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Behavioural economics in EU competition law: Article 102 TFEU, the Digital Markets Act, and informed assumptions of irrationality

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ABSTRACT

This article analyses how European Union (EU) competition law uses insights from behavioural economics to determine whether business conduct is illegal. Various Article 102 TFEU decisions against Microsoft, Google, Amazon, and Apple have reflected behavioural findings on non-rational decision-making, as do the obligations imposed on gatekeepers by the Digital Markets Act (DMA). Regardless of whether one accepts the underpinning analysis, behavioural economics is informing EU competition law. The issue is how it should do so. Both Article 102 enforcement and the DMA incorporate behavioural economics in different ways, neither of which is simply a corollary of being 'ex post antitrust' or 'ex ante regulation'. It is argued that the certainty of Article 102 enforcement would benefit from it replicating the DMA's informed assumptions of irrationality. While the Commission's current approach of context-specific factual analysis faithfully captures the contingency of biases in behavioural economics and facilitates accurate findings of illegality, it has resulted in uncertainty as to when conduct is prohibited by Article 102. The DMA's assumptions of irrationality admittedly distort behavioural economics and will lead to some inaccurate outcomes. Nevertheless, if suitably informed by economic research and enforcement experience, assumptions of irrationality offer the opportunity for Article 102 decisions to reflect behavioural insights without abandoning legal certainty.

Keywords: competition law; behavioural economics; rationality; legal certainty; abuse of dominance; digital markets

JEL CLASSIFICATIONS: B20, B50, D01, D90, K00, K21

1. INTRODUCTION

Whether business conduct harms competition depends on how others respond. Consider a firm that significantly increases its prices. If its customers react by flocking to cheaper rivals and a wave of new alternatives appear to undercut the price hike, it is difficult to conclude that there has been harm worthy of legal punishment. But if consumers continue purchasing at the inflated price, or if new rivals fail to materialize, findings of harm and the need for legal intervention are easier to reach. As an additional illustration, the preinstallation of apps on a smartphone seems innocuous if we expect that users will still seek out better alternatives. But if users just stick with preinstalled offerings regardless of their quality, these apps may have an unmerited advantage over superior competitors. Legal punishment of preinstallation then appears easier to justify.

As these simplified examples suggest, how consumers and rivals act in response to business conduct can lead to different conclusions on whether harm to competition seems likely. As a consequence, our understanding of decision-making can inform the shape and application of competition law to market behaviour.

Perhaps the most prolific portrait of how businesses and consumers act is offered by neo-classical microeconomic theory, which assumes rationality. Rational decision-making involves considering the options available, evaluating their costs and benefits, and accurately choosing the course that optimally satisfies preferences (welfare, happiness, money).¹ The expectation is of shrewd behaviour by businesses and consumers to act in their best interests. Its supporters have argued that rationality and the outcomes it predicts can be demonstrated empirically.² Indeed, it is considered so strong that rationality has facilitated the deployment of neoclassical microeconomic analysis to ‘all human behaviour’,³ including law.⁴ The consequences of assuming rational decision-making for competition law (or ‘antitrust’) were explored by scholars associated with the University of Chicago from the 1950s to the 1980s. They reasoned that if consumers engage in savvy switching to the cheapest offering available, new entrants are enticed in by inflated prices, and businesses only do things that maximize their profits, then several potential harms to competition would either not arise or would be punished by the market, removing the need for additional reprimand through law.⁵ Although US courts have occasionally embraced this logic to alter antitrust doctrines,⁶ there are no comparable illustrations of European Union (EU) competition law being consciously shaped by an assumption of rationality.

In contrast, this article analyses how the European Commission, Courts, and legislators have increasingly reflected the alternative picture of decision-making offered by *behavioural economics* to reach conclusions on competitive harm and, ultimately, the legality of business conduct. Behavioural economics explores deviations from rationality owing to cognitive biases and reliance upon simple rules of thumb. Since appearing in decisions against

¹ Oskar Lange, ‘The Scope and Method of Economics’ (1945) 13 *Rev Econ Stud* 19, 30; Paul Samuelson, *Foundations of Economic Analysis* (Harvard University Press 1947) 97–98; Ward Edwards, ‘The Theory of Decision Making’ (1954) 51 *Psych Bull* 380.

² Milton Friedman, ‘The Methodology of Positive Economics’ in *Essays in Positive Economics* (University of Chicago Press 1953).

³ Gary Becker, *The Economic Approach to Human Behavior* (University of Chicago Press 1976) 8.

⁴ Eg Richard Posner, *Economic Analysis of Law* (Little, Brown & Co 1973).

⁵ Eg Richard Posner, ‘The Chicago School of Antitrust Analysis’ (1978) 127 *U Pa L Rev* 925.

⁶ *Eg Continental TV v GTE Sylvania* (1977) 433 US 36; *Leegin Creative Leather Products v PSKS* (2007) 551 US 877 (sequentially overturning per se illegality for restraints between manufacturers and retailers owing to rational explanations); *Brooke Group v Brown & Williamson Tobacco Corp* (1993) 509 US 209 (making unlawful predation harder to establish owing to faith in new entry).

Microsoft in the 2000s,⁷ EU competition law has increasingly echoed insights from behavioural economics, particularly in its attempts to tame the titans of the digital economy. This is visible in two areas of activity: the enforcement of Article 102 TFEU, which prohibits abuse of market dominance; and the Digital Markets Act (DMA), which imposes obligations on certain core platform services.⁸ Literature on behavioural economics and EU competition law is scarce,⁹ yet recent years have witnessed not just the arrival of the DMA, but decisions against Alphabet/Google,¹⁰ Amazon,¹¹ and Apple¹² that continue to illustrate its insights.

The purpose of this article is not just to chart this growing impact, but to analyse *how* behavioural economics has been and should be used in EU competition law to determine the legality of business conduct. Article 102 decisions and the DMA incorporate biased decision-making differently, neither of which is simply a corollary of being ‘ex post antitrust’ or ‘ex ante regulation’. They embody alternative approaches to the especially difficult task of translating behavioural economics into law. On the one hand, behavioural literature stresses that the prevalence of biases and their competitive consequences are contingent, which naturally recommends reaching conclusions on illegality through individualized, context-specific factual analysis. However, such an approach undermines legal certainty, which is achieved by deciding legality on the application of fewer, simpler conditions. While this tension is somewhat analogous to general writing on ‘rules’ and ‘standards’,¹³ and is related to the discussion of ‘form’ and ‘effects’ in competition scholarship,¹⁴ behavioural antitrust represents a distinct—and especially tough—balancing act between accuracy and certainty.

It will be argued that the use of behavioural economics in Article 102 decisions has got this balance wrong. The Commission has faithfully reflected the contingency of behavioural insights when identifying abuses through context-specific analysis that factually demonstrates biased decision-making. But while accurately prohibiting the behaviourally ‘bad’, this approach has introduced additional uncertainty as to when conduct will be illegal. Instead, Article 102 decisions should borrow the DMA’s use of *informed assumptions of irrationality*. While scholarship tends to focus on how Article 102 enforcement has influenced the DMA,¹⁵ the opposite direction of influence will be recommended on the question of how to incorporate behavioural economics into competition policy. Unlike Article 102 decision-making, the DMA’s obligations take biased behaviour and its anticompetitive consequences for granted, leaving illegality to be determined by the application of fewer, simpler conduct requirements. These assumptions displace context-specific factual analysis, which is what makes compliance with the DMA relatively more certain than Article 102. Admittedly, assuming irrationality to increase certainty is a major distortion of behavioural economics and

⁷ Microsoft [2004] (Case COMP/C-3/37.792); Microsoft (tying) [2009] (Case COMP/C-3/39.530).

⁸ Regulation (EU) 2022/1925 on Contestable and Fair Markets in the Digital Sector (Digital Markets Act) 2022 (OJ L265/1). While the recitals establish distance from arts 101 and 102 TFEU, this article includes the DMA as a facet of EU competition law owing to the compatibility of their aims and as the DMA was inspired by prior antitrust enforcement.

⁹ Exceptions include: Pinar Akman and Luke Garrod, ‘When Are Excessive Prices Unfair?’ (2011) 7 J Competition L & Econ 403; Roger Van den Bergh, ‘Behavioral Antitrust: Not Ready for the Main Stage’ (2013) 9 J Competition L & Econ 203; Amelia Fletcher, ‘The EU Google Decisions: Extreme Enforcement or the Tip of The Behavioral Iceberg?’ [2019] CPI; Andreas Heinemann, ‘Facts Over Theory: The Contribution of Behavioral Economics to Competition Law’ [2019] CPI; Amelia Fletcher and Zita Vasas, ‘Implementing the DMA: The Role of Behavioural Insights’ (2024) 15 J Eur Comp L & Pract 456.

¹⁰ Google Search (Shopping) [2017] (AT.39740); Google Android [2018] (AT.40099).

¹¹ Amazon Marketplace and Amazon Buy Box [2022] (AT.40462) and (AT.40703).

¹² Apple—App Store Practices (Music Streaming) [2024] (AT.40437).

¹³ Eg Pierre Schlag, ‘Rules and Standards’ (1985) 33 UCLA L Rev 379; Louis Kaplow, ‘Rules Versus Standards: An Economic Analysis’ (1992) 42 Duke L J 557.

¹⁴ Eg Valentine Korah, ‘EEC Competition Policy—Legal Form or Economic Efficiency’ (1986) 39 CLP 85; Valentine Korah, ‘The Paucity of Economic Analysis in the EEC Decisions on Competition: Tetra Pak II’ (1993) 46 CLP 148.

¹⁵ Eg Jacques Crémer and others, ‘Enforcing the Digital Markets Act: Institutional Choices, Compliance, and Antitrust’ (2023) 11 J Antitrust Enforcement 315, 331.

will lead to some erroneous findings of illegality. But the DMA's assumptions are still informed by research on the likelihood of biased behaviour and experience, not least Commission decisions enforcing Article 102 in similar circumstances. Article 102 jurisprudence could be revised to similarly incorporate informed assumptions of irrationality for different types of abuse, thereby reducing case-by-case analysis and increasing the foreseeability of enforcement outcomes. This would undoubtedly go against the broader jurisprudential trend of introducing more and more context-specific analysis into the application of Article 102. Nevertheless, informed assumptions of irrationality offer a more balanced reconciliation of economic accuracy with legal certainty when integrating behavioural insights into EU competition law.

Section 2 offers an overview of behavioural economics and how it can shape antitrust. Section 3 explores where behavioural insights can be found in Article 102 enforcement and the DMA. Section 4 analyses the difficulty of translating behavioural economics into law, recommending that Article 102 case law should take inspiration from the DMA's informed assumptions of irrationality to offer greater certainty to businesses.

2. DECISION-MAKING FROM A BEHAVIOURAL PERSPECTIVE: AN OVERVIEW

Behavioural economics and behavioural 'law and economics'

Behavioural economics challenges the assumption of rationality deployed in neoclassical microeconomics and its expectations of behaviour. In the 1950s, Herbert Simon argued that cognitive limitations commonly lead to reliance upon simplification devices.¹⁶ He labelled this bounded rationality, where rules of thumb ('heuristics') simplify complexity and merely 'satisfice', rather than optimize, welfare. While Simon highlighted the problem, kick-starting the voluminous empirical literature questioning rationality was left to two psychologists: Amos Tversky and Daniel Kahneman. Their pioneering work throughout the 1970s began with reflections on several cognitive processes deviating from basic rules of probability,¹⁷ before constructing their broader 'prospect theory' for understanding judgement under uncertainty.¹⁸ Although the ensuing contributors to behavioural economics are numerous, both Kahneman¹⁹ and Richard Thaler²⁰ have been especially prominent in exploring deviations from rationality. Its proponents claim to have addressed the 'gauntlet of poor excuses and implausible alternative explanations' offered to defend rationality,²¹ in particular by demonstrating that biases are relevant in real-world market contexts, not just controlled experiments.²² While once a small presence on the fringes, behavioural economics has since become a rich, mainstream field, spawning myriad books, articles, and two Nobel Memorial Prizes.²³

Manifold biases have been identified in behavioural research, leading to different outcomes from those predicted when rationality is assumed.²⁴ The following biases are of particular relevance for competition law:

¹⁶ Herbert Simon, 'A Behavioral Model of Rational Choice' (1955) 69 QJE 99.

¹⁷ Amos Tversky and Daniel Kahneman, 'Judgment under Uncertainty: Heuristics and Biases' (1974) 185 Science 1124.

¹⁸ Daniel Kahneman and Amos Tversky, 'Prospect Theory: An Analysis of Decision under Risk' (1979) 47 *Econometrica* 263.

¹⁹ Eg Daniel Kahneman, *Thinking, Fast and Slow* (Penguin 2011).

²⁰ Eg Richard Thaler, *Misbehaving: The Making of Behavioural Economics* (Penguin 2016).

²¹ *ibid* 7.

²² Thomas Russell and Richard Thaler, 'The Relevance of Quasi Rationality in Competitive Markets' (1985) 75 *Am Econ Rev* 1071, 1074.

²³ Kahneman (2002) and Thaler (2017).

²⁴ Kahneman (n 19) 13, 20–25, 105.

- *Availability (or Saliency)*: The visibility of phenomena significantly affects decision-making and judgement.²⁵ For instance, the prominence of aeroplane disasters leads to a significant overestimation of their likelihood.
- *Fairness*: Rational opportunities for gain may not be undertaken due to considerations of fairness.²⁶
- *Framing*: The way an issue is presented influences responses, even if substantive outcomes are identical.²⁷ For example, consumers respond more favourably to foregoing discounts than accepting equivalent surcharges.
- *Hindsight*: Estimations of the probability of past events occurring or succeeding are higher when guessed in the knowledge that they did occur or succeed, which would not have been thought so likely at the time.²⁸
- *Hyperbolic Discounting*: Being more inclined to take a smaller gain today over a larger future gain due to lack of self-control.²⁹
- *Loss Aversion*: Losses weigh heavier than equivalent gains, meaning more effort is required to reduce their likelihood.³⁰
- *Overconfidence (or Optimism)*: Focusing on positive over negative indicators or overestimating the likelihood of success.³¹
- *Status Quo (or Inertia)*: Sticking with the current circumstances, even if it would be better to switch.³²

The impact of such biases has filtered through into other fields where the assumption of rationality has been applied, including the neo-classical 'law and economics' movement.³³ Once again, the predictive power of neo-classical 'law and economics' depends on an expectation that legal subjects understand the costs and benefits of various courses of action and rationally choose the optimal response.³⁴ While its heyday ran through the 1970s and 1980s, it was not until the late 1990s that behavioural critiques seriously developed.³⁵ A milestone was the 1998 article by Jolls, Sunstein, and Thaler, which explored how analysis of various legal issues changed if the rational subject of neo-classical 'law and economics' was replaced with the biased decision-maker of behavioural economics.³⁶ Going from description to prescription, behavioural insights have also informed how to regulate better.³⁷ This has found its most influential articulation as Thaler and Sunstein's 'nudge' theory. As the context in which decisions are made affects outcomes, governmental alterations to this context can 'nudge' individuals towards better realizing their own goals and/or the public interest.³⁸

²⁵ Tversky and Kahneman (n 17) 1127–1128; Kahneman (n 19) 129–135.

²⁶ Daniel Kahneman, Jack L. Knetsch and Richard Thaler, 'Fairness and the Assumptions of Economics' (1986) 59 J Bus S285.

²⁷ Amos Tversky and Daniel Kahneman, 'Rational Choice and the Framing of Decisions' (1986) 59 J Bus S251, S261.

²⁸ Kahneman (n 19) 202–204.

²⁹ Thaler (n 20) 87–91, 104–106.

³⁰ Tversky and Kahneman (n 27) S255–S258; Kahneman (n 19) 300–303, 345–346.

³¹ Kahneman (n 19) 212–220, 250–264.

³² Richard Thaler and Cass Sunstein, *Nudge* (Penguin 2009) 37–39.

³³ Eg Eyal Zamir and Doron Teichman, *Behavioral Law and Economics* (OUP 2018).

³⁴ Eg Posner (n 4) 1.

³⁵ Eg Russell Korobkin and Thomas Ulen, 'Law and Behavioral Science: Removing the Rationality Assumption from Law and Economics' (2000) 88 Calif L Rev 1051.

³⁶ Christine Jolls, Cass Sunstein and Richard Thaler, 'A Behavioral Approach to Law and Economics' (1997) 50 Stan L Rev 1471.

³⁷ *ibid* 1522, 1541–1542.

³⁸ Thaler and Sunstein (n 32) 5–6, 9.

Such behavioural regulation is often achieved through switched defaults, comprehensible presentation of information, or exploiting emotional responses.³⁹

Although the focus of nudging is usually on regulatory changes to achieve ‘goods’, businesses may also exploit consumer biases. While often directed towards bolstering consumer protection rules, this is also applicable to competition law.

Behavioural antitrust

Behavioural antitrust scholarship developed in the USA to challenge how the assumption of rationality had come to shape several legal doctrines.⁴⁰ The earliest analysis of competition law invoking biased decision-making was probably Gerla's 1985 discussion of predatory pricing, drawing on Tversky and Kahneman.⁴¹ However, it was the extensive writing of Avishalom Tor and Maurice Stucke throughout the 2000s and 2010s that noticeably developed behavioural antitrust as a distinct analytical approach.⁴² Their aim was to use insights into biases to inform a more accurate picture of decision-making, the resultant competitive consequences, and, ultimately, illegality. Three examples can illustrate how rational and behavioural perspectives offer different approaches to enforcing competition law.⁴³

The first is *market entry*. The likelihood of new entry informs several aspects of competition law, such as whether firms are dominant under Article 102⁴⁴ and establishing illegal predation in US antitrust.⁴⁵ If rationality is assumed, any exercise of power in a market unprotected by barriers will attract new entrants, recognition of which by incumbents may deter such behaviour in the first place.⁴⁶ But from a behavioural perspective, entry is more complex. Biased decision-making can lead to *less* entry if potential entrants are deterred by the availability and saliency of past failures.⁴⁷ Conversely, overconfidence and optimism might lead to *more* entry than is rational as firms overestimate their competence, downplay the risks of failure, and amplify their chances of success.⁴⁸ Whether more entry than predicted by assuming rationality translates into more effective competition is not obvious: the heightened pressure caused by unwise entry may eliminate those who would have otherwise been more successful in challenging existing market power;⁴⁹ however, overrepresentation of inexperienced start-ups may shift emphasis towards innovation-based competition that might challenge incumbents more intensely.⁵⁰ Biased decision-making, therefore, makes the likelihood of market entry and its impact upon competition more complex than the assumption of rationality suggests.

A second example is *resale price maintenance* (RPM), which is the fixing of prices between manufacturers and their independent resellers. Preventing discounts and thereby reducing sales is only rational if it offers additional benefits that consumers appreciate, such as

³⁹ *ibid* 38–39, 93–94.

⁴⁰ See nn 5 and 6.

⁴¹ Harry Gerla, 'The Psychology of Predatory Pricing: Why Predatory Pricing Pays' (1985) 39 Sw LJ 755.

⁴² Eg Maurice Stucke, 'Behavioral Antitrust and Monopolization' (2012) 8 J Competition L & Econ 545; Avishalom Tor, 'Understanding Behavioral Antitrust' (2013) 92 Tex L Rev 573.

⁴³ For other examples: Maurice Stucke, 'Behavioral Economists at the Gate: Antitrust in the Twenty-First Century' (2006) 38 Loy U Chi LJ 513; Stucke *ibid.*

⁴⁴ Guidance on the Commission's enforcement priorities in applying [Article 102 TFEU] to abusive exclusionary conduct by dominant undertakings 2009 (OJ C 45/7) paras 16–17.

⁴⁵ *Brooke Group* (n 6).

⁴⁶ Posner (n 5) 944–945.

⁴⁷ Avishalom Tor, 'The Fable of Entry: Bounded Rationality, Market Discipline, and Legal Policy' (2002) 101 Mich L Rev 482, 533; Amanda Reeves and Maurice Stucke, 'Behavioral Antitrust' (2011) 86 Ind LJ 1527, 1559.

⁴⁸ Colin Camerer and Dan Lovallo, 'Overconfidence and Excess Entry: An Experimental Approach' (1999) 89 *Am Econ Rev* 306, 306; *Tor ibid* 504–505, 510–511.

⁴⁹ Tor (n 47) 531–532.

⁵⁰ *ibid* 537–543.

maintaining a luxury image or incentivizing retailers to offer sales services.⁵¹ However, behavioural scholarship suggests that biases make RPM more likely than is rational, owing to exaggerated fears of price cuts and of free-riding on investments in sales services by other retailers.⁵² This may be attributable to the cognitive availability of instances of retailers discounting, loss aversion to brand damage, and concerns about the unfairness of free-riding,⁵³ though some firms might gradually learn that their fears are misguided.⁵⁴ Even if non-rational RPM does materialize, behavioural analysis suggests that any harm to consumers is dependent on its prevalence throughout the market.⁵⁵ Again, acknowledgement of biases on whether to engage in RPM is more nuanced than the optimistic conclusions of assuming rationality.

A third example is *excessive pricing*. In the absence of competitors and the presence of significant barriers to entry, it is rational for a profit-maximizing firm to extract wealth from consumers through increasing prices.⁵⁶ But behavioural analysis suggests that this may not always occur owing to biases affecting both sides. Perceptions of fairness cause customers to react negatively to opportunism and change their future buying patterns, perhaps ceasing all purchases even if rational to continue.⁵⁷ The impact of fairness may also lead firms to forgo profitable increases, especially if they are averse to losses caused by any customer backlash.⁵⁸ This rather relaxed attitude towards excessive pricing illustrates that behavioural antitrust is not necessarily more interventionist than when rationality is assumed.⁵⁹

Despite the breadth of US scholarship covering various enforcement issues and the bold claim that it would ‘carry antitrust into the twenty-first century’,⁶⁰ the practical impact of behavioural antitrust on US doctrine is almost non-existent.⁶¹ Its insights have, however, been reflected to a much greater extent in the EU.

3. REFLECTIONS OF BEHAVIOURAL ECONOMICS IN EU COMPETITION LAW

It would be an overstatement to suggest that EU competition law is wholeheartedly rooted in a behavioural understanding of market decision-making. Still, its findings are perceptible in two major areas of activity. First, some of the biggest Commission decisions pursuant to Article 102 TFEU have reflected behavioural insights to reach conclusions on dominance, abuse, and, ultimately, illegality.⁶² Secondly, biased user behaviour has informed the obligations imposed by the DMA on gatekeepers of the digital economy. Each will be discussed in turn.

⁵¹ Ward Bowman, ‘The Prerequisites and Effects of Resale Price Maintenance’ (1954) 22 U Chi L Rev 825; *Leegin* (n 6) [20]–[21].

⁵² Avishalom Tor and William Rinner, ‘Behavioral Antitrust: A New Approach to the Rule of Reason after *Leegin*’ (2011) 2011 U Ill L Rev 805.

⁵³ *ibid* 821.

⁵⁴ *ibid* 839.

⁵⁵ *ibid* 817.

⁵⁶ Thaler (n 20) 128.

⁵⁷ Kahneman, Knetsch and Thaler (n 26) S295–S296; Thaler (n 20) 128–129.

⁵⁸ Tor (n 42) 598–599.

⁵⁹ For a more nuanced application of behavioural insights to excessive pricing: Akman and Garrod (n 9).

⁶⁰ Stucke (n 43) 516.

⁶¹ *Save for Eastman Kodak Co v Image Technical Services* (1992) 504 US 451. Even this can only be claimed retrospectively for behavioural antitrust.

⁶² Behavioural insights may also be relevant to other aspects of art 102 (eg market definition, remedies), but this article focuses on dominance and abuse.

Article 102 enforcement

Article 102 TFEU prohibits the abuse of market dominance. Dominance is a position of economic strength or independence from competitive constraints imposed by rival businesses and customers.⁶³ Such firms have a special responsibility not to distort competition through conduct that amounts to an abuse,⁶⁴ understood as behaviour that is not ‘competition on the merits’.⁶⁵

In several decisions pursuant to Article 102, the Commission’s reasoning has reflected insights from behavioural economics that reject rational explanations of consumer behaviour. These are not small, insignificant investigations, but represent some of the most ambitious—and controversial—applications of EU competition law in recent decades. The influence of behavioural economics is visible in Commission findings of abusive tying, illegal self-preferencing, and dominance in aftermarkets. While the explicitness of reliance on behavioural insights varies, in all three instances, the Commission would have reached different conclusions if it had simply accepted the consequences of assuming rationality. Overtly or implicitly, the outcomes of these decisions relied upon finding individuals to be biased decision-makers.

Non-compliance with Article 102 as a result of *tying/bundling* is the most plentiful and direct instance of behavioural insights in Commission decisions. Tying involves power in one market being used to increase a firm’s position in a second through requiring or incentivizing combined purchase or use across both.⁶⁶ The appeal of the firm’s offering in the first market may inhibit consumers from purchasing even superior alternatives in the second market, thereby giving the dominant firm an unmerited competitive advantage. Over the last two decades, a particular form of tying has provided repeated entry points for behavioural economics into Article 102 enforcement: pre-installation. In 2004, the Commission adopted a prohibition decision against Microsoft partly for tying its Windows operating system (OS) with its Windows Media Player (WMP).⁶⁷ As a result of licensing agreements with computer manufacturers, devices using Windows OS came with WMP preinstalled and unable to be removed. Analogous conduct was further scrutinized in a 2009 commitment decision, as Microsoft had similarly required manufacturers using Windows OS to preinstall its Internet Explorer browser.⁶⁸ In 2018, Alphabet was also fined for only allowing smartphone manufacturers to include its Play Store—the channel through which all other apps could be downloaded—if they also pre-installed the Google Search app and the Google Chrome app on their devices.⁶⁹ The conclusions in all three preinstallation decisions were dependent upon the Commission recognizing the presence and anticompetitive consequences of the status quo bias, as a rational user response would not lead to any harm. As Microsoft and Google did not prevent the downloading of alternative software or apps, rational users would be expected to switch to rival offerings if the default was not the best available, meaning that preinstallation itself would have no bearing on market outcomes.⁷⁰ However, the Commission refuted rationality in all three by acknowledging the impact of the status quo

⁶³ Case 85/76 *Hoffmann-La Roche v Commission* EU:C:1979:36 [38]; art 102 Guidance (n 44) para 10.

⁶⁴ Case 322/18 *NV Nederlandsche Banden Industrie Michelin v Commission* EU:C:1983:313 [57].

⁶⁵ See Case C-377/20 *Servizio Elettrico Nazionale v Autorità Garante della Concorrenza e del Mercato* EU:C:2022:379.

⁶⁶ For simplicity, ‘tying’ will be used to cover all forms of tying and bundling.

⁶⁷ *Microsoft (2004 Decision)* (n 7). Upheld: Case T-204/01 *Microsoft v Commission* EU:T:2007:289.

⁶⁸ *Microsoft (2009 Commitments)* (n 7).

⁶⁹ *Android (2018 Decision)* (n 10). Upheld: Case T-604/18 *Google and Alphabet v Commission* EU:T:2022:541 (though annulling findings on a different abuse regarding revenue sharing). In June 2025, Advocate General Kokott recommended that the Court of Justice dismiss Google’s appeal against the General Court ruling.

⁷⁰ *Microsoft (2004 Decision)* (n 7) 830, 858; *Microsoft (2007 GC)* (n 67) [952]–[953], [996]–[997]; *Android (2022 GC)* (n 69) [318]–[319], [539]–[542].

bias on how users responded to preinstallation, finding a propensity to stick with the default and a reluctance to download alternatives, even if better.⁷¹ The Commission's engagement with behavioural insights in these decisions has grown more conspicuous over time. While more implicit in the 2004 WMP decision, which avoided the technical language of behavioural economics, its 2009 commitment decision explicitly referenced how rival browsers had to 'overcome users' inertia' to get them to download alternatives to the preinstalled Internet Explorer.⁷² Come the 2018 *Google Android* decision, the Commission made repeated references to the status quo bias,⁷³ as did the General Court,⁷⁴ which further highlighted the 'distinction ... between theoretical competition assumptions and the practical reality,' meaning Google's rationalist defences 'have little credibility or impact due to the "status quo" bias'.⁷⁵ In this way, insights into biases affecting user behaviour have informed findings that preinstallation is an abuse of dominance against Article 102, contrary to the logical conclusions of assuming rationality.

The second set of decisions where Article 102 enforcement has reflected behavioural biases concern the abuse of *self-preferencing*. This is where users of one service offered by a dominant firm are steered towards a secondary service it also provides, potentially to the detriment of less prominent alternatives. This abuse was first advanced in the 2017 *Google Search* decision, where the Commission found that users of Google's dominant general search engine were directed towards its own comparison shopping service and away from rivals.⁷⁶ This was because Google's shopping service was prominently and vividly displayed to users of its general search engine, while alternatives only appeared as ordinary results and, even there, were demoted by the algorithm.⁷⁷ More recently, the 2022 *Amazon Buy Box* commitment decision can also be interpreted as an instance of self-preferencing.⁷⁸ The Commission was concerned that when calculating the featured offer shown for a product on Amazon, responsible for at least 90 per cent of sales,⁷⁹ the algorithm gave priority over third-party sellers to Amazon's own offering and those who paid it to store and process their orders.⁸⁰ Admittedly, both decisions on self-preferencing are less explicit on their behavioural underpinnings than the tying examples. However, its conclusion that self-preferencing was likely to result in anticompetitive foreclosure would not have been reached had the Commission assumed that users act rationally; the finding of illegality required acknowledgement of biased decision-making, linking behavioural insights directly to the outcomes in these decisions.⁸¹ This is because a rational actor would not be led astray by whatever was dangled in front of them, but would actively search for the best service or price available, therefore only resorting to the promoted offering if it was actually what they were looking for.⁸² Yet, the Commission's approach was to illustrate the harm to competition resulting from the non-rational user response to self-preferencing; these conclusions relied upon

⁷¹ *Microsoft (2004 Decision)* (n 7) 845, 866–867, 979; *Microsoft (2009 Commitments)* (n 7) 45–48; *Android (2018 Decision)* (n 10) 782, 805, 917, 923, 981.

⁷² *Microsoft (2009 Commitments)* (n 7) 47.

⁷³ *Android (2018 Decision)* (n 10) 781, 812, 851, 861.

⁷⁴ *Android (2022 GC)* (n 69), eg [305], [539], [574], [583], [593]

⁷⁵ *ibid* [428].

⁷⁶ *Google Search (2017 Decision)* (n 10) 341. Upheld: Case T-612/17 *Google and Alphabet v Commission* EU:T:2021:763; Case C-48/22 P *Google and Alphabet v Commission* EU:2024:726.

⁷⁷ *Google Search (2017 Decision)* (n 10) 344.

⁷⁸ As Amazon accepted remedial commitments, the reasoning is relatively brief.

⁷⁹ *Amazon Marketplace/Buy Box* (n 11) 199–202.

⁸⁰ *ibid* 172–177.

⁸¹ Hence why some interpret these decisions as illustrating behavioural economics, eg Fletcher (n 9); Amelia Fletcher and Zita Vasas, 'Implications of Behavioural Economics for the Pro-Competitive Regulation of Digital Platforms' (2024) 40 *Oxf Rev Econ Policy* 808; Fletcher and Vasas (n 9).

⁸² As argued: *Google Search (2017 Decision)* (n 10) 534; *Google Search (2021 GC)* (n 76) [399].

rejecting rationality by demonstrating the biased decision-making of users. To that end, it amassed considerable evidence in *Google Search* that rival shopping services lost significant user traffic to Google's own, regardless of their merits, owing to its conduct.⁸³ This was because users were drawn into clicking on Google's vividly displayed shopping service,⁸⁴ as well as only focusing on the top few search results on the first page, when rivals were buried deeper.⁸⁵ While avoiding behavioural terminology, what the Commission demonstrated was the effect of the availability/saliency bias on users, leading them to favour Google's highly prominent offering over less tangible alternatives.⁸⁶ By evidencing user faith in Google's top search results being the most relevant and free of manipulation,⁸⁷ the Commission's decision also reflected the optimism and fairness biases that stopped more rational digging into the alternatives available. Recognizing these biases also helps to understand the Commission's comparatively terse reasoning in *Amazon Buy Box*. Although rational users would be expected to click through to see competing retailers beyond the featured offer identified by the algorithm, it instead concluded that '[m]ost consumers will only look at this unique Buy Box offer',⁸⁸ meaning alternative sellers 'were therefore *de facto* scarcely visible'.⁸⁹ In this way, the Commission's findings on self-preferencing in these two important investigations were underpinned by a rejection of rationality and acceptance of biased users with potentially anticompetitive consequences.

A third example of behavioural insights informing Article 102 enforcement is the question of *dominance in aftermarkets*. Aftermarkets are those following on from a primary market, such as ink cartridges, spare parts, and repair services for a printer. Firms in primary markets often restrict rivals from operating in their aftermarkets through refusing to supply spare parts, not licensing IP, or incentivizing their customers against using alternatives, which can lead to limited competition and exorbitant prices in aftermarkets. But if consumers are rational, they would factor in both primary market *and* all aftermarket costs when purchasing on the former.⁹⁰ The logical conclusion is that even a monopolist in an aftermarket lacks power if it is disciplined by competition in the primary market, where rational purchasers consider the entire lifecycle cost of a product.⁹¹ The European Commission has long accepted this rationalist defence against dominance when asked to find breaches of Article 102 in aftermarkets.⁹² But in the 2024 *Apple (Music Streaming)* decision concerning anti-steering obligations,⁹³ it dismissed an attempt to use the same argument about rational lifecycle purchasing in the primary market—smartphones⁹⁴—to avoid a finding of dominance in a follow-on market—distribution of music streaming apps on Apple devices.⁹⁵ The Commission demonstrated that this argument was premised on an unrealistic account of how buyers of new smartphones actually made purchasing decisions. While it would certainly be rational to consider both the device price and any costs on follow-on markets

⁸³ *Google Search (2017 Decision)* (n 10) 462–488, 540–588.

⁸⁴ *ibid* 371–377, 489–501.

⁸⁵ *ibid* 455.

⁸⁶ Fletcher (n 9).

⁸⁷ *Google Search (2017 Decision)* (n 10) 460, 535, 598.

⁸⁸ *Amazon Marketplace/Buy Box* (n 11) 207.

⁸⁹ *ibid* 211.

⁹⁰ see *Eastman Kodak* (n 61) 495 (Scalia's dissent).

⁹¹ As Kodak argued: *ibid* 465–466.

⁹² EFIM [2009] (Case COMP/C-3/39.391) (citing decisions back to 1995).

⁹³ These prevented app developers from telling users that the same content was available cheaper elsewhere: *Apple (Streaming)* (n 12) 825–826.

⁹⁴ Regardless, the primary market was insufficiently competitive: *ibid* 365–399.

⁹⁵ Though noting some differences from classic aftermarkets: *ibid* 363, 467.

(such as the price of content bought through Apple apps), the evidence acquired by the Commission indicated that few purchasers considered these later ethereal fees, focusing instead upon more immediate factors (eg price, brand).⁹⁶ As with an analogous US Supreme Court case often flagged as behavioural antitrust in action,⁹⁷ the Commission's reasoning reflected biased decision-making; that purchasers focus more upon the aspects of the tangible smartphone in the primary market over hazy aftermarket costs (ie availability/saliency bias), which might be assumed to be low (ie optimism) or dismissed as a problem for another day (ie hyperbolic discounting). Similar to the self-preferencing decisions, the behavioural underpinnings of the Commission's analysis here are less explicit than with the preinstallation examples. However, it is clear that it rejected Apple's rationality-oriented defence against finding dominance in an aftermarket on the basis of a realistic, non-rational account of purchaser behaviour. Had the Commission instead assumed rationality, it would have had to take a different route to establishing dominance and, ultimately, illegality. This makes its recognition of biased purchasing behaviour pivotal to the overall outcome.

In this way, several Commission decisions taken pursuant to Article 102 and endorsed by the Courts have rejected rationality and, more or less overtly, reflected insights from behavioural economics. These decisions have seemingly inspired a similar approach in another area of EU competition law.

DMA

The DMA is the EU's contribution to global legislative efforts to introduce regulatory regimes specifically targeted at addressing competition issues in the digital economy. Enacted in September 2022, it applies to providers of core platform services (CPS) that are designated as 'gatekeepers'. The 10 types of CPS include online intermediation services (eg app stores, online marketplaces), search engines, social networks, operating systems, and web browsers.⁹⁸ Whether a CPS is designated as a gatekeeper depends on it being a significant and entrenched gateway for businesses to reach end users,⁹⁹ determined either through quantitative presumptions or qualitative analysis by the European Commission.¹⁰⁰ Gatekeepers are obliged to comply with several obligations, listed primarily in Articles 5, 6, and 7. Since the compliance deadline for the first wave of designated gatekeepers passed in March 2024, the Commission has already initiated several proceedings for breach of the DMA's obligations,¹⁰¹ leading to a €500 million fine for Apple in April 2025.¹⁰²

Unlike its often implicit reflection in Article 102 enforcement, the DMA was explicitly designed to incorporate insights from behavioural economics on biased decision-making and its anticompetitive consequences. This was clear in the Commission's 2020 Impact Assessment, which includes a section discussing 'Behavioural bias' as a key issue in digital markets, justifying new regulation.¹⁰³ Platforms were said to routinely exploit cognitive fallibility through, for instance, presenting choices in a way 'that "nudge" users into certain

⁹⁶ *ibid* 419–442, 465.

⁹⁷ *Eastman Kodak* (n 61) 473–475. See Avishalom Tor, 'The Market, the Firm, and Behavioral Antitrust' in Eyal Zamir and Doron Teichman (eds), *The Oxford Handbook of Behavioral Economics and the Law* (OUP 2014) 12.

⁹⁸ DMA art 2(2).

⁹⁹ *ibid* art 3(1).

¹⁰⁰ *ibid* art 3(2) or (8). At the time of writing, CPSs of Alphabet, Apple, Amazon, Booking, ByteDance, Meta, and Microsoft have been designated.

¹⁰¹ 'Commission Opens Non-Compliance Investigations against Alphabet, Apple and Meta under the Digital Markets Act' (25 March 2024) <https://ec.europa.eu/commission/presscorner/detail/en/IP_24_1689> accessed 30 July 2025.

¹⁰² *Apple—Online Intermediation Services—App Stores—AppStore—Art 5(4)* [2025] (DMA.100109).

¹⁰³ 'Staff Working Document: DMA Impact Assessment Report' [80]–[82] <<https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52020SC0363>> accessed 30 July 2025.

decisions.’¹⁰⁴ Citing behavioural research, this section also discussed inertia around switching even if better alternatives exist, vivid presentation triggering the availability bias, and, drawing on *Google Android*, the adverse competitive effects of pre-installation and defaults owing to the status quo bias.¹⁰⁵

The DMA, as enacted, reflects the Commission’s preparatory concerns about the competitive consequences of non-rational behaviour in digital markets. Five illustrations can be highlighted.¹⁰⁶

First, biases can inform which CPSs are designated as gatekeepers and therefore subject to the obligations of the DMA. Designation can result from a rebuttable presumption based on meeting quantitative thresholds¹⁰⁷ or a more searching qualitative analysis.¹⁰⁸ With regard to the latter, one of the factors analysed by the Commission is that users of a platform service are locked-in, potentially as a result of ‘behavioural bias reducing the ability ... to switch or multi-home’.¹⁰⁹ Thus, the Commission is able to consider not just the theoretical availability of alternatives to which rational users might switch when designating gatekeepers, but also the practical effect of the status quo bias on user movements.¹¹⁰

Secondly, the DMA prohibits self-preferencing by a gatekeeper of their related services over third-party rivals when ranking, indexing, and crawling.¹¹¹ This is deliberately narrower than a general prohibition on *all* self-preferencing,¹¹² like in *Google Search*. Still, this obligation in the DMA can be interpreted as reflecting perceived user biases. As a result of the availability/saliency, optimism, and fairness biases,¹¹³ users cannot be expected to resist being led towards prominently-positioned related services from the gatekeeper or to dig deep into results to find alternatives pushed down by an algorithm, even if rival offerings are superior.

Thirdly, the DMA obliges gatekeepers of certain CPSs to force their users into making choices and thereby overcome inertia. OSs, virtual assistants, and web browsers commonly interconnect with each other (eg OSs using a particular web browser to open hyperlinks) or other services (eg virtual assistants using a certain search engine to answer queries). The DMA requires gatekeepers of these three CPSs to present users with a choice screen to select the default search engine, virtual assistant, or browser used in such circumstances from a list of alternatives, rather than automatically linking to their own.¹¹⁴ As with the Article 102 decisions concerning pre-installation,¹¹⁵ this obligation is designed to overcome the anti-competitive consequences of the status quo bias, where users often stick with the default even if superior alternatives are available. Here, the DMA requirement of a mandatory choice is essentially replicating the remedy resulting from the 2009 *Microsoft* commitment decision.¹¹⁶

¹⁰⁴ *ibid* [80].

¹⁰⁵ *ibid* [80]–[82].

¹⁰⁶ A sixth could be the art 5(2) prohibition on use of personal data without informed consent, but that is more about the General Data Protection Regulation (2016/679), so it is not discussed here.

¹⁰⁷ DMA art 3(2).

¹⁰⁸ *ibid* art 3(8).

¹⁰⁹ *ibid* art 3(8)(e).

¹¹⁰ The only qualitative designation at the time of writing (*Apple—iPadOS* [2024] (DMA.100047)) does not mention biases.

¹¹¹ DMA art 6(5).

¹¹² DMA Impact Assessment (n 103) [157].

¹¹³ See text accompanying nn 76–89.

¹¹⁴ DMA art 6(3).

¹¹⁵ See text accompanying nn 67–75.

¹¹⁶ *Microsoft (2009 Commitments)* (n 7).

Fourthly, the DMA imposes several positive obligations on gatekeepers to make switching to alternatives as easy as possible, again to seemingly counterbalance the status quo bias. Several DMA requirements are intended to make switching a reality, unencumbered by restrictions imposed by gatekeepers. It must be possible to uninstall non-essential software and to change defaults,¹¹⁷ to download third-party software onto gatekeeper OSs,¹¹⁸ and to enjoy the portability of data accumulated during the use of a CPS to another platform.¹¹⁹ But while these obligations are necessary to enable switching, they were not considered sufficient to foster contestability. Therefore, the DMA also includes positive obligations intended to make software uninstallation, default swaps, app downloads, and data movement viable for all users, rational and biased alike. These obligations make ready use of the adverb ‘easily’: OS gatekeepers must allow users to ‘easily uninstall’ pre-installed software, ‘easily change default settings’ for services related to OSs, virtual assistants, and web browsers, and ‘easily’ set third-party software or app stores as the default.¹²⁰ In addition, effective data portability requires the free provision of ‘tools to facilitate the effective exercise of such’,¹²¹ with the recitals suggesting the development of application programming interfaces as a means to do so.¹²² While the methods by which gatekeepers meet these positive obligations are not entirely clear,¹²³ the DMA’s attempt to address the status quo bias through them is tangible.

Fifth and finally, the DMA’s anti-circumvention provisions are attuned to user biases. In complying with their obligations in Articles 5, 6, and 7, the DMA explicitly prohibits gatekeepers from undermining effective compliance by ‘the use of behavioural techniques or interface design’.¹²⁴ This broad obligation could capture several practices, such as excessive warnings about installing rival software and app stores, which trigger the status quo and loss aversion biases.¹²⁵ It is supplemented by the more specific expectation that gatekeepers must not make the exercise of user choice ‘unduly difficult, including by offering choices to the end-user in a non-neutral manner’ or manipulating ‘the structure, design, function or manner of operation of a user interface’.¹²⁶ The most obvious targets for such interference are mandatory choice screens,¹²⁷ where the solution proposed for one behavioural issue—status quo bias with defaults—ought not to be replaced with another—availability/saliency bias with self-preferencing.

The DMA is still a new regime, with its nuances to be explored through its implementation. Since the compliance deadline passed in March 2024 for the first designated gatekeepers, the Commission has initiated several enforcement proceedings, which may bring the consequences of biased user behaviour to the fore.¹²⁸ Still, the text of the regulation alone illustrates another channel through which behavioural deviations from rationality have been reflected in EU competition law.

¹¹⁷ DMA art 6(3).

¹¹⁸ *ibid* art 6(4).

¹¹⁹ *ibid* art 6(9).

¹²⁰ *ibid* art 6(3)-(4).

¹²¹ *ibid* art 6(6).

¹²² *ibid* recital 59.

¹²³ As discussed later, specification of these obligations in art 6 may provide greater insights in the future.

¹²⁴ DMA art 13(4).

¹²⁵ See CMA, ‘Mobile Ecosystems Market Study: Final Report’ (2022) 7.48 <<https://www.gov.uk/government/publications/mobile-ecosystems-market-study-final-report>> accessed 30 July 2025.

¹²⁶ DMA art 13(6).

¹²⁷ *ibid* art 6(3).

¹²⁸ Commission Press Release (n 101) (uninstallation ease, default selection, choice screen, self-preferencing).

Whether explicitly (tying decisions and the DMA) or more subtly (self-preferencing and after-markets decisions), various aspects of EU competition law reject an assumption of rationality and align with lessons from behavioural economics. One might disagree with behaviourally informed analysis, preferring rationalist explanations which lead to different conclusions on the competitive consequences and, ultimately, legality of the conduct in question. That is a perfectly justifiable position to take. The intention of this piece is not to support or oppose behavioural insights. Nevertheless, the reality is that the Commission, Courts, and EU legislators have undeniably rejected rationality on several occasions. Regardless of one's substantive opinion of it, behavioural economics *has* influenced EU competition law and is likely to continue to do so. That being the case, the remainder of this article explores *how* behavioural insights can and should inform the legality of market conduct, giving particular attention to the trade-off between accuracy and certainty.

4. HOW SHOULD BEHAVIOURAL ECONOMICS BE USED IN EU COMPETITION LAW?

Article 102 TFEU and the DMA use behavioural economics in different ways to reach conclusions on the legality of business conduct. Article 102 enforcement has used behavioural insights to decide whether a firm has engaged in illegality through *individualised factual demonstrations* of deviations from rationality as a result of biases. This involves case-by-case, context-specific analysis of the particular market(s), actors, and conduct in question to gauge the prevalence of non-rational behaviour and its competitive consequences in the circumstances. In contrast, the DMA primarily¹²⁹ integrates behavioural learning through *assumptions* of biases and their harm to competition. Because they are implicit in the conduct requirements imposed by the DMA, illegality is not dependent on an explicit demonstration of the occurrence and anticompetitive outcomes of biased behaviour.

Both approaches are flawed efforts to grapple with the difficulty of faithfully translating behavioural economics into competition law. Neither is a corollary of being either 'ex post antitrust' or 'ex ante regulation'. As will be discussed, illegality pursuant to Article 102 can be determined through the application of simpler generalizations, while the DMA's obligations could also be more tailored to the specific context in which a gatekeeper operates. Nevertheless, it will be argued that the DMA's use of informed assumptions of irrationality represents a more balanced compromise between accuracy and certainty. If we also care about the legal certainty of behaviourally informed Article 102 enforcement, it is an approach that this area of competition enforcement would do well to follow.

The struggle for behavioural antitrust: accuracy v certainty

Competition law uses economics to inform the accurate prohibition of business conduct that is 'bad' for competition. Whether something is economically 'bad', though, is largely dependent on which approach to economics one chooses to adopt (neo-classical, institutional, industrial organization, game theory, behavioural, etc). This article analyses one such disagreement between different approaches to economics in competition law. Behavioural antitrust can be understood as an attack on whether the neo-classical assumption of rationality correctly identifies when conduct ought to be punished through law. If one accepts the findings of behavioural economics, then reflecting its insights therefore offers the opportunity to make EU competition law more accurate in how it demarcates the scope of illegality.

¹²⁹ Qualitative gatekeeper designation is the exception as it merely recognizes the possibility of biases affecting switching, to be determined through subject-specific analysis.

The difficulty is that faithfully translating behavioural economics into law is more challenging than its neoclassical alternative. Rationality has been such a powerful analytical tool because it is an *accontextual, universal axiom* that can be assumed in all circumstances to reach predictable conclusions on competitive consequences.¹³⁰ Rationality involves everyone going through the same logical thought process to reach the optimal outcome, regardless of the specific circumstances. In essence, rationality can be generalized. By contrast, behavioural economics stresses that the prevalence of biases and their effects on competition is *contingent*, meaning that deviations from rationality may or may not materialize in any particular situation. Of course, countless empirical studies have demonstrated ‘predictable’ and ‘systematic’ biases,¹³¹ but that is not the same as an assumption of irrationality of universal application in all circumstances. In the 1950s, Herbert Simon recognized that choices are not beset by ‘modifications and simplifications all the time’,¹³² while Tversky and Kahneman later accepted that the balance between rational and biased decision-making ‘in any particular situation is an empirical issue, to be settled by observation’.¹³³ Consequently, the extent of biased decision-making depends on the specific context in question.

Behavioural economics recognizes several general variables affecting the prevalence of non-rational behaviour. First, *not everyone succumbs to biases*. Behavioural experiments include rational respondents, potentially explicable by nature, age, or culture,¹³⁴ which may affect, for instance, the frequency of the availability bias and the framing of gains/losses.¹³⁵ There is also evidence that the same person may or may not be affected by biases at different times.¹³⁶ Secondly, decision-makers may *learn to overcome biases* if they recognize their errors. Whether this is possible depends upon, inter alia, repetition, accurate and immediate feedback, and simple and stable circumstances,¹³⁷ which are situation-specific phenomena.¹³⁸ Thirdly, *competition may increase rational behaviour*. While early behavioural proponents rejected the rationalist counteroffensive that competitive pressure eradicates biased firms, they accepted that in certain circumstances, only rational firms would survive.¹³⁹ Sometimes biased firms thrive, and sometimes they are eliminated.¹⁴⁰ Fourthly, *group decision-making* can exacerbate deviations from rationality owing to idea polarization and group-think.¹⁴¹ However, there are occasions where group decision-making may mitigate biases,¹⁴² especially as collectives are more likely to introduce de-biasing techniques.¹⁴³ Adding further complexity, the purpose, structure, size, and organizational culture of a firm are said to impact rationality.¹⁴⁴ Fifth and finally, decision-making can be affected by *conflicting biases*, with no theory of their resolution.¹⁴⁵ For instance, biases could lead to the overestimation of

¹³⁰ Jennifer Arlen, ‘Comment: The Future of Behavioral Economic Analysis of Law’ (1998) 51 Vand L Rev 1765, 1768.

¹³¹ Eg Kahneman (n 19) 3–4; Thaler (n 20) 24.

¹³² Simon (n 16) 104.

¹³³ Tversky and Kahneman (n 27) S273.

¹³⁴ Daniel Kahneman, ‘Maps of Bounded Rationality: Psychology for Behavioral Economics’ (2003) 93 Am Econ Rev 1449, 1469.

¹³⁵ Cass Sunstein, ‘What’s Available? Social Influences and Behavioral Economics’ (2002) 97 Nw U L Rev 1295, 1299.

¹³⁶ Tor (n 42) 613–614.

¹³⁷ Tversky and Kahneman (n 27) S274; John Conlisk, ‘Why Bounded Rationality?’ (1996) 34 J Econ Literature 669, 683.

¹³⁸ Kahneman (n 19) 417; Thaler (n 20) 50.

¹³⁹ Russell and Thaler (n 22) 1071, 1080.

¹⁴⁰ Conlisk (n 137) 684; Avishalom Tor, ‘The Methodology of the Behavioral Analysis of Law’ (2008) 4 Haifa L Rev 237, 310.

¹⁴¹ Sunstein (n 135) 1307–1308.

¹⁴² *ibid.*

¹⁴³ Eg reference class forecasting or ‘pre-mortems’ to minimize risky ventures: Kahneman (n 19) 251–252, 264–265, 417–418; Thaler (n 20) 190–191.

¹⁴⁴ Reeves and Stucke (n 47) 1540.

¹⁴⁵ Tor (n 140) 301–302; Alan Schwartz, ‘Regulating for Rationality’ (2015) 67 Stan L Rev 1373, 1379–1380.

applies to their actions. This is why proponents of greater predictability in competition law criticize recourse to context-specific factual analysis (ie “effects-based” analysis) for determining legality, owing to how its complexity and consideration of manifold subject-specific variables cannot enlighten the application of law to other scenarios.¹⁵⁷

The certainty of legal outcomes is also connected to the administrability of the law. Avoiding lengthy, detailed, context-specific analysis through applying a series of simpler, fewer determinants of lawfulness reduces the costs (eg time, resources) for authorities and judges tasked with reaching conclusions on legality, but also the costs of lawyers and economic consultants advising firms on likely outcomes.¹⁵⁸ Along with the importance of a stable regulatory framework, administrative costs offer another reason why it is overly simplistic to characterize legal certainty as working against ‘economics’, broadly understood. It may not be the most efficient use of societal resources to spend them on difficult, time-consuming approaches to reaching conclusions on legal issues, when simpler, more certain legal tests are correct most of the time.

But therein lies the trade-off faced when aspiring towards legal certainty; it may produce political and economic benefits and reduce enforcement costs, but it also reduces the *accuracy of outcomes* through unavoidably introducing erroneous decisions in particular situations. Deciding legality by analysing fewer, simpler conditions necessarily ignores many specificities in any individual application,¹⁵⁹ which, in an antitrust context, increases the risk of inaccurately prohibiting the economically ‘good’ and permitting the ‘bad’. Reaching the perfectly correct outcome in every situation requires the ability to consider every factor at play, which reliance on simpler, fewer determinants of legality closes off. This forces a choice as to which errors we are more willing to tolerate when selecting what factors to include and exclude from decision-making: errors of over-enforcement (‘Type 1’) or errors of under-enforcement (‘Type 2’).¹⁶⁰ Of course, it *might* be possible to avoid these errors through recourse to case-by-case analysis of competitive consequences to determine legality,¹⁶¹ thereby perfectly prohibiting the ‘bad’ and permitting the ‘good’. But given the tension between them, any attempt to improve accuracy through more discriminating legal analysis comes at a cost to legal certainty and administrability.

This trade-off between accuracy and certainty goes to the core of antitrust.¹⁶² In EU competition law, it has underpinned the decades-old battle over presuming illegality without consideration of the competitive effects of the conduct in question. In 1966, the Court of Justice ruled that agreements with the object of restricting competition—such as those partitioning the internal market—are presumptively contrary to Article 101(1) TFEU without consideration of the ‘concrete effects’ or ‘economic data’.¹⁶³ Similarly, a dominant firm pricing below average variable cost and rebates conditional on obtaining all or most requirements from a dominant firm were presumed to be abuses contrary to Article 102 TFEU, without analysis of their actual or potential competitive consequences.¹⁶⁴ From the very

¹⁵⁷ Bruce Wardhaugh, *Competition, Effects and Predictability* (Hart 2020) 2; Stones (n 152) 632–633.

¹⁵⁸ The administrability of antitrust has occupied US commentators since the ‘rule of reason’ was introduced over a century ago. For famous arguments on the importance of administrable antitrust norms: Frank Easterbrook, ‘The Limits of Antitrust’ (1984) 63 *Tex L Rev* 1; Frank Easterbrook, ‘Workable Antitrust Policy’ (1985) 84 *Mich L Rev* 1696.

¹⁵⁹ Stones (n 152) 627.

¹⁶⁰ Easterbrook (n 158) 15–16.

¹⁶¹ Consideration of all the facts *potentially* leads to perfectly accurate outcomes, but, as Easterbrook argued, it is far from guaranteed.

¹⁶² See Yannis Katsoulacos and David Ulph, ‘On Optimal Legal Standards for Competition Policy: A General Welfare-Based Analysis’ (2009) 57 *J Ind Econ* 410; Jan Broulík, ‘Preventing Anticompetitive Conduct Directly and Indirectly: Accuracy Versus Predictability’ (2019) 64 *Antitrust Bull* 115.

¹⁶³ Joined Cases 56 and 58/64 *Établissements Consten and Gründig-Verkaufs-GmbH v Commission* EU:C:1966:41 342–343.

¹⁶⁴ Case C-62/86 *AKZO Chemie v Commission* EU:C:1991:286; Hoffmann (n 63).

the market',¹⁷⁴ and the General Court endorsed its account of 'the actual effects' of preinstallation on user conduct.¹⁷⁵ *Google Android* was similarly premised on idiosyncratic analysis, which demonstrated the status quo bias as a situation-specific deviation from rationality.¹⁷⁶ Beyond tying, the finding of self-preferencing in *Google Search* reflected behavioural insights when establishing the potential 'effects attributable to the impugned conduct ... taking into account all the relevant circumstances'.¹⁷⁷ It was here that the Commission demonstrated the effect on users of prominently displaying Google's shopping offering (ie availability/saliency bias) and their reluctance to dig deeper into the results to find rival platforms (ie fairness/optimism biases). In all of these decisions, the Commission deployed appropriate methods for case-specific factual demonstrations of the extent and anticompetitive consequences of biases in the context under investigation: statistics on the evolving usage of alternatives,¹⁷⁸ download rates,¹⁷⁹ or internet traffic¹⁸⁰; surveys of user preferences and behaviours¹⁸¹; online reviews and ratings of different services¹⁸²; eye-tracking studies revealing what users are drawn towards¹⁸³; and investigations involving millions of individuals into the difference that reordering search results makes to engagement.¹⁸⁴ Statistics, surveys, and studies provided ample factual evidence to illustrate that users in *these particular circumstances* were affected by biases and to thereby inform legal conclusions on abuse.

These Article 102 decisions could not have more faithfully reflected the contingent insights of behavioural economics, which were carefully captured in the markets under investigation. In keeping with the broader trajectory of EU competition law towards a more 'effects-based' approach to determinations of legality, deviations from rationality were proven, not simply assumed. The Commission, endorsed by the Courts, closely ascertained the extent of biases in the specific markets investigated, as well as the consequences for competition likely to result, through detailed factual analysis. This allowed for findings of illegality that accurately identified and prohibited the competitively 'bad' (at least from a behavioural perspective), without committing the Commission to also prohibiting the same conduct in other markets where biases may not, in reality, materialize.

But the potentially perfect accuracy of reaching conclusions through context-specific factual analysis of biases has been achieved at the detriment of legal certainty as to when conduct by dominant firms will be found abusive. As suggested in the previous section, certainty results from reaching conclusions on legality through the application of fewer, simpler determinants. But for a firm contemplating analogous conduct to that prohibited in Article 102 decisions reflecting behavioural economics, illegality depends upon complex factual inquiries into which biases affect *its* consumers on the *specific* market and their *particular* competitive consequences.¹⁸⁵ For instance, preinstallation as illegal tying resulted from the status quo bias 'in this specific case'¹⁸⁶ following 'factual assessment of the specific characteristics of the

¹⁷⁴ *Microsoft* (2007 GC) (n 67) [1013].

¹⁷⁵ *ibid* [1035].

¹⁷⁶ *Android* (2022 GC) (n 69) [557].

¹⁷⁷ *Google Search* (2021 GC) (n 76) [441]–[443].

¹⁷⁸ *Microsoft* (2004 Decision) (n 7) 905–944.

¹⁷⁹ *Android* (2018 Decision) (n 10) 808, 922.

¹⁸⁰ *Google Search* (2017 Decision) (n 10) 462–488, 540.

¹⁸¹ *Microsoft* (2009 Commitments) (n 7) 50–53; *Android* (2018 Decision) (n 10) 905.

¹⁸² *Android* (2018 Decision) (n 10) 837, 954.

¹⁸³ *Google Search* (2017 Decision) (n 10) 375–377, 455.

¹⁸⁴ *ibid* 460–461.

¹⁸⁵ Abusive tying also requires separate products, dominance in the tying market, and coercion to take both (*Microsoft* (2007 GC) (n 67) [868]); abusive self-preferencing requires discrimination (*Google Search* (2021 GC) (n 76) [175]).

¹⁸⁶ *Microsoft* (2004 Decision) (n 7) 841–842.

market',¹⁸⁷ as individualized deviations from rationality.¹⁸⁸ Even the legality of software pre-installation by other dominant computer or mobile OSs would depend on idiosyncratic analysis of behaviour by *their* particular users at the time of investigation, who may now behave differently from those in the Commission's 2004, 2009, and 2018 decisions. Tying by firms with dominance beyond computer and mobile OSs is on even shakier legal ground, dependent on whether *their* users exhibit the status quo bias or not. The Commission and Courts' behaviourally informed analysis of self-preferencing in *Google Search* is also an unenlightening precedent. Illegality resulted from a demonstration of the anticompetitive consequences of the conduct, 'taking into account all the relevant circumstances',¹⁸⁹ including user behaviour attributable to various biases. But what of the lawfulness of self-preferencing beyond search engines and manipulated algorithms; perhaps a dominant supermarket chain placing its own-brand products in a prominent position at the front of its stores, while relegating rival products to a dark corner?¹⁹⁰ As faithful to behavioural economics and as accurate in prohibiting abuses as these decisions on preinstallation and self-preferencing may be, determining illegality through context-specific factual analysis of the extent of biases and their individualized competitive consequences offers precious little legal certainty for others wondering whether similar acts are prohibited by Article 102.

Dominant firms are seemingly left with three options.

First, before engaging in preinstallation or self-preferencing, they could replicate the Commission's context-specific factual analysis to gain insights into whether illegality is likely. They too could hire dozens of economic experts to engage in years of detailed analysis of statistics, surveys, and studies. This is obviously unfeasible for many, and none have the same expansive investigatory and information-gathering powers as the Commission. Were businesses to attempt this, it would be an excellent illustration of how context-specific legal determinations increase compliance costs.¹⁹¹

Secondly, firms could engage in the conduct and await the Commission's conclusions on compliance with Article 102 (if it even investigates). This cavalier approach to illegality is one of considerable reputational and financial risk.

Thirdly, dominant firms could simply avoid engaging in such conduct altogether. While the easiest and safest of the three options, there is a chance of foregoing behaviour that would ultimately be deemed legal by the Commission, and may even be beneficial for consumers.¹⁹² Such is the dilemma arising from illegality being decided by context-specific factual analysis rather than by fewer, simpler determinants that businesses can more easily apply to their proposed actions. These are the consequences of uncertainty.

Some behavioural antitrust proponents might not care a great deal about this, maintaining that the 'pursuit of predictability may be costing us too much'.¹⁹³ But several leading lights of the movement clearly *do* care. Tor scatters references to the importance of predictability and administrability throughout his behavioural work,¹⁹⁴ while Stucke has published a

¹⁸⁷ *Microsoft* (2007 GC) (n 67) [1013].

¹⁸⁸ *Android* (2022 GC) (n 69) [557].

¹⁸⁹ *Google Search* (2021 GC) (n 76) [441]–[443].

¹⁹⁰ As an aside, a few years ago I set a competition law assessment for undergraduate students at City using a similar hypothetical scenario. Their views on whether this amounted to abusive self-preferencing in light of *Google Search* were varied, with the top submissions reaching strikingly different conclusions on legality.

¹⁹¹ See text accompanying n 158.

¹⁹² Eg art 102 Guidance (n 44) paras 49, 62 (on tying); Yusuke Zenryo, 'Platform Encroachment and Own-Content Bias' (2022) 70 J Ind Econ 684 (on self-preferencing).

¹⁹³ J Thomas Rosch, 'Behavioral Economics: Observations Regarding Issues That Lie Ahead' (9 June 2010) <<https://www.ftc.gov/news-events/news/speeches/behavioral-economics-observations-regarding-issues-lie-ahead>> accessed 30 July 2025.

¹⁹⁴ Eg Tor (n 140) 240. cf text accompanying n 150.

scathing critique of determining legality through the context-specific inquiry of the USA 'rule of reason' as an affront to the rule of law.¹⁹⁵ He and Reeves clearly did not envisage behavioural antitrust abandoning legal certainty.¹⁹⁶ But that is how behavioural insights have actually been reflected in Article 102 decisions.

Factual demonstrations of biased decision-making to reach conclusions on abusive conduct are admittedly the tip of the uncertainty iceberg in Article 102 investigations. Several other steps along the way also rely on context-specific analysis (eg defining the relevant market(s), establishing dominance).¹⁹⁷ And as noted previously, suggestions that EU competition enforcement should rely more upon case-by-case factual analysis of all aspects to determine illegality long predate the appearance of behavioural insights in Commission decisions.¹⁹⁸ This is but one small manifestation of a much broader trajectory towards accuracy and away from certainty. Still, reflecting behavioural economics in this manner is an additional contribution to this problem, and one that affects perhaps the most important question for a dominant business: is my conduct legal or not? But as the DMA illustrates, behaviourally informed competition law does not have to be this way.

Behavioural economics in the DMA: assumptions

The DMA does not faithfully reflect behavioural economics. It ignores the contingency of non-rational decision-making and will inevitably lead to inaccurate findings of illegality.¹⁹⁹ Yet, it is this same flaw that arguably makes its reflection of biases preferable to the experience with Article 102. This is because the DMA's obligations represent a more balanced compromise between accurate outcomes and legal certainty.

The DMA's obligations that reflect behavioural economics make *assumptions* of biased behaviour and its resultant anticompetitive consequences. Such assumptions informed the conduct requirements as drafted, by taking for granted that users: *do* stick with defaults, so gatekeepers must force a choice upon them²⁰⁰; *will* struggle to change pre-installed apps and settings or transfer data, so switching has to be easy²⁰¹; and *are* led astray by distorted search ranking, so self-preferencing in results is forbidden.²⁰² These assumptions are also implicit in any subsequent enforcement for breach; illegality depends purely on whether gatekeepers comply with the conduct-based obligations—no choice screen for default related services, self-preferencing in ranking—without any explicit demonstration of the prevalence of biases and competitive harm in the specific market(s) in question. Indeed, the DMA explicitly prevents gatekeepers from producing evidence to the contrary.²⁰³ Ascertaining the actual nature of user decision-making is therefore not a necessary precondition for the application of the DMA's obligations.

The DMA assumes *irrationality*, i.e. consistently biased decision-making; essentially, the opposite assumption to neo-classical rationality. A key proponent of behavioural antitrust has generally called assuming irrationality a 'fundamental methodological error'.²⁰⁴ This is because it ignores the contingency of biases and their variable effect on competition, as emphasized in behavioural economics. There is therefore a considerable risk that the DMA's

¹⁹⁵ Maurice Stucke, 'Does the Rule of Reason Violate the Rule of Law?' (2008) 42 UC Davis L Rev 1375.

¹⁹⁶ Reeves and Stucke (n 47) 1543–1545.

¹⁹⁷ Hence, this section does not discuss the behavioural insights in *Apple (Streaming)* finding dominance.

¹⁹⁸ See text accompanying nn 162–170.

¹⁹⁹ For why not *all* manifestations: n 129.

²⁰⁰ DMA art 6(3).

²⁰¹ *ibid* art 6(3), (4), and (9).

²⁰² *ibid* art 6(5).

²⁰³ Narrow exceptions only relate to economic viability, public health, and security: *ibid* arts 9 and 10.

²⁰⁴ Tor (n 42) 579.

obligations will inaccurately prevent and prohibit instances where gatekeeper conduct is not actually 'bad' from a behavioural point of view; individual instances where users might actually behave rationally and where there is no threat to competition. Undoubtedly, the accuracy of how the DMA integrates behavioural insights into legal obligations is considerably poorer than the case-by-case factual analysis of Article 102 decisions.

But it is the inaccurate assumptions of irrationality that make breach of DMA obligations more certain than behaviourally informed findings of abuse contrary to Article 102. Assumptions exclude context-specific factual inquiries into the prevalence and consequences of biases from conclusions on the legality of conduct, leaving it to be decided instead through the application of fewer, simpler determinants based on conduct. Consider the DMA prohibition of self-preferencing in search; how do gatekeepers know whether their conduct will be in breach? Well, if they ‘treat ... more favourably, in ranking and related indexing and crawling’ their own offering over rivals.²⁰⁵ There is clearly room for disagreement about whether particular behaviour *is* more favourable treatment, but that also exists for a finding of abusive self-preferencing contrary to Article 102.²⁰⁶ What the DMA’s assumption of irrationality removes from the equation, however, is the need for an *additional* factual analysis of biases and their anticompetitive consequences in the specific context under investigation to conclude on illegality. This is why, despite both being informed by behavioural economics, the application of Article 6(5) DMA is more certain and administrable than the lawfulness of equivalent conduct pursuant to Article 102, as per *Google Search*. The same can be said of the obligation on OS, virtual assistant, or browser gatekeepers to present a choice screen for users to select the default search engine, virtual assistant, or browser to which they will be directed when this functionality is required.²⁰⁷ While the mechanics of choice screens and anti-circumvention are to be fleshed out,²⁰⁸ offering no choice screen at all is an obvious breach of the DMA. Such an omission alone is sufficient for illegality, informed by the assumption—probably sometimes erroneous—about the occurrence and competitive outcomes of the status quo bias unless choice is forced. The absence of case-specific factual analysis is, therefore, what makes illegality here more foreseeable.

Admittedly, not all of the DMA's behaviourally informed obligations are as straightforward in their application. In particular, the positive obligations to overcome the status quo bias through "easy" uninstallation, switching of defaults, and data portability are less tangible.²⁰⁹ Fortunately, as they are contained in Article 6, the Commission has the discretion to issue decisions to gatekeepers specifying how they should be met and guidance on whether proposals are satisfactory.²¹⁰ This should offer greater clarity to the individual gatekeeper and perhaps, with time, insights relevant to others on how to comply. In any event, there are no real equivalents to these positive obligations in the law of Article 102. It is instead when their analogous, behaviourally informed approaches to self-preferencing and preinstallation/defaults are compared that the relative foreseeability of compliance with the DMA rather than the Article 102 prohibition becomes more apparent.

This is not simply a corollary of the DMA being ‘ex ante regulation’, to be contrasted with Article 102 as ‘ex post antitrust’. It is rather essentialist to consider ‘ex post antitrust’ *inherently* more fact-intensive in determining legality in an accurate manner, while ‘ex ante

²⁰⁵ DMA art 6(5).

²⁰⁶ *Google Search* (2021 GC) (n 76) [175].

²⁰⁷ DMA art 6(3).

²⁰⁸ See text accompanying nn 124–127.

²⁰⁹ See text accompanying nn 120–122.

²¹⁰ DMA art 8(2) and (3).

regulation' is *necessarily* about simpler obligations offering legal certainty.²¹¹ Both are malleable. As discussed above, the controversy over the use of presumptions in Article 102 decisions shows that more or less certain or accurate approaches can be taken to reaching conclusions on legality in 'ex post antitrust'.²¹² The same goes for the 'ex ante' DMA, which resulted from a deliberate legislative preference for clearer conduct obligations that are simpler to apply than extensive factual inquiries.²¹³ Heavy weighting was given to the value of legal certainty in its drafting.²¹⁴ This was not inevitable, as illustrated by how the UK's equivalent regime works rather differently.²¹⁵ It too seeks to address behavioural biases affecting users of digital platforms²¹⁶ and contains similar obligations that could tackle their anticompetitive consequences,²¹⁷ but the obligations applicable to any firm subjected to the regime are tailored to the specific platforms, market(s), and contexts in which they operate,²¹⁸ and firms can defend non-compliance on the basis of countervailing benefits.²¹⁹ Despite both being 'ex ante regulation', the UK's behaviourally informed regime uses a greater number of more complex determinants than the DMA to conclude on the legality of conduct by significant digital platforms. The UK and EU have thereby struck different regulatory balances between accuracy and certainty.

Behaviourally informed enforcement of Article 102 could similarly strike a different balance, offering more certainty than is currently the case. However, as in the DMA, it will require compromise.

What Article 102 can learn from the DMA: informed assumptions of irrationality

If one accepts the insights of behavioural economics, its integration into Article 102 enforcement through factual demonstrations of biases is of considerable merit. It reflects that non-rational conduct is contingent, facilitating the accurate prohibition of economically 'bad' conduct. But as illegality is being determined through complex, situation-specific analysis, it offers little certainty as to what acts will be found to breach Article 102. This is the logic of the accuracy/certainty trade-off. It means that if—like key behavioural antitrust advocates envisaged²²⁰—we really want competition law that is informed by behavioural economics without abandoning legal certainty, it is necessary to concede on perfectly prohibiting the 'bad' in every instance.

Article 102 enforcement could follow the DMA's more balanced compromise between accuracy and certainty for determining the legality of business conduct in a behaviourally informed manner. The DMA does this by incorporating *informed assumptions of irrationality*. Both the "informed" and "assumptions" aspects are key to this more equal balance.

As discussed previously, it is the DMA's *assumptions* that offer certainty. Biased decision-making with anticompetitive consequences is taken as given, removing a factual demonstration of the actual nature of market behaviour and its impact on competition from conclusions on illegality, and thereby leaving fewer, simpler conduct-based determinants of lawfulness that businesses can foresee. This is undeniably ignorant of the contingency of

²¹¹ Natalia Moreno Bellosio and Nicolas Petit, 'The EU Digital Markets Act (DMA): A Competition Hand in a Regulatory Glove' (2023) 48 ELRev 391, 417.

²¹² See text accompanying nn 162–171.

²¹³ DMA Impact Assessment (n 103) para 119.

²¹⁴ *ibid* paras 330–331.

²¹⁵ Digital Markets, Competition and Consumers Act 2024 (DMCCA).

²¹⁶ 'Digital Markets, Competition and Consumers Bill: Impact Assessment Annex A: A New Pro-Competition Regime for Digital Markets' para 22 <<https://bills.parliament.uk/bills/3453/publications>> accessed 30 July 2025.

²¹⁷ DMCCA s 20(2)–(3).

²¹⁸ *ibid* s 19(1).

²¹⁹ *ibid* s 29.

²²⁰ See text accompanying nn 194–196.

behavioural findings; ironing over context-specific nuances comes at the cost of imperfect outcomes from under- or over-inclusive illegality.

However, the DMA's assumptions of irrationality are still *informed* by behavioural wisdom. They do not entirely abandon economic accuracy to achieve legal certainty. While necessarily less discerning than using case-by-case factual analysis to decide on the lawfulness of conduct from a behavioural perspective, the aim is to ensure that what is excluded by assumptions from individual determinations of legality still leads to *reasonably* accurate outcomes. Regardless of whether one agrees with its sources of inspiration, the DMA's assumptions are informed by (behavioural) economic research—as visible in the voluminous references in the Impact Assessment²²¹—and enforcement experience, not least the Commission's own Article 102 decisions discussed previously. Research and experience have recommended that for particular types of conduct by gatekeepers of core digital platforms, biased decision-making and its anticompetitive consequences are highly likely to materialize, although not guaranteed. Albeit imperfect, the likelihood of biases and harm makes it completely reasonable for the DMA to assume irrationality and prohibit non-compliance with simpler conduct obligations *without* having to individually demonstrate biases and anticompetitive consequences. What is lost in accurately prohibiting the 'bad' and permitting the 'good' in some situations is gained in legal certainty and administrability.

Assumptions of irrationality informed by behavioural economics could similarly be used in the doctrines of Article 102 to reduce recourse to complex factual analysis and thereby increase legal certainty, without entirely sacrificing the accuracy of enforcement.²²² It is not inevitable that compliance with Article 102 is determined through context-specific analysis of the market, actors, and conduct in question.²²³ As noted previously, jurisprudential developments may be leading Article 102 towards this approach on the back of decades of criticism that EU competition law is too formalistic and inaccurate in what is prohibited.²²⁴ Still, for how a more certain approach to behavioural antitrust could proceed, the *de facto* illegality of pricing below average variable cost offers an informative counterpoint.²²⁵ This assumes harm to competition and therefore illegality on the basis of costs that are relatively comprehensible to a potential defendant without more complex factual analysis, even though this *could* reveal instances where such pricing does not actually exclude rivals or might make business sense (eg stock clearance, attracting customers to a nascent market). While imperfect, the assumption of harm is a *reasonable* approximation of economic thought, therefore allowing illegality to be determined on the basis of simpler determinants that offer greater certainty as to when pricing will be prohibited. The same logic was essentially endorsed by the Court of Justice to justify finding horizontal price-fixing contrary to Article 101 TFEU without having to prove likely anticompetitive effects.²²⁶ Essentially, this is also the *modus operandi* of the DMA; reaching legal conclusions on illegality based on the likelihood—but not guaranteed certainty—that biased responses to certain forms of conduct will produce competitive harms, without detailed factual analysis of their actual existence. These precedents and the DMA reflect that generalizations in a law are a compromise between competing virtues, offering certainty at the cost of occasional inaccuracy.

A similar approach can be taken to determining whether business conduct is contrary to Article 102 in light of behavioural economics. Research and enforcement experience on the

²²¹ DMA Impact Assessment (n 103).

²²² Similarly: Stucke (n 149) 740; Max Huffman, 'Marrying Neo-Chicago with Behavioral Antitrust' (2012) 78 *Antitrust LJ* 105.

²²³ Moreno Bellosio and Petit (n 211) 417.

²²⁴ See text accompanying nn 156–164.

²²⁵ *AKZO* (n 164) (technically a presumption but yet to be rebutted, making it essentially a *de facto* prohibition).

226 *Groupe des Cartes Bancaires* (n 166) [51].

general occurrence and consequences of biases in particular situations should inform assumptions of irrationality, leaving legality to be decided through the application of fewer, simpler determinants that businesses can more easily comprehend.

Informed assumptions of irrationality could wholesale replace some factual determinations of biases in establishing illegality. Obligations would be clearer and easier to administer, albeit purchased at the expense of (primarily)²²⁷ Type 1 errors of over-enforcement. Consider self-preferencing. If, for instance, the prominent display of related services by a dominant firm is deemed so likely to trigger the availability/saliency bias with foreseeable anticompetitive consequences, we could assume such non-rational user responses, thereby excluding factual analysis of how users actually respond in specific markets from deciding the legality of self-preferencing. Undoubtedly, this assumption of irrationality would be over-inclusive, prohibiting instances where rational users are not actually swayed by prominence. However, it might be a justifiable—not perfect—reflection of behavioural wisdom on self-preferencing determined through a more certain test of legality than is currently the case. Similarly, if economic research and experience suggest that users mostly stick to preinstalled services over acquiring superior alternatives owing to the status quo bias, deciding whether preinstalled services are illegal tying through case-by-case factual analysis is conceding too much to the pursuit of perfectly accurate outcomes. An assumption of irrationality—that it is not necessary to demonstrate whether users do or do not switch—would greatly increase certainty as to whether such conduct is lawful, at the cost of some instances of inaccurate prohibitions.

But informed assumptions of irrationality could also be deployed in a more circumscribed manner in Article 102, perhaps if the general economic evidence on the extent and consequences of biased behaviour is more nuanced. For example, we might only assume irrationality to prohibit *preinstallation* without context-specific factual analysis, while maintaining the current approach of requiring factual analysis of anticompetitive effects for other forms of tying, if the status quo bias is generally thought to be less prevalent beyond preinstallation scenarios.²²⁸ Similarly, for self-preferencing, establishing that merely prominent positioning of related services is abusive could still require detailed factual analysis to determine the extent and consequences of the availability and saliency biases for competition. However, deliberate manipulation of algorithms to disadvantage rivals might be found so likely to exploit users' optimism in the integrity of the results and inertia to search elsewhere that it is deemed unnecessary to actually demonstrate the effect of such biases on competition. These more targeted assumptions of irrationality would still reduce recourse to context-specific analysis for deciding whether some scenarios—preinstallation and manipulation of algorithms—are contrary to Article 102, giving firms a clearer indication of unlawfulness in these particular manifestations of tying and self-preferencing.

Developing informed assumptions of irrationality that balance reasonably accurate outcomes with legal certainty is not straightforward, especially given the contingency of insights from behavioural economics. It will necessarily lead to some erroneous outcomes. As with the broader error cost approach to generalizations in antitrust, difficult decisions will have to be taken about our tolerance for false positives and negatives, as well as deciding which of the two we are more willing to accept. But by taking complex analysis out of conclusions of legality and leaving simpler conduct-based determinants, informed assumptions of

²²⁷ But not necessarily. See 'Behavioural antitrust' section on how biased entry and excessive pricing may make competitive concerns less likely than when rationality is assumed.

²²⁸ This is essentially the approach of the DMA in narrowly circumscribing some obligations where it assumes irrationality, eg only prohibiting self-preferencing in search ranking, mandatory choice screens only for particular connections between CPSs.

irrationality would facilitate Article 102 decisions that are still informed by behavioural economics, but without abandoning legal certainty. It is not that the DMA is 'right' and Article 102 enforcement is 'wrong'. The tension between accuracy and certainty has bedevilled EU competition law since its earliest years and will continue to do so for many to come. Yet if the intention is for a legal order that realizes both virtues, albeit imperfectly, the DMA offers an approach to behavioural economics from which Article 102 enforcement may also benefit.

This compromise between accuracy and certainty is essentially what Maurice Stucke intended for behavioural antitrust. As noted previously,²²⁹ Stucke is both a key proponent of behavioural economics *and* defender of legal certainty against case-by-case determinations of legality. He wished for the transformation of behavioural antitrust from ‘effects-based legal analysis toward simpler, ex ante legal rules and presumptions’ which ‘market participants can internalize and follow.’²³⁰ The problem with Stucke’s ambition was that at the same time, he drew the line at assuming irrationality; it is ‘an oversimplification to categorize millions of consumers and firms as either rational or bounded rational,’²³¹ meaning that ‘behavioral economics, unlike neoclassical economic theory, will not provide a simple unifying principle’.²³² He was absolutely right. Assuming irrationality *is* caricaturing behavioural economics, deliberately brushing over the importance of context-specific variables, which may affect the prevalence of biases and their competitive consequences in any market investigated. But if we refuse to compromise on the context-dependence of behavioural economics, it is difficult to develop any generalizations at all to avoid case-by-case determinations of legality. If we desire behaviourally informed *and* legally certain competition law, targeted and informed assumptions of irrationality, as in the DMA, offer a way to achieve that. It will, however, require compromise, both on faithfully incorporating behavioural economics into the law, and on accurately reaching the ‘right’ conclusion in every single instance.

5. CONCLUSION

EU competition law increasingly reflects insights from behavioural economics. What was first visible in the landmark case against Microsoft two decades ago has since been echoed in several decisions pursuant to Article 102 TFEU against the giants of the digital economy. Furthermore, the DMA is informed by a recognition of non-rational behaviour by digital platform users. Although ‘behavioural antitrust’ was primarily a product of US scholarship, it has arguably received a much warmer reception in competition law on this side of the Atlantic.

Yet, *how* behavioural economics has been reflected by EU competition law to determine the legality of business conduct is more contentious. In this regard, it has been argued that Article 102 should follow the lead of the DMA by incorporating informed assumptions of irrationality. Context-specific factual demonstrations through statistics, surveys, and studies of biases and their anticompetitive consequences have led to Article 102 decisions faithfully reflecting the contingency of behavioural insights, but exacerbating uncertainty as to when business conduct will be deemed illegal. In contrast, the DMA's obligations assume non-rational users and competitive harms, leaving legality to be determined through the application of simpler conduct requirements. This approach is a significant distortion of behavioural economics and will lead to inaccurate prevention and prohibition of innocuous acts, but it

²²⁹ See text accompanying nn 195 and 196.

²³⁰ Stucke (n 149) 740.

²³¹ *ibid* 724–725.

²³² *ibid* 738.

does offer greater certainty as to what gatekeepers can and cannot do. Article 102 enforcement could similarly incorporate assumptions of irrationality informed by economic research and enforcement experience, thereby avoiding excessive recourse to case-by-case factual analysis to decide whether business conduct is lawful. As with the DMA, this would allow for behavioural economics to be reasonably reflected—albeit imperfectly—in Article 102 decisions without abandoning predictable enforcement outcomes. Of course, informed assumptions of irrationality would sacrifice some economic accuracy for legal certainty in the enforcement of EU competition law. But we should not let the pursuit of ‘perfect’ outcomes become the enemy of achieving ‘good’ competition law, economically *and* legally.

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