms’ expectations with the need for adaptive enforcement in fast-moving markets.

Our fourth section aims to develop a conceptual framework for analyzing the trade-offs between these two approaches to remedy adjustment. To do so, we compare four distinct configurations of corrective measures, each representing a different degree of flexibility in merger control enforcement. The first configuration involves intervention solely on market structures, without imposing any behavioral constraints on the merged entity’s future conduct. The second configuration corresponds to the more common practice in European competition law, where behavioral remedies are imposed for a fixed duration and remain non-revisable. The third configuration introduces predefined adjustment mechanisms within behavioral remedies. Here, the conditions and scope of potential adjustments are explicitly set out in the competition authority’s initial decision. The fourth configuration represents fully flexible remedies, where corrective measures can be adjusted throughout their entire duration to reflect evolving market conditions.

Outline of a Conceptual Framework

Table 1 positions our proposal along a continuum of remedy types, from traditional structural remedies to fully flexible, long-term behavioral constraints. Drawing on Majumdar’s (2021)

¹⁵ See, e.g., European Commission (2018) *Bayer/Monsanto (Case M.8084)*, Decision of 21 March 2018.

typology, this spectrum ranges from one-off interventions aligned with the logic of U.S. antitrust enforcement to adaptive frameworks that resemble sectoral regulation. At one end, structural remedies seek to restore competitive conditions through immediate market reconfiguration; at the other, regulation-type remedies aim to shape firm conduct over time in response to evolving market dynamics. Behavioral remedies occupy the intermediate space within this continuum – a space that our proposal seeks to refine and conceptualize.

A structural remedy seeks to prevent competitive harm by conditioning merger approval on asset divestitures. This approach constitutes a one-shot intervention, granting full strategic autonomy to the merged entity after divestiture, which should mitigate the competitive concerns arising from the merger. Nevertheless, structural remedies may exhibit a degree of flexibility. For example, when a merger is conditioned on an asset divestiture to an upfront buyer capable of exerting long-term competitive pressure, failure to secure such a buyer may trigger an alternative divestiture option – a more attractive asset for potential buyers, known as the crown jewels mechanism. However, the underlying logic remains a one-shot intervention, designed to resolve the competitive issue permanently while preserving the strategic autonomy of market participants.

A second approach in merger control consists of behavioral remedies that constrain the conduct of the post-merger firm over a prolonged period. These measures typically prohibit certain strategies or impose obligations toward competitors to facilitate market access or limit barriers to expansion. While such remedies are fixed at the time of the decision, their duration may be adjusted during implementation. Renewal options may exist, and firms themselves may request modifications or removals of obligations. However, in cases of bad-faith non-compliance, the competition authority may impose financial sanctions. The key characteristic of these remedies is their rigidity (or, at best, partial downward adjustability), which may become problematic when imposed over an extended period.

The third approach – adaptable remedies – is the one we propose in this paper. We distinguish it from a fourth approach, fully flexible remedies, which align more closely with a regulatory logic. In both the third and fourth models, the post-merger firm is subject to behavioral constraints that evolve in response to market conditions and competitive reconfigurations. However, the triggers for adjustment and the underlying rationale may differ.

Under an adaptable remedies' framework, adjustments occur based on predefined triggering conditions (*rendez-vous* clauses) and lead to the activation of options already included in the initial decision. As discussed earlier, requests for revision may originate from the competition authority, the affected firm, or third parties. The conditions for revision can be structured to provide the necessary safeguards for all stakeholders.

In contrast, a fully flexible remedies approach places the competition authority in a regulatory role. The focus is no longer solely on the effectiveness of corrective measures but extends to shaping the competitive dynamics of the market. This approach resembles sectoral regulation, where the goal is to balance relationships between market players rather than merely remedy the effects of a specific merger. A fully flexible approach would introduce broader revision mechanisms, including more extensive triggering conditions, adjustments beyond those foreseen in the initial decision, and remedies whose duration is not predefined but linked to the

firm's market position. The objective shifts from mitigating the impact of a specific merger to actively fostering competition on the merits, particularly in markets characterized by significant structural asymmetries and competitive dynamics that may further reinforce these imbalances.

Table 1. A Typology of Competitive Remedies in Merger Control

Criteria	Structural Remedy	Fixed Behavioral Remedy	Adaptable Behavioral Remedy	Regulation-Type Behavioral Remedy
Objective	Preventing competitive harm by altering market structures	Constraining merging firms' future behavior through fixed commitments	Constraining merging firms' behavior in response to market dynamics	Ensuring a market structure compliant with public policy objectives
Firm's Autonomy	Total autonomy after completing the divestiture	Constrained by fixed obligations (dos and don'ts) for a defined duration	Constrained by adaptable obligations set in the initial decision	Dependent on a regulatory framework without a predefined duration
Triggers	Inability to sell assets to an upfront buyer	Breach of remedy obligations	Three identified in our proposal: (1) Initiative of the competition authority if market delineations evolve, (2) Request by the firm (involving negotiation and a market test), (3) Proposal from stakeholders	Continuous monitoring by a regulatory body with periodic adjustments or renegotiation options
Consequences	Activation of the crown jewels provision; potential prohibition of the merger or reversal	Financial penalties for non-compliance	Adjustment of behavioral remedies (duration, scope); activation of a contract option such as divestiture	Modification of contractual terms or governance rules
Economic Model	Restoring competition by resetting market conditions	Individual rigid contract with exit penalties	Adaptive individual contract with limited discretion, governed by contractual rules and due process safeguards	Market regulation through structured interventions, vertical oversight, and asymmetric measures

Conclusion

From a dynamic perspective, it is essential to incorporate forward-looking considerations into merger control. Innovation continuously reshapes market boundaries, competition mechanisms, and industry structures, making it necessary for merger analysis to include systematic assessments of future developments. Under the prevailing single-step framework, uncertainty about alternative scenarios weakens the enforceability of merger rules, potentially facilitating inefficient concentrations while impeding mergers that could generate long-term efficiencies. Empirical evidence points to the limited effectiveness of remedies, with behavioral commitments performing less reliably than structural ones.

In contrast, a multi-step merger control model – such as the one proposed in this paper – would enable remedies to be revisited and revised over time. By embedding an iterative mechanism for remedy adjustment, authorities could better align interventions with actual market outcomes. Such a framework would also allow merger control to account for dynamic phenomena – such as merger waves and chains or shifts in market delineation – that typically manifest only ex post. In doing so, it offers a way to counteract long-term trends toward higher concentration and declining competition, as documented by recent empirical studies.

The current system, which evaluates each transaction in isolation and largely restricts assessment to short-term effects observable at the time of notification, is ill-equipped to manage structural change. Admittedly, designing and operationalizing a merger control regime that effectively integrates ex-ante and ex-post elements is far from straightforward. Yet the potential benefits – in terms of both economic adaptability and regulatory relevance – make this avenue worth serious and sustained consideration.

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References

- Affeldt P, Duso T, Gugler K and Piechucka J (2021) *Market concentration in Europe: Evidence from antitrust markets*. CESifo Working Paper No. 8866. Munich. Available at: <https://www.cesifo.org/en/publications/2021/working-paper/market-concentration-europe-evidence-antitrust-markets> (accessed 20 May 2025).
- Agrawal A, Jaffe JF and Mandelker GN (1992) The post-merger performance of acquiring firms: A re-examination of an anomaly. *The Journal of Finance* 47(4): 1605–1621.
- Andrade G, Mitchell M and Stafford E (2001) New evidence and perspectives on mergers. *Journal of Economic Perspectives* 15(2): 103–120.
- Athey S and Morton FS (2022) Platform annexation. *Antitrust Law Journal* 84(3): 677–704.
- Autor D, Dorn D, Katz LF, Patterson C and Van Reenen J (2020) The fall of the labor share and the rise of superstar firms. *The Quarterly Journal of Economics* 135(2): 645–709.
- Baker JB and Shapiro C (2008) Reinvigorating horizontal merger enforcement. In: Pitofsky R (ed.) *How the Chicago School Overshot the Mark: The Effect of Conservative Economic Analysis on U.S. Antitrust*. Oxford: Oxford University Press, pp. 235–290.
- Bougette P, Budzinski O and Marty F (2022) Self-preferencing and competitive damages: A focus on exploitative abuses. *The Antitrust Bulletin* 67(2): 190–207.

- Bougette P, Budzinski O and Marty F (2024) In the light of dynamic competition: Should we make merger remedies more flexible? *European Competition Journal*. Epub ahead of print 2024.
- Budzinski O (2010) An institutional analysis of the enforcement problems in merger control. *European Competition Journal* 6(2): 445–474.
- Budzinski O and Kretschmer JP (2016) Implications of unprofitable horizontal mergers: A positive external effect does not suffice to clear a merger! *Contemporary Economics* 10(1): 13–26.
- Budzinski O and Stöhr A (2025) The dynamics of market boundaries and the role of systemic market power. *Journal of Antitrust Enforcement*. Forthcoming.
- Cartwright S and Schoenberg R (2006) Thirty years of mergers and acquisitions research: Recent advances and future opportunities. *British Journal of Management* 17(S1): S1–S5.
- Clark JM (1961) *Competition as a Dynamic Process*. Washington, D.C.: The Brookings Institution.
- Cowgill B, Prat A and Valletti T (2021) Political power and market power. *CEPR Discussion Paper* No. DP17178. Available at: <https://dx.doi.org/10.2139/ssrn.4390776> (accessed 20 May 2025).
- Draghi M (2024) *EU Competitiveness: Looking Ahead*. Report. Brussels: European Commission. Available at: https://commission.europa.eu/topics/strengthening-european-competitiveness/eu-competitiveness-looking-ahead_en (accessed 20 May 2025).
- De Loecker J, Eeckhout J and Unger G (2020) The rise of market power and the macroeconomic implications. *The Quarterly Journal of Economics* 135(2): 561–644.
- Eisenmann T, Parker G and Van Alstyne M (2011) Platform envelopment. *Strategic Management Journal* 32(12): 1270–1285.
- Ezrachi A (2006) Behavioural remedies in EC merger control – Scope and limitations. *World Competition* 29: 459–479.
- Farrell J and Shapiro C (2010) Antitrust evaluation of horizontal mergers: An economic alternative to market definition. *The B.E. Journal of Theoretical Economics* 10(1): 1–40.
- Federico G, Morton FS and Shapiro C (2020) Antitrust and innovation: Welcoming and protecting disruption. *Innovation Policy and the Economy* 20(1): 125–190.
- Fischer E (2024) Double-checking mergers: Ex-ante and ex-post competition law enforcement and its implications for third parties. *Journal of European Competition Law & Practice* 15(6): 428–435.
- Garces, E., Kozlova Guglielmi, O. and Reilly, D. (2024) ‘Ecosystem Theories of Harm in Merger Enforcement: Current Direction and Open Questions’, *Journal of European Competition Law & Practice*, 15(4), pp. 272–273.
- Gaughan PA (2017) *Mergers, Acquisitions, and Corporate Restructurings*. 7th ed. Hoboken, NJ: Wiley.
- Gautier A and Maitry R (2024) Big tech acquisitions and product discontinuation. *Journal of Competition Law & Economics* 20(3): 246–263.
- Gilbert RJ and Sunshine SC (1994) Incorporating dynamic efficiency concerns in merger analysis: The use of innovation markets. Unpublished manuscript, Economic Analysis Group, Antitrust Division, U.S. Department of Justice.

- Goel AM and Thakor AV (2009) Do envious CEOs cause merger waves? *The Review of Financial Studies* 23(2): 487–517.
- Grullon G, Larkin Y and Michaely R (2019) Are U.S. industries becoming more concentrated? *Review of Finance* 23(4): 697–743.
- Gugler K, Mueller DC and Weichselbaumer M (2012) The determinants of merger waves: An international perspective. *International Journal of Industrial Organization* 30(1): 1–15.
- Gutiérrez G and Philippon T (2018) Ownership, concentration, and investment. *AEA Papers and Proceedings* 108(5): 432–437.
- Harford J (2024) Merger waves: A survey of the literature. In: Denis DJ (ed.) *Handbook of Corporate Finance*. Cheltenham: Edward Elgar, pp. 377–409.
- Hayek FA von (1975) The pretence of knowledge. *The Swedish Journal of Economics* 77(4): 433–442.
- Hayek FA von (1978) Competition as a discovery procedure. In: Hayek FA von (ed.) *New Studies in Philosophy, Politics, Economics, and the History of Ideas*. Chicago: University of Chicago Press, pp. 179–190.
- Hitt, M. A., Harrison, J., and Ireland, R. D. (2001) *Mergers and Acquisitions: A Guide to Creating Value for Stakeholders*. Oxford University Press.
- Kamepalli SK, Rajan R and Zingales L (2020) Kill zone. *NBER Working Paper* No. 27146.
- Kerber W (2023) Towards a dynamic concept of competition that includes innovation. Paper presented at the OECD Competition Committee Meeting, Paris, 14–16 June 2023.
- King DR, Dalton DR, Daily CM and Covin JG (2004) Meta-analyses of post-acquisition performance: Indications of unidentified moderators. *Strategic Management Journal* 25(2): 187–200.
- Koltay G, Lorincz S and Valletti T (2023) Concentration and competition: Evidence from Europe and implications for policy. *Journal of Competition Law & Economics* 19(3): 466–501.
- Kwoka JE (2012) Does merger control work? A retrospective on U.S. enforcement actions and merger outcomes. *Antitrust Law Journal* 78: 619–650.
- Kwoka JE (2014) *Mergers, Merger Control, and Remedies: A Retrospective Analysis of US Policy*. Cambridge, MA: MIT Press.
- Kwoka JE and Valletti T (2021) Unscrambling the eggs: Breaking up consummated mergers and dominant firms. *Industrial and Corporate Change* 30(5): 1286–1306.
- Lancieri F and Valletti T (2024) Towards an effective merger review policy: A defence of rebuttable structural presumptions. *Stigler Center Working Paper* No. 345. Chicago: The University of Chicago Booth School of Business. Available at: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4733492 (accessed 20 May 2025).
- Lancieri F, Posner EA and Zingales L (2023) The political economy of the decline of antitrust enforcement in the United States. *Antitrust Law Journal* 85(2): 441–519.
- Majumdar SK (2021) Stick versus carrot: Comparing structural antitrust and behavioral regulation outcomes. *The Antitrust Bulletin* 66(3): 431–455.
- Makris S (2023) Responsive competition law enforcement: Lessons from the Greek Competition Authority. *World Competition* 46(2): 205–244.

- Nocke V and Rhodes A (2025) Optimal merger remedies. *CRC TR 224 Discussion Paper Series* No. crctr224_2025_680. University of Bonn and University of Mannheim. Available at: https://ideas.repec.org/p/bon/boncrc/crctr224_2025_680.html (accessed 20 May 2025).
- Perrone H (2025) Chips in on a merger: The Arm–Nvidia case. *International Journal of Industrial Organization* 98: 103130.
- Petit N and Schrepel T (2020) Evaluation of the Commission Notice on Market Definition in EU Competition Law. Submission to the European Commission, 15 May. Available at: https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/12325-Droit-de-la-concurrence-de-lUE-communication-sur-la-definition-du-marche-evaluation-/F519594_fr (accessed 20 May 2025).
- Petit N and Teece DJ (2021) Innovating Big Tech firms and competition policy: Favoring dynamic over static competition. *Industrial and Corporate Change* 30(5): 1168–1198.
- Petit N, Schrepel T and Heiden B (2024) Situating the dynamic competition approach. *Dynamic Competition Initiative (DCI) Working Paper 1-2024*, VU University Amsterdam Legal Studies Paper Series. Available at: <https://ssrn.com/abstract=4689177> (accessed 20 May 2025).
- Régibeau P (2023) Competition policy enforcement in a dynamic world. *Network Law Review*. Available at: <https://www.networklawreview.org/regibeau-dynamic-enforcement> (accessed 20 May 2025).
- Seldeslachts J, Clougherty JA and Barros PP (2009) Settle for now but block for tomorrow: The deterrence effects of merger policy tools. *The Journal of Law and Economics* 52(3): 607–634.
- Stöhr A (2024) Price effects of horizontal mergers: A retrospective on retrospectives. *Journal of Competition Law & Economics* 20(1–2): 155–179.
- U.S. Department of Justice and Federal Trade Commission (1995) *Antitrust Guidelines for the Licensing of Intellectual Property*. Report, DOJ and FTC, Washington, D.C., 6 April. Available at: <https://www.justice.gov/archives/atr/antitrust-guidelines-licensing-intellectual-property>
- Tollison RD (1982) Rent-seeking: A survey. *Kyklos* 35(4): 575–602.
- Tollison RD (2012) The economic theory of rent-seeking. *Public Choice* 152(1–2): 73–82.
- Trautwein F (1990) Merger motives and merger prescriptions. *Strategic Management Journal* 11(4): 283–295.
- Valletti T (2021) How to tame the tech giants: Reverse the burden of proof in merger reviews. *ProMarket.org*, 28 June. Available at: <https://www.promarket.org/2021/06/28/tech-block-merger-review-enforcement-regulators> (accessed 20 May 2025).
- Wegner G (1997) Economic policy from an evolutionary perspective – A new approach. *Journal of Institutional and Theoretical Economics* 153(3): 485–509.

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