THE DYNAMIC COMPETITION PARADIGM: INSIGHTS AND IMPLICATIONS

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Dynamic innovation-driven competition is what strong competition policy should favor; yet it is the weaker static efficiency driven competition which animates current competition economics and enforcement action. The shortcomings of the static efficiency approach have resulted in backward looking antitrust actions that underappreciate certain forms of potential competition resulting in errors with respect to the assessment of monopoly power, M&A activity, and complex contracts. This paper exposes the weaknesses of static analysis and calls for a forward-looking capabilities-based determination of competitive effects. The proposed framework requires deeper analyses of (supply side) capabilities, both technological and organizational, present and future. It endorses a long-term consumer welfare standard and calls for a multidisciplinary approach that draws on complexity economics, technology management, organizational behavior, and information and computer science. The administrability of the dynamic competition framework will be at hand once the foundation of dynamic competition are more fully embellished and better understood by both economists and lawyers.

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I. INTRODUCTION

Competition is a key enabler of a thriving private-enterprise economy. Competition can be engendered by firms engaging in cost-saving and cost-cutting, "efficient" activities, which enable them to deliver lower prices to consumers. That form of competition is "static." The pursuit of efficiency is the primary focus of contemporary antitrust enforcement with its endorsement of the (short run) consumer welfare standard.

Competition can also come from innovation and entrepreneurship that result in new and better products and services that results from human ingenuity and machine intelligence. The outcome is improved product and service performance that pleases customers, and, in the end, saves resources. This second type of competition is "dynamic" and should be the primary goal of antitrust enforcement. It is the more impactful form of competition. It accepts that market actors have imperfect knowledge and face deep uncertainty.

Dynamic competition requires different managerial styles and internal structures for the business enterprise, and relies on risk-taking and innovation to achieve competitive advantage.[1] Both dynamic and static competition matter; but dynamic competition is more powerful, exciting, and important. Dynamic competition brings about dramatically different and/or improved new products and services that customers enjoy and that nations require for economic growth and national security.

Notwithstanding the rather obvious superiority of dynamic over static competition (in my judgment, which I will express and hope to explain and support throughout this article), competition authorities in many countries have (perhaps inadvertently) favored the static over the dynamic.[2] That is probably because competition economics as a field of study that informs enforcement actions is primarily "deterministic" insofar as the field of study attempts to provide predictability

1 *See* BURTON H. KLEIN, DYNAMIC ECONOMICS, (1977).

2 *See infra* Section II.c.

given specified structural elements within a particular competitive context. Such predictability is likely false comfort if it is based on static perspectives.

Competition authorities understandably prefer to base their enforcement policies on a model of competition that claims a level of certainty and quantifiability. This article argues that, in so doing, competition authorities are sacrificing "relevance," or an accurate account of the reality of competitive conditions, for false and often oversimplified characterizations of competition.[3] A static orientation, coupled with failure to recognize the rich interdependencies between innovation and competition, too often prevents competition authorities from properly understanding today's competitive landscape, particularly where digital and other technological along with geopolitical transformations are underway.

The need for a dynamic competition framework has not suddenly been thrust upon us by the arrival of "Big Tech" and digital transformation. Rather, that need has been around for decades, but it is now urgent and particularly well-illustrated by the fluid and rapidly superseding generations of tech competition. Fortunately, the state of the art has now advanced sufficiently, both outside and inside competition economics, to allow a fulsome embrace of dynamic competition as the organizing paradigm for competition policy. As we will see, however, a proper dynamic competition assessment typically is case-specific and requires a deep factual inquiry that evaluates the potential for innovation and associated competitive threats. Such threats are often camouflaged and usually completely unseen, particularly to those wedded to static frameworks.[4]

[3] *See* George A. Akerlof, *Sins of Omission and the Practice of Economics*, 58 J. ECON. LITERATURE 405 (2020).

[4] Getting competition policy right with innovation prioritized will have the auxiliary benefit of aiding the integration of competition policy, technology policy, and industrial policy. With today's largely static competition focus, these policy domains can sometimes be at war with each other.

Some commentators, and in particular some Neo-Brandeisians,[5] believe that there has been an epic failure of competition policy of a different kind, especially with respect to Big Tech. That failure supposedly comes from allowing Big Tech to flourish, get big, and, in the eyes of some, wield monopoly power.[6] In my judgment, too many competition economists are too quick to advance the view that digital platforms enjoy the inexorable winner-take-all economics that generate serious antitrust risks. The reality is that an incumbent's network effects can often be overcome by a different firm's superior business acumen and innovative activity—what I call a firm's "dynamic capabilities."[7]

The Neo-Brandeisians believe that technology-based, and in particular social media-based, market power is undesirable because it might translate into political power.[8] Many do not support an "effects-based" analysis, and seem to believe that antitrust intervention should be based on ex ante presumptions of illegality that condemn certain types of conduct.[9] The burden of rebutting that presumption would fall

[5] Neo-Brandeisians represent a movement in the U.S. that is critical of Big Tech and antitrust enforcement as it has evolved over the last 50 years. *A Brief Overview of the "New Brandeis" School of Antitrust Law*, PATTERSON BELKNAP (Nov. 8, 2018), https://www.pbwt.com/antitrust-update-blog/a-brief-overview-of-the-new-brandeis-school-of-antitrust-law [https://perma.cc/2M9F-AY3E].

[6] *See* Bo Cowgill, Andrea Prat & Tomasso M. Valletti, *Political Power and Market Power* (Ctr. Econ. Pol'y Rsch. Discussion Paper No. DP17178, 2023).

[7] *See* David S. Evans & Richard Schmalensee, *Why Winner-Takes-All Thinking Doesn't Apply to the Platform Economy*, HARV. BUS. REV. (May 4, 2016), https://hbr.org/2016/05/why-winner-takes-all-thinking-doesnt-apply-to-silicon-valley [https://perma.cc/W6D2-9HCG].

[8] *See* Natali Helberger, *The Political Power of Platforms: How Current Attempts to Regulate Misinformation Amplify Opinion Power*, 8 DIGIT. JOURNALISM 842, (2020); Clay Shirky, *The Political Power of Social Media: Technology, the Public Sphere, and Political Change*, 90 FOREIGN AFF. 28 (2011).

[9] U.S. Dep't Just. & Fed. Trade Comm'n, *Request for Information on Merger Enforcement* 4 (Jan. 18, 2022), https://www.justice.gov/opa/press-release/file/1463566/download (including several questions regarding

on the defendants, shifting traditional burdens of proof and providing the enforcement authority with a distinct litigation advantage.

Merely asserting the existence of monopoly power and advancing industrial-age shibboleths (structure-performance-effects and static reasoning) as to how any "monopoly" power was acquired and/or maintained no longer provides a solid foundation for antitrust enforcement or legislative proposals that are designed to address competitive realities. Moreover, designations of market power are highly problematic when, as we have seen for years in the tech economy, radical and ongoing shifts in the organization of business and the economy are driven by successive generations of technology that render the most recent generation effectively obsolete. The very concepts of industry and relevant markets must themselves be seen as fluid and evolving with rapid digital innovation and the appearance of broad-spectrum competitors.

Fortunately, some competition authorities have (somewhat belatedly) begun to recognize the importance of dynamic competition.[10] However, few seem to have a good understanding of the innovation process, with the result that there is now a tendency to clumsily, if not erroneously, intervene in the name of protecting innovation.[11] Premature

aspects of transactions, firms, or markets that should trigger presumptions of illegality as described *infra* note 126.

[10] *See* Frederick Jenny, *What Role Does Competition Policy Play in Ensuring That Dynamic Competition in Digital Markets Works Best for Consumers? And What Are Some Lessons the APAC Region Can Take Away From the EU/US Experiences?*, COMPETITION POL'Y INT'L (Aug. 2, 2022), https://www.competitionpolicyinternational.com/what-role-does-competition-policy-play-in-ensuring-that-dynamic-competition-in-digital-markets-works-best-for-consumers-and-what-are-some-lessons-the-apac-region-can-take-away-from-the-eu-us-experien/ [https://perma.cc/RDA6-LVBA].

[11] *See, e.g.*, *Fed. Trade Comm'n v. Meta Platforms Inc.*, No. 5:22-CV-04325-EJD, 2023 WL 2346238, at *31 (N.D. Cal. Feb. 3, 2023) ("the Court concludes that the FTC has failed to establish a likelihood that it would ultimately succeed on the merits as to its … claim" based on potential competition and lost innovation.); Compl. At 6, *Fed. Trade Comm'n v. Meta Platforms Inc.*, No. 5:22-CV-04325 ("[T]his Acquisition poses a reasonable probability of eliminating both present and future competition. That

and ill-conceived interventions do more harm than good, as they discourage the very innovation that should be promoted as the engine of competition. Absent investment by competition enforcement authorities in understanding and implementing new models of competition that identify and promote authentic innovation, dynamic competition as an analytical framework will become bastardized even before it has got going.

To be clear, this article does not attempt to provide but a few of the answers with respect to how a dynamic competition framework should be developed and translated into an enforcement framework/paradigm. Its primary goal is to outline the foundations of the dynamic competition paradigm and show the direction of travel that is required. It also attempts to illustrate its application to certain aspects of M&A analysis. At the same time, it calls scholars and professionals to the task of rendering the framework more administrable. In that regard, the author wishes to thank Dr. Tasneem Chipty for her helpful observations in the accompanying article entitled, Are We Not Taking Innovation Seriously? A Discussion of the 2022 Howard Taft Lecture, and the introduction by the Willkie authors, Taking Innovation Seriously: A Dynamic Competition Model for Antitrust Law.[12]

lessening of competition may result in reduced innovation, quality, and choice…"); *United States v. UnitedHealth Grp. Inc.*, No. 1:22-CV-0481 (CJN), 2022 WL 4365867 (D.D.C. Sept. 21, 2022), dismissed, No. 22-5301, 2023 WL 2717667, at *7 (D.C. Cir. Mar. 27, 2023) (rejecting the government's argument "that the proposed acquisition is an illegal vertical merger because United's control over Change's EDI clearinghouse would give it the ability and incentive to withhold innovations and raise rivals' costs. . ."); *Fed. Trade Comm'n v. Qualcomm Inc.*, 969 F.3d 974, 1000 (9th Cir. 2020) (rejecting the FTC's suggestion "that Qualcomm's royalty rates impose an anticompetitive surcharge on its rivals' sales… because Qualcomm uses its licensing royalties to charge anticompetitive, ultralow prices on its own modem chips—pushing out rivals by squeezing their profit margins and preventing them from making necessary investments in research and development.").

[12] Tasneem Chipty, *Are We Not Taking Innovation Seriously? A Discussion of the 2022 Howard Taft Lecture*, 2023 COLUM. BUS. L. REV. 462 (2023); William H. Rooney, Colin Lee, and Amanda M. Payne, *Taking*

The author, as well as others,[13] has research that is making steps in that direction.[14] There is no room for complacency. For too long, competition authorities and economists have resisted the dynamic competition framework because its tactile and fact-intensive approach does not conform to the neat categories that have provided the basis of enforcement guidelines and the static competition-economics discourse.[15]

The research base for a dynamic competition framework, however, is far more comprehensive than many realize because of the considerable work done in the fields of strategic management, entrepreneurship and innovation, which mainstream competitive economists has not adequately acknowledged, perhaps due to overly specialized academic disciplines.[16] Moreover, the challenge will always appear formidable so long as economists and other professionals put the vast majority of their research efforts into finessing versions of the static paradigm. Professional (and social) responsibility requires a more imaginative, interdisciplinary, and courageous research agenda in law, economics, and business.

One way to state the analytical problem is to note that mainstream competition models not only have omitted-variables problems; they are also mis-specified because of the unrecognized endogeneity of innovation and competition. Although competition authorities and economists correctly

Innovation Seriously: A Dynamic Competition Model for Antitrust Law, 2023 COLUM. BUS. L. REV. 338 (2023).

13 The author has co-founded the Dynamic Competition Initiative (dynamiccompetition.com) to give momentum to this process.

14 *See* Cambridge Elements Volumes on Dynamic Competition (forthcoming).

15 J. Thomas Rosch, Former Comm'r, FTC, Promoting Innovation: Just How 'Dynamic' Should Antitrust Law Be? Remarks at USC Gould School of Law 2010 Intellectual Property Institute (Mar. 23, 2010).

16 *See, e.g.*, Pierre Dussauge, Laurence Capron & Will Mitchell, *Resource Redeployment Following Horizontal Acquisitions in Europe and North America, 1988-1992*, 19 STRAT. MGMT. J. 631, (1998).

recognize that competition drives innovation,[17] they have not sufficiently appreciated that causation also runs the other way. Indeed, my primary thesis is that innovation (and what I will call "dynamic capabilities") drives competition at least as much as, and probably more than, competition drives innovation.[18][19]

I turn to an elaboration of the dynamic competition framework, first by contrasting it to the established static paradigm.

II. THE DYNAMIC COMPETITION FRAMEWORK: KEY ELEMENTS AND LINEAGE

A. Delineating two paradigms of competition economics

A dynamic competition framework has been under development by this author and a few others for decades, albeit with limited acknowledgement in the competition policy

[17] Heather Boushey and Helen Knudsen, *The Importance of Competition for the American Economy*, CEA BLOG (Jul. 9, 2021), https://www.whitehouse.gov/cea/written-materials/2021/07/09/the-importance-of-competition-for-the-american-economy/ [https://perma.cc/SN2H-BWNL].

[18] Indeed, one way for incumbents to respond to dynamic competition is by the top management team deciding to proactively launch new business units. Sometimes proactive mergers and acquisitions facilitate internal renewal. They can become beachheads for incumbents to not just respond to threats, but to power forward, renew, and drive innovation. *See* Rajshree Agarwal and Constance E. Helfat, *Strategic Renewal of Organizations*, 20 ORG. SCI. 281 (2009); *See generally* CLAY CHRISTENSEN & MICHAEL RAYNOR, THE INNOVATOR'S SOLUTION: CREATING AND SUSTAINING SUCCESSFUL GROWTH (2003) (where Christensen answers the "Innovator's Dilemma" by developing a framework to help create disruptive products and services to maintain growth for firms).

[19] This innovation-first approach is, paradoxically, not completely out of line with Justice Louis Brandeis' ideas. He understood to some degree the importance of progress and industrial innovation. *See* Jonathan Sallet, *Brandeis and the Willingness to Innovate*, BENTON INSTITUTE (Mar. 6, 2019), https://www.benton.org/blog/brandeis-and-willingness-innovate [https://perma.cc/3VCV-C84W].

arena.[20] The dynamic competition framework is inspired by the Austrian school of economics and the work of Joseph Schumpeter.[21] It is a holistic approach that treats competition and innovation as co-determinants of changes in market structures and outcomes. It also recognizes that efficiencies of a static kind are not the true handmaiden of competition: only innovation can claim that mantle. Before discussing the nature of dynamic competition, it is necessary to describe in more detail the antithesis of the dynamic competition framework: the standard (static) competition model.

1. The Static Competition Model

The static competition model reflects an intellectual framework, not a state of the world. It exists primarily within the mind–within the logical order–and not in the external world of competition reality. That itself is a major problem.

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[20] Thomas M. Jorde & David J. Teece, *Competing Through Innovation: Implications for Market Definition*, 64 CHI. KENT L. REV. 741 (1989); Thomas M. Jorde & David J. Teece, *Innovation and Cooperation: Implications for Competition and Antitrust*, 4 J. ECON. PERSPECTIVES 75 (1990); Thomas M. Jorde & David J. Teece, *Innovation, Dynamic Competition, and Antitrust Policy*, 13 REGULATION 35 (1990); David J. Teece & Christopher Pleatsikas, *The Analysis of Market Definition and Market Power in the Context of Rapid Innovation*, 19 INT'L J. INDUS. ORG. 655 (2001); David J. Teece & Mary Coleman, *The Meaning of Monopoly: Antitrust Analysis in High-Technology Industries*, 43 ANTITRUST BULL. 801 (1998); J Gregory Sidak & David J. Teece, *Rewriting the Horizontal Merger Guidelines in the Name of Dynamic Competition*, 16 GEO MASON L. REV. 885 (2009); David J. Teece & Thomas Jorde, *Antitrust Policy and Innovation: Taking Account of Performance Competition and Competitor Cooperation*, 147 J. INSTITUTIONAL & THEORETICAL ECON. 118 (1991); David J. Teece, *Next Generation Competition: New Concepts for Understanding How Innovation Shapes Competition and Policy in the Digital Economy*, 9 J. L. ECON. & POL'Y 97 (2012); David J Teece, *Pivoting Towards Schumpeter: Makan Delrahim and the Recasting of U.S. Antitrust Towards Innovation, Competitiveness, and Growth*, 32 ANTITRUST 32 (2018); Nicholas Petit & David J. Teece, *Innovating Big Tech Firms and Competition Policy: Favoring Dynamic Over Static Competition*, 30 INDUS. CORP. CHANGE 1168 (2021).

[21] JOSEPH A. SCHUMPETER, CAPITALISM, SOCIALISM, AND DEMOCRACY (2003 ed.) (1942).

The static model proposes that existing products are offered by competitors at low prices by firms using the same or similar technologies. Within the parameters of the model, no new products are introduced, and rapid price reductions driven by innovation do not exist. There is no disruptive or hurley-burly competition, as any such competition is not "predictable" and cannot be reliably specified in a model. Without innovation, all firms have the same or very similar technologies and business models. Markets are in a stable equilibrium. Firms make only meager profits, but they do not suffer from disruption and lose money.[22] There is an infinite array of models which represent minor variations/manifestations of the static narrative.

While the framework has a theoretical simplicity, it does not describe real-industry dynamics. Absent innovation, there is unlikely to be much or any new entry. Since incumbents can satisfy demand, new entrants are not needed or motivated to risk entry. Absent scale economies, no firm is likely to become dominant, and the ecology of firms is unchanging. Those simplifications permit predictable modeling, but they sacrifice connections to competitive reality.

Variations on the static economics paradigm infuse the economics textbooks, or at least the undergraduate economics textbooks, that are used to train future generations of economists and (some) antitrust lawyers.[23] It also infects the economics that purports to describe industrial organization and competition.[24] It is mainly concerned with the elements of competition, not the comprehensive system of competition. A static model/paradigm describes the (static) structure of the system being modelled and the structure is viewed as unchanging. In (static) economic models change may be admitted but it is usually certain, continuous, regular, and

[22] *See, e.g.*, Nicholas Petit & David J. Teece, *Innovating Big Tech Firms and Competition Policy: Favoring Dynamic Over Static Competition*, 30 INDUS. CORP. CHANGE 1168, § 2 (2021).

[23] *See* GREG MANKIW, PRINCIPLES OF MICROECONOMICS 243-356 (9th ed. 2020).

[24] *See* Dennis W. Carlton & Jeffrey M. Perloff, Modern Industrial Organization (Global ed. 4th ed. 2015).

constant. Static analysis at best explains only the final state of equilibrium; it does not show how a new equilibrium is achieved. Dynamics is closer to reality; yet static models of strategic interactions populate the academic literature. The entry game literature is used to model endogenous market structure. However, dynamic models of entry in the game theoretic industrial organizational literature have little to do with the type of dynamic competition discussed here.

When the static competition model addresses connections among its elements, it typically makes strong assumptions and simplifies those connections and interdependencies.[25] Most static competition models adopt a caricature of the world, yet they have been relied upon by antitrust enforcers and competition economists.

2. Dynamic Competition

The term "dynamic" is shorthand for the competitive activities that result from sellers' introduction of completely new or radically improved products and services. Dynamic competition is characterized by firms' effectuating change and/or responding rapidly to it, whether from innovation, new market opportunities, changes in regulation, geopolitical developments, or other forces of disequilibrium. Considerable research, development, and engineering outlays are usually needed to animate dynamic competition. The development and implementation of new business models is another key driver. The digital economy has enabled a plethora of business models not previously contemplated.[26] Dynamic competition

[25] For example, the static model assumes competition only within the "relevant market" and further assumes that competitive "performance" is related to the structure and concentration within that market with no formal account of dynamic change amidst the ecosystem within which the relevant market is situated. *See generally*, U.S. DEP'T OF JUST. & FTC, HORIZONTAL MERGER GUIDELINES §§ 5, 10 (2010) [hereinafter MERGER GUIDELINES]. *See also,* JASON POTTS, THE NEW EVOLUTIONARY MICROECONOMICS: COMPLEXITY, Competence, AND ADAPTIVE BEHAVIOUR 32-37 (2001).

[26] David J. Teece, *Business Models, Business Strategy, and Innovation*, 43 LONG RANGE PLAN. 172 (2010).

is more intuitive than the static model because it is more realistic and, for the same reason, it is much closer to our "everyday" understanding of competition than are textbook notions of static competition.

With dynamic competition, new entrants and incumbents alike engage in new product and process development and seek to create entirely new markets and product categories. Such firms do not just look "sideways" to rivals, but also "forward" to anticipate latent competition and satisfy user/customer needs and unlock potential demand. Frequent new product introductions, often followed by price declines, are commonplace.[27] Both application areas can have disruptive effects beyond the area of immediate application. Fig. 1 identifies selected technologies driving dynamic competition today. These technologies are changing the structure of existing markets and offer opportunities to create entirely new ones. Standard oligopoly models provide little insight into how firms compete for such opportunities.

Innovation and dynamic competition stems not only from investment in research and development (R&D) aimed at new products and from the design and implementation of new business models, but also from the improvement or renovation of established technologies. Continuously improving products include everything from smartphones and semiconductor chips to batteries and lightbulbs.[28] In today's digital economy, new business models and platforms emerge regularly and provide the bases upon which firms compete. Witness, for example, the lightning-fast arrival of artificial intelligence (AI) on the consumer-facing scene, including the introduction of ChatGPT.[29]

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[27] Michael Gort & Steven Klepper, *Time Paths in the Diffusion of Product Innovations*, 92 ECON. J. 630, 646 (1982). Artificial intelligence is just one of many exciting technological trends and is finding application in autonomous vehicles and in ChatGPT.

[28] Lightbulbs have seen major innovations decades after their introduction (e.g., using different filaments and gases and later with compact fluorescent lights and LEDs)

[29] *See* Tekla S. Perry, *10 Graphs that Sum up the State of AI in 2023*, IEEE SPECTRUM, (April 8, 2023), https://spectrum.ieee.org/state-of-ai-2023.

Dynamic competition recognizes that uncertainty is endemic to the competitive process and that entrepreneurs and managers who can navigate uncertainty are essential to that process. Promoting innovation depends on the existence of entrepreneurs and legal and economic policies that favor innovation. Technological innovation may come in successive waves and cause what Joseph Schumpeter called "creative destruction."[30] Schumpeter further noted that competition is also fueled by the introduction of new organizational forms. As he put it:

> [D]ynamic competition comes from the new commodity, the new technology, the new source of supply, the new type of organization – competition which commands a decisive cost or quality advantage and which strikes not at the margins of the profits and the output of existing firms, but at their foundations and their very lives.[31]

The dynamic competition framework is also distinctive in that it recognizes that value capture, in addition to value creation, is integral to the competitive process.[32] "Value capture" refers to the means by which the innovating firm is able to obtain a share of the value of the improved product or service (i.e., of the value created through innovation), often through technology license fees or more likely other forms of product embodiment[33] When value capture is reasonably

[30] JOSEPH A. SCHUMPETER, CAPITALISM, SOCIALISM, AND DEMOCRACY 81-106 (2003 ed.) (1942); *see also* Friedrich Hayek, *The Meaning of Competition, in* INDIVIDUALISM AND ECONOMIC ORDER 92, 92-106, (3rd Impression 1958).

[31] JOSEPH A. SCHUMPETER, CAPITALISM, SOCIALISM, AND Democracy 84-85 (2003 ed.) (1942).

[32] While innovation creates value for consumers, rapid innovation and/or infringement of patents and misuse of trade secrets, or even potentially legal reverse engineering may deny the pioneer the ability to capture value. Hence, innovation requires a viable mechanism of value capture to be profitable and hence sustainable. See David J. Teece, Business Models, Business Strategy, and Innovation, 43 Long Range Plan. 172 (2010).

[33] *See* David J. Teece, *Profiting from Technological Innovation: Implications for Integration, Collaboration, Licensing, and Public Policy*, 15

related to securing the value associated with the improvement, it ordinarily should not be viewed as an anticompetitive practice or a caveat in enforcement policy. Value capture is a central pillar of the dynamic competition paradigm as it incentivizes investment in R&D and related activities.

Both value creation and value capture must be understood before business practices can be properly evaluated and any legal determination can be made, including a competitive assessment under the rule of reason. This, in turn, requires an understanding of organizational capabilities (and the associated entrepreneurial navigation of uncertainty) and business strategies, along with a firm's record of generating knowhow and commercializing it.

In light of the reality of business practices and contemporary economics, the static model should be seen as the "lite" version and the dynamic model as the true heavyweight. Advocates of strong competition policy should therefore favor the latter over the former. A convenient comparison of the two may be found in Table 1 in the Appendix.

The dynamic competition paradigm places minimal weight on traditional structural criteria for assessing monopoly power, such as market shares and the Herfindahl-Hirschman Index (HHI).[34] It recognizes that the economy is a complex system exposed to deep uncertainty, as explained a century ago by the economist, Frank Knight.[35] Many "ecosystems" of competitive activity develop simultaneously and, as the name implies, mimic the dynamism of the natural environment. Those ecosystems include suppliers, horizontal competitors,

RSCH. POL'Y 285 (1986); and David J. Teece, Profiting *from Innovation in the Digital Economy,* 47 RSCH. POL'Y 1367 (2018).

[34] The Herfindahl-Hirschman Index (HHI) is a common measure of market concentration and is used to determine market competitiveness, often pre- and post-merger and acquisition (M&A) transactions. *See* Michael Bromberg, *Herfindahl-Hirschman Index (HHI) Definition, Formula, and Example*, INVESTOPEDIA (Nov. 21, 2022), https://www.investopedia.com/terms/h/hhi.asp [https://perma.cc/8C3B-Z4S3].

[35] *See* FRANK H. KNIGHT, RISK, UNCERTAINTY, AND PROFIT (1921).

and adjacent firms that produce related but not directly substitutable products; together, they form the venue from which entry into current competition and next-generation competition often emanate. The competitive "ecosystem" and "environment" are used interchangeably below, as both describe a system of competition driven by supplier ingenuity and changing consumer taste.

The dynamic competition paradigm accepts long-run consumer welfare (serving consumer needs more effectively with new and better products, not just lower prices) as the proper standard for competition policy ("LRCWS"). The LRCWS that is associated with dynamic competition does not focus only on price and output as indicia of competition, as does the static model; it also embraces innovation, product availability, privacy, supply reliability, and excitement around new products and services.[36] Of course, I recognize that competition policy has a temporal dimension and must sometimes protect consumers against "anticompetitive" practices and effects in the meantime before the so-called "long run" arrives. I also understand that not all markets are self-correcting, at least within a time frame the fulfills the legislative intent of some competition statutes and regulations. But I have identified LRCWS as the goal of competition policy and assert that allegations of anticompetitive practices and the exploitation of market imperfections should be investigated within the framework of dynamic competition and with the objective of promoting long-run consumer welfare. Cultivating robust and innovative and competitive ecosystems is a good proxy for the LRCWS.[37]

[36] Nicolas Petit & David J. Teece, *Innovating Big Tech Firms and Competition Policy: Favoring Dynamic Over Static Competition*, 30 INDUS. CORP. CHANGE 1168, 1181–1182 (2021).

[37] This is particularly relevant in the context of multi-sided platforms. *See* Geoffrey A. Manne & Kristian Stout, *The Evolution of Antitrust Doctrine After* Ohio v. Amex *and the* Apple v, Pepper *Decision that Should Have Been*, 98 NEB. L. REV. 425, 440 ("Two-sided markets present novel business arrangements, the competitive dynamics and implications of which are incompletely captured by existing antitrust doctrines.").

Dynamic competition has much in common with "complexity economics," which sees economic activity occurring in complex systems with interacting organizations, institutions, and individuals.[38] Complexity economics harbors optimists and pessimists. The latter are skeptical about how much we can understand about markets and business evolution because of deep uncertainty and the complexity of interactions in the economy. The optimists believe that the right frameworks and tools coupled with the investigative powers of regulators can lead to better insights if not predictions.[39] This author is in the optimistic camp.

B. The dynamic competition paradigm is forward-looking

Dynamic competition requires the regulator, like the entrepreneurial manager, to be forward-looking. However, antitrust enforcement authorities too often adopt the opposite stance—looking backwards as they bring enforcement actions that, not surprisingly, turn out to be largely irrelevant. Examples include actions against the Whole Foods – Wild Oates merger and against Microsoft and IBM. After the Whole Foods – Wild Oates merger, the trend of natural and organic products increasingly being carried in "mainstream" food retailers continued.[40]

With regard to the Microsoft and IBM cases, it seems likely that the decline in market position of both firms had less to do with antitrust intervention by competition authorities[41] and

[38] *See* W. Brian Arthur, *Foundations of Complexity Economics*, 3 NATURE REVS. PHYSICS 131 (2021).

[39] *See* Steven N. Durlauf, *Complexity, Economics, and Public Policy*, 11 POL., PHIL. & ECON. 45, 64 (2012).

[40] Paul R. La Monica, *This Grocer Is Eating Whole Foods' Overpriced Lunch*, CNN BUS. (11 September 2015), https://money.cnn.com/2015/09/11/investing/kroger-earnings-organic-whole-foods/index.html [https://perma.cc/EU7J-LT5V].

[41] The Microsoft trial was about Microsoft's extending its monopoly from Windows to browsers, excluding Netscape Navigator, and protecting the operating system from displacement by middleware riding on browsers. Windows retains its operating system leadership on the PC desktop but

more with the existence of competition that the enforcement agencies were unwilling to recognize.[42] With the growth of the Internet and competing browsers, especially Chrome and Safari, Microsoft's Internet Explorer became less relevant as an environment in which to develop software. Then, even though it still controlled the desktop gateway for users to access the Internet (i.e., the Windows operating system), Microsoft lost much of its dominance due to dynamic competition from smartphone providers after "Apple proposed a better client model with the iPhone."[43] IBM has a similar story: workstations such as those provided by Sun Microsystem and Hewlett Packard undermined IBMs competitive advantage in many markets.[44]

Yet, during the Microsoft antitrust trial, economists testifying in the courtroom ridiculed Microsoft for talking about the possibility of future (unknown) competition. Richard Langlois noted that Microsoft

> [P]ortrayed its position as that of a dynamic competitor in an ever-changing market, perennially besieged by threats ranging from the dimly perceptible to the radically unknown. "In the future," one Microsoft executive was paraphrased as testifying, users may simply plug their computers into cable outlets and get whatever programs cable providers offer. Small, handheld computing devices could wipe out the PC, just as the PC wiped out the mainframe." A graphical exhibit depicted these threats, many of them in the form of question marks,

Internet Explorer (Bing) is largely irrelevant, at least from the consumer search perspective. Google and Apple dominate the browser world owing nothing to the Microsoft antitrust trial.

[42] *See* Benedict Evans, *How to Lose a Monopoly*, BENEDICT EVANS (Jan. 1, 2020), https://www.ben-evans.com/benedictevans/2020/01/01/microsoft-monopoly-and-dominance [https://perma.cc/QF84-4NB8].

[43] Benedict Evans, *How to Lose a Monopoly*, BENEDICT EVANS (Jan. 1, 2020), https://www.ben-evans.com/benedictevans/2020/01/01/microsoft-monopoly-and-dominance [https://perma.cc/QF84-4NB8].

[44] Benedict Evans, *How to Lose a Monopoly*, BENEDICT EVANS (Jan. 1, 2020), https://www.ben-evans.com/benedictevans/2020/01/01/microsoft-monopoly-and-dominance [https://perma.cc/QF84-4NB8].

> impinging as arrows upon the company. This elicited titters from the courtroom, and the argument was widely mocked in the press.[45]

Langlois then went on to note that:

> Needless to say, within a few years the twin general-purpose technologies of cloud computing and the smartphone had arisen to make Microsoft's competitive sorrows of 1999 seem a lot less like alligator tears.[46]

Strategic management scholars and analysts familiar with complexity economics would not have found Microsoft's position laughable;[47] however, competition economists employed by the enforcement agencies, as well as many academics, did. The reason for the differences in perspective is that each discipline is informed by quite different paradigms of competition: one static and the other dynamic.

Microsoft and IBM are not isolated cases. The FTC is now spending untold millions of dollars on a lawsuit against Meta that challenges the lawfulness of its 2012 acquisition of Instagram and its 2014 acquisition of WhatsApp.[48] Many state attorneys general have brought a similar suit against Meta that has not been dismissed with prejudice by the D.C. Circuit as untimely, underscoring the backwards-looking focus of their enforcement perspective.

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45 Richard N. Langlois, *Potential Competition as Process and Structure,* CPI ANTITRUST CHRON. 49, 50-51 (Feb. 2022).

46 Richard N. Langlois, *Potential Competition as Process and Structure,* CPI ANTITRUST CHRON. 49, 51 (Feb. 2022).

47 Nor might economists such as Evans and Schmalensee. *See* David S. Evans & Richard Schmalensee, *Some Economic Aspects of Antitrust Analysis in Dynamically Competitive Industries*, 2 INNOVATION POL'Y & ECON. 1 (2002).

48 Fed. Trade Comm'n v. Facebook, Inc., 560 F. Supp. 3d 1, 4 (D.D.C. 2021) ("[Facebook] has allegedly maintained [its] monopoly, in violation of Section 2 of the Sherman Act, . . . by acquiring firms that it believed were well positioned to erode its monopoly – most notably, Instagram and WhatsApp.").

The D.C. Circuit characterized the States' parallel lawsuit as both "odd" and "old."[49] "'Odd' because the States' suit concerns an industry that, even on the States' allegations, has had rapid growth and innovation with no end in sight."[50] "Old" on grounds that the court of appeals found sufficient to affirm that the States' case was time-barred under the doctrine of laches.[51] Although laches does not apply to the FTC's suit,[52] one would think that the characterization of "odd" would apply, as would the observation that the case addresses activities that are close to a decade old.

Enforcement agencies need to look forward, not backward. Of course, some prior conduct has undoubtedly been anticompetitive and injured competitors and consumers. Cartels obviously warrant government criminal enforcement and follow-on civil enforcement. But the government should think twice about challenging past conduct unless that conduct continues to threaten the innovation that is capable of disciplining it in the future. Perhaps such a case exists, but the litigation record has not provided a record of competitive successes when compared to the expenses incurred and the chilling effect on future innovation.

Looking forward requires a more robust understanding of potential competition. Perhaps the ability of nascent competitors or, more likely, other incumbents to expand and

49 New York v. Meta Platforms, Inc., 66 F.4th 288, 295 (D.C. Cir. 2023) ("The States' lawsuit is not only odd, but old.").

50 *Id.* ("'Odd because the States' suit concerns an industry that, even on the States' allegations, has had rapid growth and innovation with no end in sight.").

51 *Id.* at 301 ("[A] 'complaint seldom will disclose undisputed facts clearly establishing the defense' of laches. Under the facts alleged here, however, we agree with the district court that the defense applies."(quoting Menominee Indian Tribe of Wisconsin v. U.S., 614 F.3d 519, 532 (D.C. Cir. 2010)).

52 Fed. Trade Comm'n v. Verity Int'l, Ltd., 194 F. Supp. 2d 270, 286 (S.D.N.Y. 2022) ("[T]he defense of laches is not available against a government entity."); Fed. Trade Comm'n v. Facebook Inc., 560 F. Supp. 3d 1, 32 (D.D.C. 2021) ("[T]he Court holds that . . . an injunction under Section 13(b) is a theoretically available remedy in a Section 2 challenge to long-ago mergers so long as the defendant still holds the purchased assets or stock.").

compete must be taken seriously as a disciplining factor. As discussed in more detail below, an assessment of capabilities and their redeployability can aid the analysis.

The Microsoft case (and IBM before it) shows that the enforcement agencies also tend to take too limited a view of the scope of the relevant product market. Even today, there is still the implicit view that actual competition is more powerful and important than potential competition. In the tech space, it is usually the other way around, though most competition economists and enforcement officials view potential competition as speculative and current competition as certain and therefore central to their competitive assessment. Given the rise of the platform economy and amplified concerns about the market power of big tech, this misunderstanding is likely to have very significant costs for society. The current enforcement agencies' almost exclusive focus on challenging the practices of big tech, many of which are designed to capture the value that innovation has created, is both costly and likely misplaced.

In the Microsoft case, for example, the government's market definition downplayed the dynamic features of the browser and operating system competition. The government painted Microsoft as a company without serious competition.[53] However, Microsoft's management was well aware of the threat of Google and others that could allow the internet to be a replacement for much of what was done on the PC. Bill Gates' much-discussed 1995 "internet tidal wave" memo about the potential of the internet to upend traditional modalities for computing was viewed by the DOJ as articulating the desire to take over the browser market by eliminating rivals by "tie-ins" and the like.[54] But the memo is

[53] United States v. Microsoft Corp., 253 F.3d 34, 51–54 (D.C. Cir. 2001) (finding Microsoft to be a monopolist in the market for "intel-compatible PC operating systems" and excluding from the market Mac OS, middleware, and portal websites.").

[54] For a discussion, see *May 26, 1995: Gates, Microsoft Jump on 'Internet Tidal Wave,'* WIRED MAG. (May 26, 2010), https://www.wired.com/2010/05/0526bill-gates-internet-memo/ [https://perma.cc/28DC-NGWZ].

better seen as Gates' "sensing," and making sense of, a new competitive landscape in which PC-based software had likely had its day in the sun. It is now plainly evident that software was indeed moving to the cloud. This goes to show that enforcement agencies miss prospective competitive developments because they and the economists that advise them are too wedded to the static paradigm.

When assessing the future competitiveness of a firm, enforcers cannot ignore investments in, and the creation of, technological capabilities that lie outside the borders of standard market definition. Those capabilities are relevant to understanding competition in the ecosystem and assessing the likelihood of disruptive competition. No amount of sophisticated churning of historical market data, or the building of game theoretic models featuring strategic interactions, will provide adequate insight into future competition. Of course, enforcement officials will be concerned about whether such developments are speculative and insufficient to affect current competition. But making those judgments with improved acuity and accuracy is exactly what I am proposing.

Enforcement officials have made errors in the past that have arisen, not from a mistaken isolated judgment about a given case but from having used the wrong competitive paradigm, and being bereft of an understanding of technological and organizational capabilities and their likely evolution. The aim of this paper is to expose the often-subtle foundations for those errors. It is only by renovating the foundational pillars of competition economics that broader competitive forces can be properly understood.

C. The long-recognized need for a new paradigm

I am not alone in recognizing the need for a new paradigm. Half a century ago, University of Pennsylvania economist Almarin Phillips noted that "the neglect of the question of causation appears to me to be basic in the failure of economics to erect satisfactory generalizations concerning market

structure and technological change." [55] By causation, Professor Phillips was referring to the same factors that I have cited above and that have been important inputs to the structure of markets and the evolution of business firms.

Phillips proposed in 1971 "an eclectic system of relations between market structure, market performance, and technological change."[56] He borrowed from Schumpeter but gave greater weight to non-market driven (exogenous) science and technology issues. Although Phillips does not expressly account for the entrepreneurial capabilities of management, his acknowledgement that the causes of competition participate in a "system," and that the system is "eclectic," implies that a greater specification of the system is warranted, which I would suggest should include entrepreneurial capabilities and the march of exogenous and endogenous science and technology.

Since the 1990s, there has been growing recognition—though among a relatively small number of scholars, policymakers, and enforcers—that the issues that I have identified in proposing the dynamic paradigm and criticizing the static paradigm… have been overlooked.[57] Commissioner Christine Wilson of the FTC has noted that frameworks that incorporated dynamic competition have been neglected, thereby potentially harming innovation. The consequences could be significant. As she put it, "the economic literature also acknowledges that innovation over the long run will deliver very large consumer welfare gains."[58]

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55 ALMARIN PHILLIPS, TECHNOLOGY & MARKET STRUCTURES: A STUDY OF THE AIRCRAFT INDUSTRY 9 (1971).

56 ALMARIN PHILLIPS, TECHNOLOGY & MARKET STRUCTURES: A STUDY OF THE AIRCRAFT INDUSTRY 10–19 (1971). The system of relations is reproduced in Figure 2 in the Appendix.

57 Thomas O. Barnett, *Maximizing Welfare Through Technological Innovation*, 15 GEO. MASON L. REV. 1191, 1191-94 (2008).

58 Christine Wilson, Commissioner, Fed. Trade Comm', Remarks at IP Watchdog Patent Masters Symposium (Sep. 10, 2019) *in* Eileen McDermott, *FTC Commissioner Christine Wilson Tells Patent Masters Attendees FTC v. Qualcomm Decision 'Scares Me',* IP WATCHDOG (September 11, 2019), https://www.ipwatchdog.com/2019/09/11/ftc-commissioner-christine-

Other senior policy makers have also been aware that there's a problem with the current apparatus of competition economics. In a 2010 speech, Federal Trade Commissioner Tom Rosch was particularly poignant, noting:

> antitrust enforcement has historically focused more on static than dynamic analysis. . . for a number of reasons. First, the antitrust community—both lawyers and economists—has far greater familiarity and comfort with static analysis . . . . Second, there is little incentive for parties to take the time to develop arguments premised on dynamic analysis, given the courts' and antitrust agencies' focus on static analysis. Third, there's the perception . . . that dynamic analysis is less well developed.[59]

While this provocative statement over a decade ago invited a new paradigm, it mainly fell on deaf ears, in the sense that the need for a fulsome development of a new paradigm has only now begun to be embraced. A decade ago, Ginsberg and Wright felt confident enough to declare (somewhat prematurely) that:

> [t]he debate over dynamic analyses appears to be moving beyond the question of whether it should be used in antitrust law and towards identifying the appropriate ways and circumstances in which to do so.[60]

More recently, the chair of the Organization for Economic Cooperation and Development ("OECD") competition committee, Frederic Jenny, has observed in the context of digital platforms that:

> The relationship between competition and innovation is complex and not well understood. … [U]nless

wilson-tells-patent-masters-attendees-ftc-v-qualcomm-decision-scares/id=113222/ [https://perma.cc/R54J-UU3C].

59 J. Thomas Rosch, Former Comm'r, FTC, Promoting Innovation: Just How "Dynamic" Should Antitrust Law Be? Remarks before the USC Gould School of Law 2010 Intellectual Property Institute (Mar. 23, 2010).

60 *See* Douglas H. Ginsberg & Joshua D. Wright, *Dynamic Analysis and the Limits of Antitrust Institutions*, 78 ANTITRUST L. J. 1, 2 (2012).

> competition authorities have a good theory of what makes a digital startup grow and become successful, their assessment of the effects of such mergers will be controversial and they may have to turn to the business economics literature to find clues.[61]

The OECD itself likewise stressed more generally that "the methodology of competition authorities should move from a focus on static competition towards dynamic competition" without, however, lessening their "commitment to the rigor of evidence-based enforcement."[62] The admonitions by Jenny and the OECD are consistent with the thesis of this paper, though the challenges have not arisen only from the arrival and spread of large digital platforms. The challenge has been with us for a long time. The OECD's call for the "rigor of evidence-based enforcement" must be properly understood. That should refer to evidence of entrepreneurial capabilities and nascent innovation within the relevant competitive ecosystem. The use of econometric models and analysis of historical (and perhaps outdated) market data is of secondary importance.

The disabilities of the static approach have animated this author's scholarship,[63] along with that of others', for decades. The unwillingness of many agencies to embrace a new framework, or even mention the need for it, seems quite remarkable, while the failure of scholars to engage in a significant way on dynamic competition issues is enigmatic. Frederic Jenny has provided insights into why competition authorities may be reluctant to say that the instruments and methodologies they have relied upon have limited applicability to the digital sector. His explanation is "fear that

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61 Frederic Jenny, *Competition Law and Digital Ecosystems: Learning to Walk Before We Run*, 30 INDUS. AND CORP. CHANGE 1143, 1149–1150 (2021).

62 Global Forum on Competition, *Executive Summary: The Impact of Disruptive Innovation on Competition Law Enforcement*, OECD Doc. DAF/COMP/GF(2015)15/FINAL, (October 29-30, 2015), https://one.oecd.org/document/DAF/COMP/GF(2015)15/FINAL/en/pdf [https://perma.cc/7GRP-TRPC].

63 *See supra* note 5.

the use of a new conceptual apparatus and new instruments for this sector would meet the skepticism of judges who value the stability of jurisprudence."[64]Jenny is perhaps correct, but the reference to a stable jurisprudence refers to the legal overlay. The dynamic competition approach addresses the factual economic investigation and the factual economic conclusions to be drawn from that investigation. Antitrust law has already adopted competition economics as its infrastructure. It simply must adopt the correct paradigm of competition economics on which to base its economic, and thus legal, conclusions. Table 1 in the Appendix summarizes the static and dynamic competition paradigms, and Table 2 in the Appendix highlights contrasting indicia of each.

I suspect that enforcement agencies shun innovation as an important factor in the competitive process because they have a penchant to bring cases; and crediting innovation makes bringing cases more difficult and messy. That, however, does not explain the reticence of professional economists. They seem stuck in the current paradigm and unable to resist the allure of a neat, "rigorous," and data-based economic models even if it does not reflect economic reality. Had dynamic economics been pursued by the scholarly research community years ago, the enforcement agencies would by now be better placed to integrate innovation into enforcement decisions and policies.

While there is now some recognition that innovation is important, the primary concern in mainstream competition frameworks today is on how competition affects innovation. The focus should rather be on how innovation, whether based on deep tech or business model innovation, affects competition. One can refer to the first as the "incentive effect," and the second as the "impact effect."[65] The first category ("incentive effects") has received most of the attention. The second (the impact effect) needs equal if not greater attention, but is usually ignored. Indeed, an "incentives" approach has

64 Frederic Jenny, *Competition Law and Digital Ecosystems: Learning to Walk Before We Run*, 30 INDUS. AND CORP. CHANGE 1143, 1164 (2021).

65 Michael L. Katz & Howard A. Shelanski, *Mergers and Innovation*, 74 ANTITRUST L.J. 1, 12-13 (2007).

supported more suits by the enforcement agencies that were supposed to protect innovation but more likely have had the opposite effect.[66]

To grapple with the competitive issues raised with respect to Big Tech in particular and the proper understanding of competition more generally, one must now operationalize the dynamic competition framework, not just as an add-on, as some scholars have attempted to do, but as the central organizing principle of competition policy.[67] This paper endeavors to accelerate that process. This author also hopes that the companion pieces that are published in this journal and cited in the introduction will assist in that process, especially as new merger guidelines are under consideration.[68]

This article appeals to research in the fields of strategic management, entrepreneurship, and the management of

[66] *See supra* note 12, *infra* note 186. David J. Teece, *Towards a Dynamic Competition Approach to Big Tech Merger Enforcement: The Facebook-Giphy Example*, COMPETITION POL'Y INT'L, TECHREG CHRON. (December 2021).

[67] Some scholars might claim, along with J. Gans, that "dynamic considerations can often be addressed and analyzed using the same tools we would use for static analysis." *See* Joshua S. Gans, *When Is Static Analysis a Sufficient Proxy for Dynamic Considerations? Reconsidering Antitrust and Innovation*, in 2 INNOVATION POLICY AND THE ECONOMY 55, 57 (Josh Lerner & Scott Stern eds., 2011). This author is deeply skeptical.

[68] Shortly before this article was published and after it was drafted, the DOJ and FTC released, on July 19, 2023, revised draft merger guidelines. U.S. DEPT. OF JUST. & FED. TRADE COMM'N, *Draft: Merger Guidelines*, FTC.GOV (July 29, 2023), https://www.ftc.gov/system/files/ftc_gov/pdf/p859910draftmergerguidelines2023.pdf. The Draft Guidelines are designed to replace the Merger Guidelines that were issued in 2010. Although an analysis of the Draft Guidelines is beyond the scope of this article, the author observes that all assessments of the Draft Guidelines of which the author is aware conclude that the Draft Guidelines are more restrictive than the Merger Guidelines of 2010 in the standards by which they would find proposed mergers to be lawful under the Clayton Act. The author retains citations to the Merger Guidelines of 2010 to illustrate the manner in which the Merger Guidelines fail to incorporate the dynamic competition model. What is said about the Merger Guidelines of 2010 applies with even more force to the Draft Guidelines.

innovation for assistance in operationalizing the dynamic competition framework. The field of strategic management, for example, studies and explains how firms build and maintain competitive advantage. Fifty years ago, Harold Demsetz set out on a quest to do something similar.[69] However, his effort while laudatory was handicapped because he did not bring organizational economics, nor innovation, nor dynamic capabilities, nor dynamic competition to bear on the issue.[70] Doing so would have facilitated a better understanding of the many sources of firm-level competitive advantage. Absent such an understanding, there is a high likelihood that market outcomes will be attributed to monopolistic practices when much deeper and more subtle dynamic forces are at work.

III. INNOVATION, CAPABILITIES, AND THE FOUNDATIONS OF COMPETITIVE ADVANTAGE

A. General

I now proceed to consider "capabilities" theory as a central pillar to help understand the foundations of firm level competitive advantage. Competitive advantage is the condition that puts a company in a favorable business/market position. Often the reason for favorable positioning is not restrictive practices but superior foresight, skill, acumen, and execution or simply (dynamic) capabilities. I focus here on the tech sector not because it is unique, but because it illustrates the importance of the "capabilities" theory of enterprise performance. Moreover, it is superior capabilities which drives dynamic competition.

I place "capabilities" in quotation marks because they cannot be reduced to the intangible and subjective talents of

69 Harold Demsetz, *Industry Structure, Market Rivalry, and Public Policy*, 16 J. L. & ECON. 1 (1973).

70 The index to Harold Demsetz' book "The Economics of the Business Firm" has only one page reference to innovation. HAROLD DEMSETZ, THE ECONOMICS OF THE BUSINESS FIRM: SEVEN CRITICAL COMMENTARIES 177 (1997).

managers. Rather, "capabilities" embraces a mixture of organizational and individual attributes[71] – past, present, and future. Relevant metrics include R&D, patents, product development, and investment levels. The planning documents and production records and entrepreneurial actions of the executive team over time reflect the management's attitude toward risk, innovation, and competition.

Explanations for business success and failures in the tech sector often have less to do with scale, scope, or network effects than adherents to static frameworks assume. Rather, innovation, capabilities, and management are also drivers of market outcomes. Thus, the long-term success of Meta, Amazon, Alphabet, and other Big Tech firms are not as dependent on current market shares or network effects as many assume. The single most important facet is likely their mastery of new technologies (including, for example, artificial intelligence) and their development of new capabilities and technologies (such as virtual reality).[72]

As will be shown below, capability theory is the portmanteau that allows strategic management[73] concepts to inform both a deeper understanding of firm-level competitiveness and associated business conduct (both competitive and anticompetitive) that impacts innovation and the functioning of competitive marketplaces. A capability theory of the business enterprise goes beyond textbook models

71 *See* Mie Augier & David J. Teece, *Dynamic Capabilities and the Role of Manager in Business Strategy and Economic Performance,* 20 ORG. SCI. 410 (2009).

72 *Big Tech Moves Generative AI To Center Stage*, COMPETITION POL'Y INT'L (Mar. 1, 2023), https://www.competitionpolicyinternational.com/big-tech-moves-generative-ai-to-center-stage/ [https://perma.cc/2695-X8F4]; *From Apple to Google, Big Tech is Building VR and AR Headsets,* THE ECONOMIST (Apr. 9, 2022), https://www.economist.com/business/2022/04/09/from-apple-to-google-big-tech-is-building-vr-and-ar-headsets [https://perma.cc/9HQH-HWHP].

73 *See* Richard P. Rumelt, Dan Schendel & David J. Teece, *Strategic Management and Economics*, 12 STRATEGIC MGMT. J. 5 (1991). The field of strategic management was once known as business policy. The two terms can be used interchangeably.

of firms and provides economic substance to Alfred Chandler's concept of the "visible hand" of management.[74]

The "visible hand" of managers drives innovation and competition, which, along with the "invisible hand" of the market, power the economic system. Indeed, the essence of both the firm and capability theory is the firm's ability, by way of the visible hand of management, to allocate non-priced resources to high-value uses, repurposing the asset if necessary.[75] Capability theory thus leads to a better understanding of the distinctive contributions that large and well-run integrated enterprises can make to competition and innovation, especially in highly dynamic, research-intensive sectors. Despite their obvious importance, firm-level capabilities are barely mentioned in competition economics—and when they are, the extensive literature in strategic management is not cited.[76]

B. Capability taxonomies and supply side implications

Because of the endogeneity issues surrounding the innovation-competition nexus mentioned earlier, it is critically important to delve deeper to discover the omitted variables in the innovation-competition nexus. The leading candidate is firm-level capabilities. Fortunately, there is an

[74] ALFRED D. CHANDLER, THE VISIBLE HAND: THE MANAGERIAL REVOLUTION IN AMERICAN Business (1977).

[75] The essence of the business firm is its ability (using the visible hand of management) to allocate non-priced assets/resources to high value uses, repurposing the asset if necessary. *See* David J. Teece, *Technological Innovation and the Theory of the Firm: The Role of Enterprise-level Knowledge, Complementarities, and (Dynamic) Capabilities,* in HANDBOOK OF THE ECONOMICS OF INNOVATION 679, 694–98 (Bronwyn H. Hall & Nathan Rosenberg eds. 2010).

[76] For example, Frederico et al refer in passing to "overlaps in capabilities" when examining R&D issues in the mergers and acquisitions context, but their use of the concept is perfunctory, even if it is at least a beginning. Giulio Frederico, Fiona Scott Morton & Carl Shapiro, *Antitrust & Innovation: Welcoming and Protecting Disruption*, 20 UNIV. CHI. PRESS 125, 146 (2020).

exploding body of research on this topic which can inform competition economics.[77]

Capability theory respects basic principles from evolutionary and complexity economics while at the same time recognizing the role of management (and boards of directors), business models, and strategy.[78] Noted industrial organization economist John Sutton from the London School of Economics, while not as yet applying capabilities thinking to competition economics, has signaled the importance of capabilities to the understanding of economic systems by declaring, "[t]he proximate cause [of differences in the wealth of nations] lies, for the most part, in the capabilities of firms."[79] If the capabilities of firms are important to the wealth of nations, they are likely highly important to the understanding of competition too.

The management literature accepts that the market and ecosystem success that a firm is able to achieve depends on the firm's capabilities, some of which may be fungible, and some of which may be latent. The exigencies of the Second World War showed that General Motors, an enterprise that had not previously made weapons, could switch from making cars and trucks to making tanks—the Cadillac division of General Motors made the tanks, and Buick made airplane

77 *See* David J. Teece, *Explicating Dynamic Capabilities: The Nature and Microfoundations of (Sustainable) Enterprise Performance*, 28 STRATEGIC MGMT. J. 1319 (2007); David J. Teece, *Towards a Capability Theory of (Innovating) Firms: Implications for Management and Policy*, 41 CAMBRIDGE J. ECON. 693 (2017); CONSTANCE E. HELFAT, SYDNEY FINKELSTEIN, WILL MITCHELL, MARGARET A. PETERAF, HARBIR SINGH, DAVID J. TEECE & SIDNEY G. WINTER, DYNAMIC CAPABILITIES: UNDERSTANDING STRATEGIC CHANGE IN ORGANIZATIONS (2007).

78 David J. Teece, *A Capability Theory of the Firm: An Economics and (Strategic) Management Perspective,* 53 NEW ZEALAND ECON. PAPERS 1, 29 (2019).

79 John Sutton, Fellow of the Acad., Keynes Lecture in Econ. at the British Acad.: Rich Trade, Scarce Capabilities, Industrial Development Revisited (Oct. 26, 2000), *in* PROCEEDINGS OF THE BRITISH ACAD., 2001, at 265.

engines.[80] The Ford Motor Company, which had dabbled in aircraft manufacturing, most notably with the Ford Trimotor (which was discontinued in 1933),[81] within months began manufacturing B-24 Liberator bombers using a one-mile-long assembly line at Willow Run.[82] The line produced an airplane every sixty-three minutes.[83] In more recent times, Amazon moved from selling books to selling a panoply of products online, then leveraged its information and computing capabilities to offer web services.[84] Clearly, the underlying resource base and capabilities of some organizations can be quite fungible.[85]

As these examples show, when market conditions change, capabilities can be reoriented and equipment and systems repurposed for different products and services. Such supply-side responses are too often ignored, or viewed as an afterthought in static competition analysis. Market shifts can and do trigger the repurposing of capabilities, as the above examples demonstrate. Given that policymakers and enforcement agencies need to understand how firms compete, competition economics must address resource and capability

[80] A. J. Baime, *U.S. Auto Industry Came to the Rescue During WWII*, CAR AND DRIVER (Mar. 31, 2020), https://www.caranddriver.com/news/a31994388/us-auto-industry-medical-war-production-history/ [https://perma.cc/385Q-RBFM].

[81] Mark Vaughn, *Fabulous Flying Ford: The Tri-Motor Changed Flying Forever*, AUTOWEEK (Oct. 5, 2003), https://www.autoweek.com/news/a2102781/fabulous-flying-ford-tri-motor-changed-flying-forever/. [https://perma.cc/X92A-734A].

[82] *Willow Run Bomber Plant*, HENRY FORD, https://www.thehenryford.org/collections-and-research/digital-collections/expert-sets/101765/ [https://perma.cc/84TX-BKDF].

[83] *Willow Run Bomber Plant*, HENRY FORD, https://www.thehenryford.org/collections-and-research/digital-collections/expert-sets/101765/ [https://perma.cc/84TX-BKDF].

[84] Yun Yu, *Amazon: From a Book Store, to the Everything Store, to Running the Internet,* HARV. BUS SCHOOL (Feb. 1, 2017), https://d3.harvard.edu/platform-digit/submission/amazon-from-a-book-store-to-the-everything-store-to-running-the-internet/ [https://perma.cc/LX2W-AVM6].

[85] *See* David J. Teece, *Economies of Scope and the Scope of the Enterprise*, 1 J. ECON. BEHAV. & ORG., 223 (1982).

and fungibility issues. Those issues lie behind the elasticity of supply, which has been marginalized in competition economics, perhaps because of the lack of a robust theory of organizational capabilities. The capability to adapt and innovate impacts supply elasticities and must be subject to careful study if the realities of competition are to be understood.

The concepts employed to understand business behavior cannot be limited (as static frameworks do) to incentives, pricing and output strategies, agency issues, and transaction-cost issues. While each is important, alone and even together, they are a poor guide to the understanding of business behavior. Indeed, incentives explain far less than most economists think.

Incentives alone did not bring us the iPhone—it was software and design capabilities that Apple had that incumbents didn't have, coupled with the drive of Steve Jobs and others around him to "make a small dent in the universe."[86] One has to ask why was it not Nokia, Motorola, IBM, or Rim that created the iPhone and the iOS platform? Each company had great scale and strong incentives to create an internet-capable smart phone. However, these companies lacked the technological capabilities of Apple with its iOS platform. Likewise, the emergence of Tesla as an electric vehicle designer and manufacturer is not well-explained by incentives. Nor is the response of incumbents to new entry well-explained by incentives. If incentives were all that mattered, Toyota and GM (with larger market shares) would have less incentives than, say, tiny Mazda to innovate with new products. Clearly, this is not the behavior we observe, as

[86] Steve Jobs, Commencement Address at Stanford University (June 12, 2005). Jobs and the organization he cofounded was driven by purpose. Financial incentives were decidedly secondary for cofounder Steve Wozniak in particular, but also for cofounder Jobs as well. For some of the early years of the Apple Computer Company, IBM was framed as the nemesis; but the broader goal was to assist individuals and groups in their creative activities. Economic incentives are often a poor proxy for understanding the behavior of such management teams. This is hard for economists to understand and there is little in economic theory to suggest otherwise.

both GM and Toyota are making great progress with electric and autonomous vehicles, more so than Mazda.[87]

To assess the capabilities of a firm, one must step outside of traditional (static) microeconomic representations. One must looks beyond factors of production, production functions, and "production sets" to recognize the importance of the choices managers make to innovate, organize, and render resources more productive. Strategic games are largely irrelevant. One must investigate how the firm has met or plans to meet customer demand, whether existing or latent, and recognize that technology and know-how do not fall like manna from heaven. Creating value instead results from research and investment, all oriented, amidst uncertainty, to solving customer problems and frictions in the marketplace. Moreover, value capture by innovators and imitators is a function of the strength of the appropriability regime and how well a firm can implement the innovation, protect its value, and develop durable customer relationships. The nature of the knowledge the firm can build or acquire over time, and how hard it is to replicate by competitors, significantly impacts competition advantage.[88]

Moreover, if a dominant position is created and maintained by superior capabilities, the observed outcomes are laudatory and ought not be condemned. This "capability prowess," like superior foresight and skill, is quite different in nature from market power, as it can be deployed across many markets and be used to create new markets. The fungibility of certain technologies is an asset. Application to different use cases is not anticompetitive "leverage." Rather it's procompetitive lateral reuse of capabilities which is economically desirable.

87 *See Mazda Faces a Steep Uphill Road to EVs*, AUTOWEEK (Dec. 2, 2022), https://www.autoweek.com/news/green-cars/a42137180/mazda-plan-for-evs-by-2030/ [https://perma.cc/GTZ5-BHHS]. This article notes that Mazda is "well behind the rapidly accelerating move from internal combustion to BEV power." It doesn't have many of the relevant capabilities and is relying on a partnership with Toyota to narrow its capability shortcomings.

88 David J. Teece, *Profiting from Innovation in the Digital Economy,* 47 RSCH. POL'Y 1367, 1376–78 (2018); David J. Teece, *Reflections on 'Profiting from Innovation',* 35 RSCH. POL'Y 1131, 1134 (2006).

However, capability prowess may not last long, absent continued upgrading. No one can patent or monopolize "capabilities" and human and machine ingenuity.

Until competition economists can develop frameworks and models that are informed by capabilities theory and thereby properly explain real-world competitive conduct, they cannot determine whether a company has market power or identify the source of any such power. Nor will economists or enforcement authorities be able to accurately assess more complex questions, such as the likely impact on competition of a given business models or merger, especially acquisitions of "nascent" competitors.

Given the importance of capabilities to market outcomes and analyses, a brief description of the types of capabilities is outlined below.

1. "Ordinary" (and super-ordinary) capabilities

Ordinary capabilities, which encompass operations, administration, and the regular governance of the firm's activities, allow the firm to produce and sell a defined (and static) set of products and services. Ordinary capabilities are embedded in some combination of (1) skilled personnel, including, under certain circumstances, independent contractors; (2) facilities and equipment; (3) processes and routines operating inside the organization; and (4) the administrative coordination needed to accomplish a well-defined set of activities. A firm's ordinary capabilities can be thought of as supporting technical efficiency (and hence productivity) in performing a defined set of activities, regardless of how well- or ill-suited the outputs are to the market's needs.[89] Production and quality control methodologies, order entry, performance measurement, and payroll execution are examples of ordinary capabilities. The

[89] David J. Teece, *The Foundations of Enterprise Performance: Dynamic & Ordinary Capabilities in an (Economic) Theory of Firms*, 28 ACAD. OF MGMT. PERSPS. 328, 331 (2014); *see also* David J. Teece, *Explicating Dynamic Capabilities: The Nature and Microfoundations of (Sustainable) Enterprise Performance*, 28 STRATEGIC MGMT. J. 1319, 1321 (2007).

corresponding managerial modes include cost control and (static) optimization. This is very close to the Chicago School concept of (static) efficiency, and it is what economists tend to focus on. Firms with strong ordinary capabilities can deliver ordinary (or static) competition, though not much more.[90]

The development of excellence with respect to ordinary capabilities leads to the enablement of "best practices" which in turn can lead a firm into competitive complacency. A trap is sprung when market conditions change and/or new technological opportunities emerge, as the single-minded pursuit of efficiency and productivity can compromise the willingness or ability to effectuate change, on a timely basis, towards the new suite of products and processes the market requires.[91] Indeed, O'Reilly and Tushman and many other scholars, as well as senior managers, point to how the pursuit of efficiency can stand in the way of innovation and change.[92]

Sometimes an enterprise can transfer its ordinary capabilities to new applications and markets and thus lean toward dynamic capabilities. For instance, Honda has taken its capabilities in small internal combustion engines from motor scooters into motor bikes and then outboard motors for the boating industry. However, such redeployment itself requires dynamic capabilities. Apple has gone from the iPod to the iPhone, the iPad, and the Apple Watch, in many cases to consumers' delight. Harley Davidson's unsuccessful foray

90 *See* Paul S. Adler, Mary Benner, David James Brunner, John Paul MacDuffie, Emi Osono, Bradley R. Staats, Hirotaka Takeuchi, Michael L. Tushman, & Sidney G. Winter, *Perspectives on the Productivity Dilemma*, 27 J. OPERATIONS MGMT. 99, (2009).

91 Henry Ford learned this the hard way. The Ford Motor Company used vertical integration to optimize the production process for the Model T. This worked well until the market shifted. Bringing a follow-on product, the Model A, to market was a long and arduous process that allowed General Motors to get ahead of Ford, a leadership position, GM held for decades. *See* Richard S. Tedlow, *The Struggle for Dominance in the Automobile Market: The Early Years of Ford and General Motors,* 17 BUS. & ECON. HIST. 49, 51-60 (1988).

92 *See* Charles A. O'Reilly, III & Michael L. Tushman, *Organizational Ambidexterity: Past, Present, and Future,* 27 ACAD. MGMT. PERSPS. 324 (2013). See also footnote 82 and 83 above.

into perfume and Intel's failure to advance WiMAX and smartphone modems[93] provide opposite examples of the wins and losses of innovations. Redeploying to the wrong opportunities can be fatal, but that is the risk inherent in innovation, a risk that we should applaud a firm for taking.

Further, some "ordinary" capabilities can be referred to as "super-ordinary" and can be reflected in the development of "signature"[94] processes that rest upon application or market-specific knowledge, together with generic knowhow. Such "super-ordinary" capabilities can allow a manufacturer of household refrigerators to, say, make refrigerators for nautical use. Pisano refers to the extent to which application capabilities are specific as "the degree to which knowledge is transferable across tasks…"[95] Thus a potential competitor not in a current line of business would be a candidate to be an actual competitor if it has (or can readily develop) the necessary task- or content-specific capability and if market conditions were right. Determining the likelihood of such mobility, as well as a realistic time frame within which the mobility is likely to occur, lies at the heart of accurately assessing supply elasticities and dynamic competition.

2. Dynamic capabilities

Dynamic capabilities can be defined as "the firm's ability to integrate, build, and reconfigure internal and external [resources/competencies] to address and shape rapidly changing [business] environments."[96] Dynamic capabilities animate dynamic competition and must be a focus of future scholarship in competition economics.

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93 On July 25, 2019, Apple and Intel announced the sale of Intel's mobile modem business to Apple. This announcement came after Intel's failure to get significant traction for its smartphone modems in the market.

94 Lynda Gratton & Sumantra *Ghosal, Beyond Best Practice*, 46 MIT SLOAN MGMT. REV. 49, 49 (2005).

95 Gary P. Pisano, *Toward a Prescriptive Theory of Dynamic Capabilities: Connecting Strategic Choice, Learning, and Competition*, 26 INDUS. AND CORP. CHANGE 747, 753 (2017).

96 David J. Teece, Gary Pisano & Amy Shuen, *Dynamic Capabilities and Strategic Management*, 18 STRATEGIC MGMT. J., 509, 516 (1997).

Doing ordinary things right (technical efficiency) is no substitute for doing the right things. The latter is market effectiveness and requires dynamic capabilities. As John Chambers, former CEO of Cisco Systems, has observed, companies must be willing and ready to change from doing "the right thing too long" to "the next big thing."[97] Because of failures of competition economists to grasp the importance of capabilities, efficiencies (e.g., scale and network effects) are often over-weighted, and innovation is under-weighted, in terms of their competitive significance.[98]

The key clusters of activities that constitute dynamic capabilities can be categorized as sensing, seizing, and transforming.[99] These activities are the domain of the organization, under the guidance of management and boards of directors, and are described below. In the language of econometrics, one can think of "sensing, seizing, and transforming" as the "reduced form" version of a more complicated structural/systems model of enterprise performance.

Sensing, in the dynamic capabilities context, is the ability, under Knightian uncertainty, to either recognize opportunities before they are fully apparent or, in some cases, create new ones.[100] While there are underlying routines to

97 John Chambers, *Turning Setbacks into Success*, LINKEDIN (Apr. 19, 2017), https://www.linkedin.com/pulse/turning-setbacks-success-john-chambers/ [https://perma.cc/E4FD-D4HS].

98 *See* Paul S. Adler, Mary Benner, David James Brunner, John Paul MacDuffie, Emi Osono, Bradley R. Staats, Hirotaka Takeuchi, Michael L. Tushman, & Sidney G. Winter, *Perspectives on the Productivity Dilemma*, 27 J. OPERATIONS MGMT. 99, 100 (2009).

99 *See* David J. Teece, *Explicating Dynamic Capabilities: The Nature and Microfoundations of (Sustainable) Enterprise Performance*, 28 STRATEGIC MGMT. J. 1319, 1319 (2007); David J. Teece, *Dynamic Capabilities: Routines Versus Entrepreneurial Action*, 49 J. MGMT. STUD. 1395, 1396 (2012).

100 Constance E. Helfat & Margaret A. Peteraf, *Understanding Dynamic Capabilities: Progress Along a Developmental Path,* 7 STRATEGIC ORG. 91, 96–7 (2015).

developing effective R&D programs,[101] dynamically capable management recognizes "signals" from near and far and will demonstrate over time an intuitive capability to make sense of the signals and develop effective product-development strategies. Early as well as later Big Tech success stories are obvious examples.

In the dynamic capabilities framework, seizing involves execution and the deployment (or redeployment) of corporate resources, human, physical, and financial. That, in turn, involves the astute implementation of business models, the orchestration of big data, the achievement of strategic alignment, the setting of firm boundaries, and the making of investment commitments.[102]

Dynamic capabilities allow and require proactive managers to effectuate organizational transformation in anticipation of environmental change, rather than waiting too long. The evolution of firms and the development of capabilities are not completely path-dependent, or limited to best practices or the selection among strategies that all lead to the same given end.[103] Instead, the dynamic capabilities that lead to organizational transformation depend upon leadership and entrepreneurial decision making and bold bets and some of them losing ones.

101 Organizational routines are often expressed as "standard operation procedures." *See* David J. Teece, *Dynamic Capabilities: Routines Versus Entrepreneurial Action*, 49 J. MGMT. STUD. 1395, 1395–1400 (2012).

102 Aspects of these activities can be found by reading between the lines of the evolutionary economics literature, but they are certainly not given the full attention they merit in terms of their strategic importance. More importantly, evolutionary economics gives too little attention to the dimension of time, particularly the urgency needed for effective seizing for purposes of competitive response.

103 In an open system, equifinality is the principle that a given end state can be reached by several different means. In the business context, it means that different strategies can sometimes result in similar market positions.

Excellence not only in search ("sensing" in dynamic capabilities terms) but also in sense-making[104] affords the firm the opportunity to stay ahead of competitors and to animate dynamic competition in one-sided or multisided marketplaces. When static factors do not explain competitive outcomes or are subject to multiple interpretations, the dynamic capabilities of the management, as established by company documents and the record of product development and supporting investments, may clarify those factors and become central to understanding business behavior or assessing future effects, including in the merger review process.

Strong dynamic capabilities enable high performance in new product and process development. They are undergirded by a change-oriented organizational culture, and a prescient assessment of the business environment and technological opportunities. The corresponding managerial modes include asset orchestration, entrepreneurial agility, and forward-looking leadership. These modalities, coupled with technological innovation, drive the revolutionary change that in turn drives dynamic competition. Competitors that have strong dynamic capabilities generally have better competitive and financial performance.[105] Figure Three summarizes the taxonomy laid out above.

Static competition analysis often mistakenly imputes market power to a weak competitor with a high share of a narrow market but that, in fact, lacks the competitive robustness that market power requires.[106] Such a firm might well be on its way down and possibly out. One cannot assess

104 David J. Teece, *Capturing Value from Knowledge Assets: The New Economy, Markets for Know-How, and Intangible Assets,* 40 CAL. MGMT. REV. 55, 73–74 (1998).

105 *See* Dan Lovallo, Alexander L. Brown, David J. Teece, & David Bardolet, *Resource Re-allocation Capabilities in Internal Capital Markets: The Value of Overcoming Inertia*, 41 STRATEGIC MGMT. J. 1365 (2020).

106 The antitrust case against IBM, eventually dropped, was one such foray. *See* John E. Lopatka, *United States v. IBM: A Monument to Arrogance*, 68 ANTITRUST L.J. 145, 145–47 (2000).

genuine competitive robustness without assessing dynamic capabilities.[107]

Perhaps to escape censure for the omission of innovation, and to preserve the fiction that efficiency logic suffices to deal with capabilities and innovation, competition economics has begun to use the term "dynamic inefficiency" (or sometimes dynamic efficiency). The term is meant to imply that an efficiency-based static assessment can account for dynamic considerations.[108] In my view, this "patch" to the traditional framework is insufficient; yet it is a quiet admission of inadequacies in the basic framework.

The references to "dynamic inefficiencies" or "dynamic efficiencies," highlight the tensions between an efficiency model and an innovation model. Innovation almost always compromises efficiency at least in the early stages of product lifecycles. If both are conducted together in the same organizational subunit, prioritizing efficiency will almost always inhibit (if not destroy) the chances for innovation.[109] Definitionally, efficiency and innovation do not fit comfortably in the same organizational subunit.[110] Nor should they belong

107 In the framework advanced here, capabilities are partly endogenous and partly exogeneous. The trajectory set by the company's founders matters (the exogeneous component) and board selection of top management has exogeneous elements too.

108 *See* Paul S. Adler, Mary Benner, David James Brunner, John Paul MacDuffie, Emi Osono, Bradley R. Staats, Hirotaka Takeuchi, Michael L. Tushman, & Sidney G. Winter, *Perspectives on the Productivity Dilemma*, 27 J. OPERATIONS MGMT. 99, 104-105 (2009).

109 *See also*, Pankaj Ghemewat & Joan E. Ricart I Costa, *The Organizational Tension Between Static and Dynamic Efficiency*, 14 STRATEGIC MGMT. J. 59 (1993).

110 Clayton M. Christensen, THE INNOVATOR'S DILEMMA, 98 (1997) ("The very decision-making and resource allocation processes that are key to the success of established companies are the very processes that reject disruptive technologies: listening to customers; tracking competitors' actions carefully; and investing resources to design and build higher-performance, higher-quality products that will yield greater profit. These are the reasons why great firms stumbled or failed when confronted with disruptive technology change. [Paragraph break] Successful companies want their resources to be focused on activities that address customers' needs, that promise higher profits, that are technologically feasible, and

together in innovation economics. The upshot is that innovation is qualitatively different from efficiency and should have priority over efficiency.

C. The supply side: mobility barriers and capability "distance"

The assessment of competition and the strength of rivalry inevitability involve the notion of capability or competitive "distance,"[111] i.e., how hard is it to build or modify the capabilities of the business enterprise to support a shift in the company's competitive activities.[112] When assessing market competition, it is not uncommon for competition economists to talk about "distant players" by reference to product differentiation, or positioning differences.[113] For example, Maserati is a distant competitor to Toyota and Ford in automobiles, having a small market share compared to

that help them play in substantial markets. Yet, to expect the processes that accomplish those things also to do something like nurturing disruptive technologies – to focus resources on proposals that customers reject, that offer lower profit, that underperform existing technologies and can only be sold in insignificant markets– is akin to flapping one's arms with wings strapped to them in an attempt to fly. Such expectations involve fighting some fundamental tendencies about the way successful organizations work and about how their performance is evaluated.").

111 David J. Teece, *A Capability Theory of the Firm: An Economics and (Strategic) Management Perspective,* 53 NEW ZEALAND ECON. PAPERS 1, 11–12 (2019).

112 Traditional textbook microeconomics assumes that isoquants are smooth and twice differentiable and that firms can move around with respect to (public) technologies employed at zero cost and with alacrity. For a sense of what a neo-Schumpeterian theory of the firm would look like, see Sidney G. Winter, T*oward a Neo-Schumpeterian Theory of the Firm*, 15 INDUST. & CORP. CHANGE 125 (2006); and David J. Teece, *Technological Innovation and the Theory of the Firm: The Role of Enterprise-level Knowledge, Complementarities, and (Dynamic) Capabilities,* in HANDBOOK OF THE ECONOMICS OF INNOVATION 679, 694–98 (Bronwyn H. Hall & Nathan Rosenberg eds. 2010).

113 As used here, market positioning is little more than the market share ranking of a competitor.

both,[114] and also occupying a distinctive market niche (with styling and performance being essential elements). Each company's sales and market position is quite different, and their price points are different too. To conclude that Maserati and Toyota or Ford are only distant competitors, however, is to misunderstand competition and the competitive process. A proper assessment requires understanding the supply side, and understanding organizational capabilities is necessary if one is to understand supply side opportunities and responses.

The assessment of capability distance is thus central to any assessment of competition and potential competition, and supply elasticities, within and across markets. Despite its obvious importance to the understanding of the supply side of a market and to supply elasticity, the assessment of capability distance (and mobility barriers) is rarely attempted in any systematic or primary way by antitrust enforcers or competition economists. This leads to overemphasis on demand side issues where competition economists feel more comfortable. Needless to say, an unbalanced approach will surely lead to wrong answers.

Consider how a lack of understanding of capabilities might contribute to the failure of industry analysts and competition economists alike to understand entry conditions in the automobile industry.[115] The automobile industry had been considered to have high barriers to entry; yet Tesla spent only $140 million and $650 million respectively to develop its Roadster and Model S, which were not just new traditional models but new innovative, electric-vehicle models.[116] Tesla relied heavily on alliances with Lotus, Daimler, and Toyota to

114 Recent estimates show the worldwide market shares for passenger cars at Toyota (12.0%), Ford (7.3%) and Mazda (2.0%). *See, e.g., Mazda – Market Data Analysis & Forecast*, STATISTA 9 (December 2022).

115 I am not faulting any agency decision but merely explaining why traditional frameworks are not adequate. If there had have been competition issues to evaluate, this author is skeptical that the agencies would get it right.

116 Edward Peter Stringham, Jennifer Kelly Miller, and J.R. Clark, *Overcoming Barriers to Entry in an Established Industry: Tesla Motors*, 57 CAL. MGMT. REV. 85, 91 (2015).

access components and designs.[117] It built capabilities and an ecosystem for distribution and found partners to install charging stations.[118] Tesla overcame the supposed network effects that the incumbents enjoyed (e.g., relationship with distributors) by employing a business model that didn't need them.[119] In addition, they pursued an "open innovation" model to crowd-source new technology.[120] In short, Tesla quickly built capabilities to take on the incumbents and, in the process, blew a big hole in the conventional wisdom about competition in the automobile industry.[121]

Assessing dynamic competition and the competitive landscape requires a wider lens than is commonly utilized. It is insufficient to limit competitive assessments to the boundaries of "relevant markets" as they have been traditionally defined. The ecosystem of suppliers, distributors, and peripheral firms must be included in those assessments, which should focus on the capabilities of incumbents and potential entrants if the supply side, the locus of dynamic competition, is to be analyzed in a meaningful manner.

A good understanding and appreciation of the firm-level factors that explain the reasons for business success are often absent. This has fueled what Donald Turner referred to as the "inhospitability tradition"[122] towards business. Nobel laureate Ronald Coase went on to remark that which is not well-understood is too often attributed by economists to monopoly.[123] As he noted:

117 *Id.* 92–93.

118 *Id.* at 94–95.

119 *Id.*

120 *Id.* at 95–96.

121 *See* David J. Teece, *Tesla and the Reshaping of the Auto Industry*, 14 MGMT. AND ORG. REV. 501 (2018).

122 *See* Mark J. Niefer *Donald Turner, Vertical Restraints and the Inhospitability Tradition of Antitrust,* 82 ANTITRUST L.J. 389 (2019).

123 *See* Ronald H. Coase, *Industrial Organization: A Proposal for Research*, in ECONOMIC RESEARCH: RETROSPECT AND PROSPECT, 3 POLICY ISSUES AND RESEARCH OPPORTUNITIES IN INDUSTRIAL ORGANIZATION 59 (Victor R. Fuchs ed., 1972).

> If an economist finds something—a business practice of one sort or another—that he does not understand, he looks for a monopoly explanation. And as in this field we are very ignorant, the number of ununderstandable practices tends to be very large, and the reliance on a monopoly explanation frequent.

A deeper understanding of capabilities and how they are developed and maintained can minimize this problem and provide useful insight into firm behavior.[124] For instance, capability development often requires M&A, which may provide useful explanations of the acquisition of "nascent competitors," as described in the following section.[125]

In sum, a failure to consider capabilities in competitive assessments means that economists and competition agencies have a large omitted variables problem. The understanding of the origins of alleged monopolies and monopoly profits cannot be complete without a systematic understanding of important factors such as capabilities and business models. Such considerations are not yet the stock in trade of competition economists, and this needs to change.

IV. THE RELEVANCE OF CAPABILITIES TO THE ASSESSMENT THE COMPETITIVE EFFECTS OF MERGERS

A. General

The dynamic competition framework should inform the antitrust assessment of all business conduct, whether under the Sherman Act (monopolization and restraints of trade) or under the Clayton Act (mergers). Given that the primary objective of the framework is to understand business decisions and their likely contribution to competition, the framework is also directly relevant to assessing whether challenged conduct

124 *See* David J. Teece, *Capability Development*, *in* Mie Augier & David J. Teece (eds.), THE PALGRAVE ENCYC. STRATEGIC MGMT., 192-194 (2016).

125 *See infra* Section VI.

should be subject to the per se rule of liability or to a rule of reason assessment.

For example, what may be deemed "reasonable" under the rule of reason may be different if the main criterion for reasonableness is innovation as opposed to efficiency. Conduct that is supportive of innovation, as described in the prior section, may not be justified as competitively reasonable if the conduct must be assessed under an efficiency lens, as understood under the static competition model. In addition, conduct that may seem "naked" from an efficiency perspective may have a good explanation from an innovation perspective and thus, viewed properly, may not fall within the per se rule. Antitrust lawyers and economists should consider the elements of the dynamic competition framework that I have so far provided with respect to its potential to inform the Sherman Act assessments and determinations of the per se/rule of reason analytical dichotomy.

The focus of this portion of the article will be the impact of a dynamic competition assessment on mergers. The subject is timely, as the enforcement agencies are expanding the scope of their anticompetitive concerns to consider non-horizontal interactions between the merging companies and with other market participants.[126] The enforcement agencies are also concerned about the acquisition of nascent competitors[127] and this may result in the adoption of new presumptions of illegality.[128]

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[126] *See, e.g.*, *FTC Seeks to Block Microsoft Corp.'s Acquisition of Activision Blizzard, Inc.*, FTC (Dec. 8, 2022), https://www.ftc.gov/news-events/news/press-releases/2022/12/ftc-seeks-block-microsoft-corps-acquisition-activision-blizzard-inc [https://perma.cc/AS8Y-F2PZ].

[127] *See, e.g.*, *FTC Sues Facebook for Illegal Monopolization*, FTC (Dec. 9, 2020), https://www.ftc.gov/news-events/news/press-releases/2020/12/ftc-sues-facebook-illegal-monopolization [https://perma.cc/ZRW7-GLS4].

[128] *See, e.g.*, Fed. Trade Comm'n v. Facebook, Inc., 560 F. Supp. 3d 1, 4 (D.D.C. 2021) ("[Facebook] has allegedly maintained their monopoly . . . by acquiring firms [WhatsApp and Instagram] that it believed were well positioned to erode its monopoly."); Fed. Trade Comm'n v. Meta Platforms, Inc., 2023 WL 2346238, *1, *22 (N.D. Cal. 2023) (noting that the FTC sought to block "Meta's acquisition of Within on the basis that the merger would

The legal review of mergers requires different filters, particularly if the goal is to facilitate systemic or (architectural) innovation versus achieving, say, greater economies of scale. The Willkie article in this issue analyzes the current version of the merger guidelines and identifies area in which innovation is not afforded sufficient importance to recognize it as an economic justification, and a procompetitive effect, of a proposed merger.

Most critically, however, the dynamic competition framework requires a reassessment of supply-side factors, including capabilities, entry barriers, and incumbency. Rather than highlighting incumbency as a shield, dynamic competition often exposes incumbency as a liability insofar as the incumbent is consumed by protecting its "territory" and is

substantially lessen potential competition," but deciding to deny the FTC's motion for preliminary injunction).

128 U.S. Dep't Just. & Fed. Trade Comm'n, Request for Information on Merger Enforcement § 5 (Jan. 18, 2022), https://www.justice.gov/opa/press-release/file/1463566/download ("Do the guidelines adequately identify mergers that are presumptively unlawful under controlling case law? … Does the structural presumption in the guidelines accurately reflect current understanding of the characteristics of mergers that prove to be anticompetitive? … What specific metrics or observable features of a transaction, firm, or market should, alone or in combination, trigger a presumption that a horizontal transaction is anticompetitive? … Should the guidelines identify thresholds for customer diversion and margins that, solely or together, create a presumption of competitive harm from certain mergers? … What specific metrics or observable features of a transaction, firm, or market should, alone or in combination, trigger a presumption that a non-horizontal transaction is anticompetitive? … Would the inclusion of multiple alternative presumptions better reflect the diversity of transactions and evidence presented by the modern economy? … How does the administrative cost and accuracy of the guidelines' structural presumption or any proposed alternative presumption(s), standing alone, compare to the administrative cost and accuracy of individually analyzing each transaction in depth?"); Fed. Trade Comm'n, Submit a Comment on the Joint FTC-DOJ Merger Enforcement Request for Information, https://www.ftc.gov/policy/studies/submit-comment-merger-enforcement-request-information ("The agencies seek information on whether concentration thresholds should be adjusted to improve the efficiency and effectiveness of enforcement, whether alternative metrics or qualitative factors should also trigger presumptions of competitive harm, and evidence regarding the accuracy of such presumptions.").

blind to the nascent and peripheral threats that are just beyond that territory. Moreover, their portfolio of ordinary and superordinary capabilities may be poorly matched to future competitive circumstances, making them incredibly vulnerable, despite high market shares.

A wider lens is needed to recognize a broader range of competitive factors, including the organizational and managerial capabilities of the incumbents and firms on the fringe of the market. Exogenous developments in science and technology must also be considered to assess whether incumbency implies durable market power. It also requires an understanding of new and potential entrants and their likely competitive viability, both of which are primary subjects of study in the dynamic competition framework.

Risk-taking is necessary on the part of enforcers as well. They cannot limit their time horizon to today and tomorrow. Innovation takes a while to incubate, and a premature threatened or actual enforcement action can preclude that innovation before it is given a chance to develop. In addition, not all innovation justifications are speculative. The enforcer must develop expertise in identifying innovation goals that are plausible in light of the merging parties' capabilities, objectives, and prior development track records.

Generally, US law prohibits mergers and acquisitions when the effect "may be substantially to lessen competition, or to tend to create a monopoly."[129] The key question agencies ask is whether the proposed merger is likely to create or enhance market power or facilitate its exercise. During a merger investigation, the agencies seek to determine whether the proposed merger would increase the likelihood of coordination among firms in the relevant market. There is also concern that goes beyond coordination to unilateral effects, particularly unilateral price increases, as the merged firm may be able to raise prices profitably post-merger.[130]

129 Clayton Act § 7, 15 U.S.C. § 18.

130 MERGER GUIDELINES § 6.1 ("A merger between firms . . . may diminish competition by enabling the merged firm to profit by unilaterally raising the price of one or both products above the pre-merger level.").

Potential competition is highly relevant to those and other aspects of the merger assessment, including market definition, market power, rapid supply response, entry, and competitive effects.[131] A potential-competition merger involves one competitor's buying a company that is planning to enter the market. Such an acquisition could be harmful because (1) it could prevent actual increased competition or (2) eliminate the disciplinary effect of the existence of a potential competitor poised to enter, assuming no others are poised to enter too.

The dynamic competition paradigm invites an overhaul of the conventional approach to market definition, market power, supply responses, entry, and procompetitive justifications. The dynamic framework substantially revises assessments of the supply side and broadens consideration on the demand side beyond "the narrowest possible market" that the current version the merger guidelines take.[132] Under the dynamic framework, procompetitive justifications include innovation objectives and effects that are separate from, and

[131] MERGER GUIDELINES § 5.3 ("A merger between an incumbent and a potential entrant can raise significant competitive concerns."); *see also* William H. Rooney, Colin Lee, & Amanda M. Payne, *Taking Innovation Seriously: A Dynamic Competition Model for Antitrust Law*, 2023 COLUM. BUS. L. REV. 338 (2023) (noting that currently the Merger Guidelines only consider "suppliers that do not currently supply the relevant product but would 'very likely' provide 'rapid' supply responses" as potential market participants).

[132] Rooney, Lee, & Payne, *supra* note 128, at 8 ("The DCM thus does not attempt to define the narrowest possible market but the group of products and suppliers that are interacting with one another in a dynamic competitive environment."); *see also* MERGER GUIDELINES, *supra* note 127, § 4 ("Defining a market broadly…can lead to misleading market shares…. Although excluding more distant substitutes from the market inevitably understates their competitive significance to some degree, doing so often provides a more accurate indicator of the competitive effects of the merger than [including them would] . . . . Market shares of different products in narrowly defined markets are more likely to capture the relative competitive significance of these products, and often more accurately reflect competition between close substitutes. As a result, properly defined antitrust markets often exclude some substitutes to which some customers might turn in the face of a price increase even if such substitutes provide alternatives for those customers.").

more important than, the cost-reducing "efficiencies" that the merger guidelines currently recognize per the static competition model.[133] Indeed, if one wanted to identify a caricature of the real world competitive realities, one only has to review the current version of the horizontal merger guidelines.[134]

The question arises as to how one should assess dynamic issues, as administrability and predictability matter in developing legal standards. [135] Fortunately, the dynamic competition paradigm offers an entirely workable standard insofar as it calls for a careful factual assessment of competitive realities and a judgment about the likelihood of future competitive harm, which is the same analysis that enforcement agencies undertake today. The difference between the current static framework and the dynamic framework is not ease of application or predictability but the lens through which competitive facts are assessed. The dynamic approach is more attuned to emerging competitive threats and less inclined to reject them as "speculative," "untimely," or "insufficient."[136] The analytical horizon of the

[133] Rooney, Lee, & Payne, *supra* note 128, at 15 ("Efficiencies are considered only after the court has found a likely anticompetitive effect."); *see also* MERGER GUIDELINES, *supra* note 127, § 10 (noting that several considerations, such as research and development cost savings, "may be substantial and yet not be cognizable efficiencies" under the guidelines).

[134] *See, e.g.*, MERGER GUIDELINES, *supra* note 127, § 10 (restricting consideration of innovation to an efficiency that must be quantified and considered as a rebuttal to an anticompetitive effect already found); Rooney, Lee, & Payne, *supra* note 128, at 3 (noting that under the current guidelines "dynamic supply responses are not considered in defining markets or identifying market participants").

[135] It is of course important to recognize that administrability matters. As Tim Muris has noted, "the suitability of an economic hypothesis for shaping antitrust doctrine should be measured by whether the hypothesis lends itself to the development of standards that courts and enforcement agencies can administer effectively" Remarks before George Masen University Law Review. Jan 15 2003.

[136] MERGER GUIDELINES, *supra* note 127, § 9 (noting that entry is cognizable when it "would be timely, likely, and sufficient in its magnitude, character, and scope to deter or counteract the competitive effects of concern").

dynamic approach is broader and longer, and less myopic, than that of the static approach.

The dynamic competition approach recognizes that capabilities are the handmaiden of innovation and competitiveness. It places less reliance on market share to assess market power and more reliance on the innovative capabilities of focal firms. Thus, a firm with a significant market share, based on sales over the last fiscal year, may have weak capabilities, and, if so, its ability to wield market power is limited; on the other hand, a firm with strong capabilities and forward-looking technology and product development, but a moderate market share over the last year, is likely in a stronger competitive position. That a mathematically calculated index, like the four-firm concentration ratio or the HHI, is not yet available to place a numerical value on capabilities does not make those capabilities any less real or competitively relevant.

I invite competition lawyers, judges, and economists to propose legal rubrics with which to incorporate innovation capabilities more directly into the legal framework with which mergers are assessed. The same need arises in reconsidering supply responses. In short, more credit is due both to human ingenuity generally and to our ability to innovate around the "barriers" that enforcement agencies are too willing to credit as insulating durable market power.

To be clear, strong dynamic capabilities is not a predictor of market power. It is a competing explanation for market success to be evaluated alongside scale, scope, network effects, and other textbook go-to explanations. Mergers may be animated by goals other than efficiency or market power. They may be driven by the desire to enhance capabilities, which in turn strengthens dynamic competition.

Static models of competition implicitly venerate staid, cost-cutting, routinized competitive strategies, mindsets, and mergers.[137] The dynamic approach gives credit to the

[137] The incentives analysis that is so often used by enforcement agencies should be used to assess their own policies. Political and legal careers are advanced by bringing cases and starring in widely publicized "wins" that prohibit headline transactions. If government resources were

successful navigation of uncertainty, and inventions that fuel growth, employment, and robust innovation ecosystems. It is less friendly to staid static efficiency mergers that do nothing to promote dynamic competition.

The next subsection provides an example from the automobile industry to show that the concept of capabilities can become operational if enforcers and economists ask the right questions.

B. Capability assessment of evolving competitors: automobiles as an example

When incumbents face new technological and competitive challenges, they are sometimes aided and sometimes compromised by their existing capabilities. As noted above, new entry can come from incumbents in related areas who diversify into the focal market(s), or from de novo entrants (i.e., startups).

Murmann and Vogt, scholars in the field of strategic management, have demonstrated the feasibility of capability assessments with respect to their likely impact on competitive outcomes in the market(s) for electric vehicles.[138] A comparative capability analysis has been conducted with respect to three types of firms considered relevant to assessing the future of competition in the auto industry: (1) incumbents, (2) diversifying entrants, and (3) startups.[139]

The authors assess capabilities of four firms based on publicly available documents.[140] They reviewed Volkswagen, Google/Waymo, and Tesla, and they employed a qualitative assessment of "capability distance" (for incumbents) that had

used to promote a competitive process that yields the greatest innovation, creativity, and ingenuity, would the public weal not be well-served?

138 Johann Peter Murmann & Fabian Vogt, *A Capabilities Framework for Dynamic Competition: Assessing the Relative Chances of Incumbents, Start-Ups, and Diversifying Entrants*, 19 MGMT. AND ORG. REV. 141 (2023).

139 *Id.*

140 *Id.* at 145–46 (2023). Obviously, a lot more would be possible if the analysts were able to access proprietary information too.

been provided elsewhere.[141] Murmann and Vogt score ordinary capabilities (using patent data and public records).[142] They score twenty-six ordinary capabilities to identify capability gaps, resulting in a capability score for each of their representative competitors: Volkswagen, Google/Waymo, and Tesla.[143] Volkswagen scored higher than Tesla, which scored higher than Google, although Tesla's capabilities had increased dramatically over the time period considered, as shown in their overview replicated in Table 3 in the Appendix.[144]

The authors' conclusion is that the incumbents are not as poorly positioned as others believe. That said, they do recognize that Tesla's growth in capabilities (itself reflecting dynamic capabilities) has been impressive.[145] They point out that software capabilities are the greatest shortcoming that incumbent automobile companies have and that "incumbents need to address their capability deficits faster than new startups and diversifying entrants can build their capabilities."[146] Murmann and Vogt conclude by observing that, "to predict the future competitiveness of incumbent firms, it is necessary to make a comparative and comprehensive evaluation of the of the capabilities of incumbents, potential startups and diversifying entrants."[147]

Most importantly, the work of these authors is of the kind that competition economists could have been doing decades ago.[148] Such an approach could have provided a better understanding of the supply landscape in and surrounding the

[141] *Id.* at 144. With hindsight, a fourth dimension of capability distance, scale, could have been added. *See* David J. Teece, *Tesla and the Reshaping of the Auto Industry*, 14 MGMT. AND ORG. REV. 501, 508 (2018).

[142] *Id.* at 145–46.

[143] *Id.* at 148.

[144] *Id.* at 149.

[145] *Id.* at 150.

[146] *Id.* at 151.

[147] *Id.*

[148] In conversation with the author, William Kovacic, former FTC commissioner, points out that the agency has already used capability analysis in assessing defense sector mergers.

relevant competitive venue. This would have informed the significance of traditional quantitative, static calculations such as the HHI and four- or eight-firm concentration indices. The capability foundations for a deeper assessment of M&A transactions in the context of innovation are developed in the next section.

V. DYNAMIC COMPETITION: REJUVENATING SUPPLY SIDE ANALYSES

A. Technological capabilities[149]

In the last 30 years, the age-old concept of "disruption" in markets due to innovation has gained public attention by virtue of the growth of the tech sector. "Disruption" is an extension of the Schumpeterian concept of "creative destruction,"[150] which has long been noted by economists but then largely ignored. However, it became core to management scholarship under the term "disruption." The term "disruption" was first popularized in management studies, not competition economics. The basic notion is that innovation by new entrants and other incumbents can often destroy the market position of incumbents.[151] A contemporary example is Netflix, which destroyed much of the DVD disc rental business of Blockbuster and is now in turn being challenged by other streaming services such as Disney+.[152] The concern in the field of competition economics is that incumbents will take a short term reactive view and resist disruption rather than respond proactively to it.

149 I'm grateful for Florian Metzler for directing me to some quotes cited in this section.

150 See JOSEPH A. SCHUMPETER, CAPITALISM, SOCIALISM, AND DEMOCRACY 81-86 (2003 ed.) (1942).

151 The late Clay Christensen popularized this notion. *See* Clayton M. Christensen, Michael Raynor & Rory McDonald, *What is Disruptive Innovation?* HARV. BUS. REV., at 4 (Dec. 2015).

152 Richard Jin "Will Netflix become the next Blockbuster" *California Management Review Insights*. July 12, 2021

It is important to note incumbents are especially vulnerable. They are often bereft of good responses. There is a large management and organizational behavior literature on the difficulties of effectuating change in large organizations. This can result from a mismatch of ordinary (and superordinary) capabilities, or weak dynamic capabilities, or both. [153] These factors are one of the reasons that new technology can competitively harm incumbents. This in turn suggests that they do not have market power even if they have high market share.

The exact reasons for the disruption of incumbents by new entrants, and sometimes by other incumbents,[154] matter little; the important fact is that it is common and that competition regulators and economists should be alert to it.[155] As discussed above, incumbency can be a liability as much as it is an advantage to the extent that the incumbent is not ready for the next round of competitive threats. As technologies and markets change, staying in a leadership position requires having: (1) the right bundles of capabilities; and (2) being able to combine, orchestrate, and configure them at the right time and in the manner most likely to result in

153 Serina Al-Haddad & Timothy Kotnour, *Integrating the Organizational Change Literature: A Model for Successful Change*, 28 J. ORG. CHANGE MGMT. 234 (2015) ("In implementing change, different definitions and methods have been proposed to manage change; however, organizations still report a high failure rate of their change initiatives. The literature provides many cases on organizational change; yet, the success rate of change initiatives is <30 percent (citation omitted). And more recent articles note the fact that this rate is not getting any better (citation omitted).")

154 E.g., Disney moving against Netflix in streaming services.

155 The disruption theories are quite diverse. Gans (2016) and Adner (2012) and Lepore (2014) and others have challenged the popular mechanism of disruption put forward by Christensen and Bower. *See* JOSHUA GANS, THE DISRUPTION DILEMMA 120 (2016); RON ADNER, THE WIDE LENS: A NEW STRATEGY FOR INNOVATION (2012); Jill Lepore, *The Disruption Machine,* THE NEW YORKER (June 23, 2014), https://www.newyorker.com/magazine/2014/06/23/the-disruption-machine [https://perma.cc/B86A-7T5Y].

products and services that delight buyers. Murmann[156] and Murmann and Zhu[157] have shown that most incumbent firms are not able to change quickly enough, and so fail when new entrants arrive. Economic theories of competition that discard such emerging, next-generation competition as speculative and remote lack a proper grounding in the realities of everyday dynamic competition.

To the extent that the above assessment is correct, the traditional approach of defining markets and assessing competition by looking for demand-side substitutes is grossly inadequate. Although the merger guidelines recognize that, if a "rapid supply response" is easy,[158] market concentration is not a good measure of market power, limited guidance is provided as to when such a rapid supply response should be acknowledged.[159] A supply response that is not "rapid" and requires nontrivial investment, as do most innovative responses, is treated as "entry."[160] The criteria for

156 JOHN PETER MURMANN, KNOWLEDGE AND COMPETITIVE ADVANTAGE: THE COEVOLUTION OF FIRMS, TECHNOLOGY, AND NATIONAL INSTITUTIONS 218 (2003).

157 Johann Peter Murmann & Zhijing Zhu, *What Enables a Chinese Firm to Create New-to-the-World Innovations? A Historical Case Study of Intrafirm Coopetition in the Instant Messaging Service Sector*, 6(4) STRATEGY SCIENCE 305, 325 (2021).

158 MERGER GUIDELINES, *supra* note 127, § 5.1; *see infra* note 156.

159 *See* MERGER GUIDELINES, *supra* note 127, § 5.1 (noting only that "[f]irms that are not current producers in a relevant market, but would be very likely to provide rapid supply responses with direct competitive impact in the event of a SSNIP, without incurring significant sunk costs…. are termed 'rapid entrants.' Firms that produce the relevant product but do not sell it in the relevant geographic market may be rapid entrants. Other things equal, such firms are most likely to be rapid entrants in they are close to the geographic market…. More generally, if the relevant market is defined around targeted customers, firms that produce relevant products but do not sell them to those customers may be rapid entrants if they can easily and rapidly begin selling to the targeted customers. Firms that clearly possess the necessary assets to supply into the relevant market rapidly may also be rapid entrants."); *see also* Rooney, Lee, & Payne, *supra* note 128, at 7 ("The Merger Guidelines do not define 'very likely,' 'rapid,' 'direct impact,' or 'significant' sunk costs . . . .").

160 MERGER GUIDELINES, *supra* note 127, §§ 5.1, 9; *see supra* note 156, *infra* note 158.

demonstrating likely entry are severe and become the burden of the merging parties to meet.[161] Unlike the enforcement agency, the merging parties do not have the power to subpoena third parties for documents during the merger review period.

The guidelines are thus stacked against crediting the viability of supply responses and otherwise provide little basis for considering innovation as a justification for the merger.[162] There is thus too strong a tendency to dismiss potential entry. This is erroneous, especially given how swift entry can be in the digital economy even though that entry rarely announces itself in advance of its occurrence. Skepticism with respect to the power of potential competition sometimes stems in part

161 *See* MERGER GUIDELINES, *supra* note 127, § 9 ("As part of their full assessment of competitive effects, the Agencies consider entry into the relevant market…. [T]he Agencies examine the timeliness, likelihood, and sufficiency of the entry efforts an entrant might practically employ."); *id.* at § 9.1 ("entry must be rapid enough to make unprofitable overall the actions causing [anticompetitive effects] . . . . The Agencies will not presume that an entrant can have a significant impact on prices before that entrant is ready to provide the relevant product to customers unless there is reliable evidence that anticipated future entry would have such an effect on prices."), *id.* at § 9.2 ("Entry is likely if it would be profitable, accounting for the assets, capabilities, and capital needed and the risks involved, including the need for the entrant to incur costs that would not be recovered if the entrant later exits."), *id.* at § 9.3 ("Even where timely and likely, entry may not be sufficient to deter or counteract the competitive effects of concern…. entry may be insufficient because the products offered by entrants are not close enough substitutes to the products offered by the merged firm…. Entry may also be insufficient due to constraints that limit entrants' competitive effectiveness."); *see also* Rooney, Lee, & Payne, *supra* note 128, at 8 ("Demonstrating entry is considered part of the defendant's rebuttal case.").

162 *See* MERGER GUIDELINES, *supra* note 127, §§ 9, 10 (discussing most supply responses as a form of entry and innovation as an "efficiency" while also noting that "[r]esearch and development cost savings may be substantial and yet not be cognizable efficiencies because they are difficult to verify or result from anticompetitive reductions in innovative activities"); *see also* Rooney, Lee, & Payne, *supra* note 128, at 8, 17 (observing that current merger law "relegates supply responses to a form of 'entry' as to which the merging parties have the burden of proof and must meet strict criteria" and "provide no framework for assessing . . . innovation or crediting it in the competitive assessment of [a] merger").

from an unwarranted (and self-interested) bias on the part of regulators in favor of enforcement instead of applying competition laws to foster a durably dynamically competitive and innovative economy. The skepticism also stems from an analytical failure to appreciate the role of innovation and new technological and organizational capabilities, coupled with the difficulties incumbents often have with organizational transformation.

Looked at from a distance, it is rather difficult to comprehend the focus (perhaps the infatuation) of competition economists with demand-side considerations in defining markets and identifying market participants, assessing market power, and determining the effects of proposed mergers. In the context of innovation and the real-world dynamics of competition, the supply side has far more relevance. The demand side is almost immaterial when old markets are being transformed, and new markets are being opened, by innovation. Just as the entrepreneur has been squeezed out of the theory of the firm,[163] so has the supply side been squeezed out, or at least marginalized, in competition economics. This likely reflects the desire for the (false) appearance of quantitative certainty that regulators and economists seek in static models, and for the simplistic neatness of (static) neo-classical structural models.

The unsatisfactory nature of the theory of the firm in economics makes it challenging for well-trained economists to engage with issues like organizational capabilities and dynamic competition, which business executives and commentators affirm as central to competitive success. Consider the repeated references to competences/capabilities by Jobs biographer Isaacson as he endeavors to explain the success of the iPhone. The iPhone was

> In large parts enabled by a rather specific constellation of long-standing technological competencies on the part of Apple and changing product requirements on the part of the industry –

163 *See* William Baumol, *Entrepreneurship in Economic Theory,* 58 AM. ECON. REV., no. 2, 1968, at 58, 64-71.

> where the latter happened to increasingly align with the former. It is to Apple's credit that the company and its leadership recognized the underlying convergences and increasing congruence and acted upon it – maybe at the earliest possible time.[164]

Steve Jobs himself made many observations that are consistent with a capabilities perspective. For example:

> We've now passed RIM. And I don't see them catching up with us in the foreseeable future. They must move beyond their area of strength and comfort, into the unfamiliar territory of trying to become a software platform company.[165]
>
> Motorola's problem was that it was a hardware technology company, but from the mid-2000s it was software driving the mobile phone business.[166]

Relatedly, Ed Colligan, then CEO of Palm (Blackberry), did not seem to recognize that the capabilities that really mattered (the desire of a mobile operating system) was where Palm was weak. Instead, he touted the importance of capabilities to design and manufacture handsets, noting:[167]

> We've learned and struggled for a few years here figuring out how to make a decent phone. PC guys are

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164 Florian Metzler, *Tracing Competencies and Product Requirements in Technology Space: A New Perspective on Firm and Industry Evolution* 13 (February 3, 2020) (working paper) https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3730195 [https://perma.cc/2WH9-79MX].

165 Steve Jobs, quoted in Jason Snell, *Jobs Speaks! The Complete Transcript*, MACWORLD (Oct. 18, 2010), https://www.macworld.com/article/208438/jobs_transcript.html [https://perma.cc/NHB8-65VH].

166 Nigel Linge, *Motorola Brought Us the Mobile Phone, But Ended Up Merged Out of* Existence, THE CONVERSATION (January 13, 2016) https://theconversation.com/motorola-brought-us-the-mobile-phone-but-ended-up-merged-out-of-existence-33967 [https://perma.cc/2J8Z-G3AL].

167 Sarah Jane Tribble & Dean Takahashi, *An Apple Phone? Palm CEO Says, 'What, Me Worry?*', MERCURY NEWS (Nov. 20, 2006) archived at https://web.archive.org/web/20061205211900/https://www.mercurynews.com/mld/mercurynews/news/columnists/16057579.htm.

> not going to just figure this out. They're not going to just walk in.

Mike Lazaridis, then CEO of RIM (BlackBerry), observed[168] (wrongly):

> "Apple's design-centric approach [will] ultimately limit its appeal by sacrificing needed enterprise functionality. I think over-focus on one blinds you to the value of the other." [. . .] Apple's approach, he said, produced devices that inevitably sacrificed advanced features for aesthetics.

Steve Ballmer, then CEO of Microsoft, displayed his ignorance too, noting:[169]

> You can get a Motorola Q for $99. [. . .] [Apple] will have the most expensive phone, by far, ever, in the marketplace.
> There's no chance that the iPhone is going to get any significant market share. No chance.[170]

There are clear implications and challenges for competition policy. As to the challenges, some will ask how, if tech CEOs, who are both knowledgeable and have their companies' future at stake, misjudge competencies and market trends, how are regulators supposed to make informed policy judgments by speculating about future competition? The answer must lie in the broad investigative power of regulators (which exceed those of management when it comes

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168 Michael Morisey, *RIM Founder Mike Lazardis Discusses BlackBerry's Outages and Advantages – and Upstart iPhone*, SEARCHMOBILECOMPUTING.COM (Mar. 12, 2008) archived at https://web.archive.org/web/20100421041008/http://searchmobilecomputing.techtarget.com/news/1305023/RIM-founder-Mike-Lazaridis-discusses-BlackBerrys-outages-and-advantages-and-upstart-iPhone#.

169 *Balmer Laughs at iPhone*, YOUTUBE (Sept. 18, 2007) https://www.youtube.com/watch?v=eywi0h_Y5_U; *Microsoft's Ballmer Not Impressed with Apple iPhone,* CNBC, (Jan. 17. 2007) archived at https://web.archive.org/web/20151104090220/https://www.cnbc.com/id/16671712 (discussing the interview which took place on or before January 17, 2007).

170 Kevin P. Casey, *CEO Forum: Microsoft's Ballmer having a 'Great Time,'* USA Today (April 29, 2007)

to assessing the proprietary information and plans of competitors). The burden that regulators must meet is to show that a given proposed transaction will probably substantially lessen competition. Regulators can and should obtain highly proprietary information from the parties to a merger, and from adjacent firms to assess the state of research and product development to gain a comprehensive a view of prospective innovation and supply-side dynamics.

As for the implications, judges must be trained to look first to innovation and insist that any showing that a merger will probably substantially lessen competition has accounted for, with a preponderance of the evidence, the likely effect of innovation. Innovation cannot be an affirmative defense whose burden is laid at the doorstep of the defendant. Demonstrating a likely anticompetitive effect notwithstanding innovation in and around the relevant competitive venue must be the burden of the plaintiff if innovation is going to gain necessary legal significance.[171]

Technological, organizational, and managerial capabilities now need to be the focus of merger inquiry. The traditional focus on shares in relevant markets as a way to assess the likelihood of a substantial lessening of competition is highly problematic. Without including as a central element a capabilities and innovation assessment, the static competition paradigm cannot remain the bedrock for competitive assessment.[172]

171 Rooney, Lee, & Payne, *supra* note 129, at 11 (suggesting that, in order to "give innovation its due as a primary driver of competition," supply-side substitution should be included "at the market definition stage," placing the burden "on the plaintiff before a presumption of illegality arises").

172 This may already be the case for merger analysis. Even if the approach today is less structural than in the past, there are calls for a return to more structural assessments (e.g., Shapiro) perhaps this is the opportunity to bring in new notions of structure that embrace capabilities as well as market shares.

B. Disruption as Central to Supply-Side Assessments

Management scholars have for many decades been exploring the nature and selective impact of disruption. Notable authors who have done research that is relevant to entry analysis include Tushman (and Romineli) and Christenson and Ganz.[173] In essence, disruption is about competency-destroying innovation. The competition it engenders undermines existing competencies and effectively eliminates yesterday's entry barriers. Incumbents who lack dynamic capabilities and have too much inertia lose relevance. Such innovation creates discontinuities because incumbents, to respond, need new capabilities, including skills and knowledge. Sometimes these can be bought (as with ordinary capabilities), but sometimes they cannot (as with super-ordinary capabilities and dynamic capabilities).

Thus, digital photography rendered emulsion/reel film obsolete. The electronic calculator made slide rules obsolete. With respect to well-established incumbents, electric vehicles (EV) are both competency-destroying and competency-enhancing. The internal combustion engine and the drive train are completely eliminated in EVs; but crash worthiness and passenger comfort elements don't change much at all, confirming that new technologies may invite the enhancement of certain existing competencies. Blockchain technology is an enabling technology and can be competency-destroying and -enhancing in different contexts. New payments technologies are competency-enhancing to credit cards when they are built on top of them.

In short, both competency destroying and competency enhancing innovations promote competition. The latter is likely to benefit incumbents; the former, undermine them. Yet

173 JOSHUA GANS, THE DISRUPTION DILEMMA (2016); Elaine Romanelli & Michael L. Tushman *Organizational Transformation as Punctuated Equilibrium*, 37 ACAD. MGMT. J. 1141 (October 1994); Clayton M. Christensen, THE INNOVATOR'S DILEMMA (1997). Other scholars who have also looked at disruption include Richard Foster. *See* Richard N. Foster & Sarah Kaplan, CREATIVE DESTRUCTION: WHY COMPANIES THAT ARE BUILT TO LAST UNDERPERFORM THE MARKET, AND HOW TO SUCCESSFULLY TRANSFORM THEM (2001).

both help energize dynamic competition, as discussed below. Although competition agencies look to changes in market shares as indicia of competition, those changes may be more usefully seen as symptomatic of relative changes in competencies. Indeed, small share gains by supposedly fringe firms may be early indicators of a relative shift in competencies that portend significant disruption.

1. Disruption via systemic (architectural) or autonomous innovation

Disruption is often the result of innovation, and innovation is highly heterogenous. To recognize a likelihood of disruption, one must be aware of that heterogeneity and some common threads that run through it. Economists Henderson and Clarke have made useful contributions to the management of technology literature that can in turn inform competition policy.[174] They make a distinction between "architectural" and "component" knowledge, whereby architectural knowhow relates to a "whole" and component knowhow relates to a part as to the innovative product or service.[175] This is very close to the embedded-versus-peripheral distinctions or the systemic-versus-autonomous distinctions.[176]

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174 Rebecca M. Henderson & Kim B. Clarke, *Architectural Innovation: The Reconfiguration of Existing Product Technologies and the Failure of Established Firms,* 35 ADMIN. SCI. Q. (Special issue) 9 (March 1990).

175 Their taxonomy is similar to the autonomous/systemic classification which I use and prefer. *See* David J. Teece, *Systemic Innovation*, *in* Mie Augier & David J. Teece (eds.), THE PALGRAVE ENCYC. STRATEGIC MGMT. (2014); *see also* Henry Chesbrough & David J. Teece, *Organizing for Innovation: When is Virtual Virtuous?* HARV. BUS. REV. 127 (Aug. 2002). Systemic innovation alters the connecting "tissue" or structure of the product; autonomous or modular innovations do not change these arrangements (i.e., the architecture or designs of the system without necessarily changing the service the product delivers.

176 *See* David J. Teece, *Economic Analysis and Strategic Management*, 26 CAL. MGMT. REV. 87, 89 (1984) and *see* David J. Teece, *Systemic Innovation*, *in* Mie Augier & David J. Teece (eds.), THE PALGRAVE ENCYC. STRATEGIC MGMT. (2014).

Companies are more likely to be deeply disrupted from the supply side by competition from architectural innovation.[177] This suggests that a new entrant with better and different architectural knowhow is more likely a strong potential competitor. In contrast, a startup/new entrant with just component knowledge is less of a competitive threat.

Building architectural knowhow and effectuating architectural (systemic) innovation is generally easier to accomplish within an integrated organization where a unified top management team can direct the process. Highly decentralized companies will be handicapped in effectuating systemic innovation.[178] Consider U.S. telecoms from the 1930s to the 1980s. AT&T ran a system integrating the activities of AT&T longlines, Bell Labs, Western Electric, and the Bell Operating Companies. Key personnel were developed to help lay the foundation for developing and introducing architectural innovation. Such personnel were referred to as "systems engineers" and they facilitated architectural innovation in the Bell System.

However, not all the pieces of the puzzle always lie under common ownership. Asset dispersions make disruption via architectural innovation difficult for individual firms to effectuate. Relatedly, as Gans notes "[i]n some situations, firms will want to absorb resources—particularly talent, skills, and technology—from outside their organizations in order to anticipate or deal with disruption."[179] Gans references Tripsas' study[180] of the typesetting industry where Morgenthaler (an incumbent) acquired talent externally to

177 Rebecca M. Henderson & Kim B. Clarke, *Architectural Innovation: The Reconfiguration of Existing Product Technologies and the Failure of Established Firms,* 35 ADMIN. SCI. Q. (Special issue) 9 (March 1990).

178 *See* JOSHUA GANS, THE DISRUPTION DILEMMA 102–04 (2016) (referencing Canon's integrated approach as assisting in its achievement of architectural innovation. Specifically, Gans refers to Canon's "integrated capabilities" which is, in essence, the ability to bring about alignment through cultures and structures).

179 JOSHUA GANS, THE DISRUPTION DILEMMA 105 (2016).

180 *See* Mary Tripsas, *Surviving Radical Technological Change through Dynamic Capability: Evidence from the Typesetter Industry*, 6 INDUS. & CORP. CHANGE 341 (1997).

help build up the new capabilities required to compete in the face of waves of innovation. Tripsas refers to this as "external integrative capabilities."[181] Integrative capabilities require engagement by senior management, as complex coordination and asset orchestration is almost always required. M&A activity can help assemble the pieces required, thereby enabling architectural innovation, which in turn can drive powerful new competition that completely reshapes markets. In the contemporary enforcement environment, those types of acquisitions are viewed suspiciously as "killer acquisitions" or eliminators of nascent competitors. [182]

In short, dynamic capabilities allow firms not only to innovate but also, and importantly, to (i) spot their own missing capabilities, and (ii) energize the organization to build or buy certain competencies to compete and possibly succeed, rather than fail. Such behavior reflects dynamic competition at work even before it is disruptive. Mergers and acquisitions are often needed to facilitate architectural innovation, since

[181] *Id.*

[182] *See, e.g.*, David Teece, *Towards a Dynamic Competition Approach to Big Tech Merger Enforcement: The Facebook-Giphy Example*, COMPETITION POLICY INTERNATIONAL 15-16 (2021) ("Giphy is an online database and search engine that allows users to search for and share short looping … videos with no sound …. Ownership of Giphy by [Meta] enables [Meta] to enhance its ad tracking capabilities …. Absent an acquisition, Giphy would most likely have failed."); *Completed acquisition by Facebook, Inc (now Meta Platforms, Inc) of Giphy, Inc*, COMPETITION MARKETS AUTHORITY 18-19 (Nov. 30, 2021) ("[The CMA] concluded that the Merger has resulted or may be expected to result in [a significant lessening of competition]: (a) in the supply of display advertising in the UK… and (b) in the supply of social media services worldwide."); Fed. Trade Comm'n v. Meta Platforms Inc., No. 5:22-CV-04325-EJD, 2023 WL 2346238, *28, 33 (N.D. Cal. Feb. 3, 2023) (court rejecting FTC's challenge to Meta's acquisition of Within, and its capability in Fitness VR, because "Meta did not have the 'available feasible means' to enter the relevant market other than by acquisition."); *Adobe to Acquire Figma*, ADOBE (Sept. 15, 2022), https://news.adobe.com/news/news-details/2022/Adobe-to-Acquire-Figma/default.aspx (announcing Adobe's plan to purchase Figma in order to expand Adobe's offerings in the collaborative, web-based design platform market to "reimagin[e]" Adobe's current offerings by "accelerat[ing] the delivery of Adobe's Creative Cloud technologies on the web"); for discussion of the regulatory challenges to the acquisition, see *infra* note 174.

the probability that the missing assets/capabilities can be built internally in a timely fashion is often low.[183]

As competition economists endeavors to assess market power, mergers, and complex business behavior and organization, they need to have such considerations in mind, or they will fall into the trap of attributing a monopolization motive to an understandable practice, thereby confounding complexity with monopoly, as Ronald Coase feared.[184] Supply-side elasticity is a meaningless concept absent an understanding of firm-level capabilities and the potential for and sources of disruption. That understanding is readily available in antitrust cases, where access to the documents of both the transactional parties and adjacent participants in the ecosystem provide a privileged opportunity to examine and reach informed judgments on such matters.

2. Disruption and the procompetitive nature of renewal

Disruption is only one manifestation of dynamic competition, and not always the most important one. Dynamic competition does not have to destroy companies to bring benefits to consumers and society. Competency-enhancing innovation also strengthens competition and can provide benefits by stimulating and rejuvenating a business enterprise. The complementary assets of incumbents can benefit from disruption even when the value of core assets is deeply compromised.[185]

It is most important that competition agencies and economists understand that dynamic competition can take the form of both disruption and renewal. It is necessary for competition economists to appreciate two categories of

183 *See* Henry Chesbrough & David J. Teece, *Organizing for Innovation: When is Virtual Virtuous?* HARV. BUS. REV. 127 (Aug. 2002).

184 See Section III *supra*.

185 *See* David J. Teece, *Profiting from Technological Innovation: Implications for Integration, Collaboration, Licensing, and Public Policy*, 15 RSCH. POL'Y 285 (1986); and David J. Teece, *Profiting from Innovation in the Digital Economy,* 47 RSCH. POL'Y 1367 (2018).

dynamic competition: (1) "Schumpeterian" entrepreneurial activity (whether by incumbents or new entrants) which brings about disruption; and (2) "Kirznerian" entrepreneurial activity (by incumbents or new entrants) which tends to push the market back towards equilibrium and often involves renewal.[186] Both categories are important, but the agencies seem willing to give accolades only to the former. Organizational renewal of the incumbent (captured in part by Kirznerian entrepreneurial activity) helps to restore equilibrium within the existing market, though at an improved level of product or service development.

Renewal is thus just as important to competition as disruption but gets almost no attention. One should accordingly view the renewal (of incumbents), whether achieved by internal restructuring or by merger, as another indicium of competition.[187]

Consider Adobe's desire (which as of this writing reportedly remains subject to regulatory scrutiny and approval[188]) to purchase Figma would appear to fall into the

186 ISRAEL M. KIRZNER, *Competition & Entrepreneurship* (1973).

187 Israel Kirzner's view (*see* ISRAEL M. KIRZNER, COMPETITION & ENTREPRENEURSHIP 48 (1973)) of the entrepreneur emphasized that firm level performance was driven by the firm's ability to profit from disequilibrium… acting as a kind of arbitrageur; whereas Schumpeter (*see* JOSEPH A. SCHUMPETER, CAPITALISM, SOCIALISM, AND DEMOCRACY 82-83 (2003 ed.) (1942)) focused on profit generated by a firm's ability to upset the status quo. The former is more about renewal; the latter is more about innovation.

188 Adobe's $20 Billion Deal to Acquire Figma Under Threat from EU Regulators, Financial Times Reports, REUTERS (June 20, 2023), https://www.reuters.com/markets/deals/adobes-deal-acquire-figma-under-threat-eu-regulators-ft-2023-06-20/ ("European antitrust regulators are preparing to launch a formal investigation into software giant Adobe's $20 billion buyout deal for cloud-based designed platform Figma later this year."); Leah Nylen, Anna Edgerton, & Brody Ford, DOJ Preps Antitrust Suit to Block Adobe's $20 Billion Figma Deal, BLOOMBERG (Feb. 23, 2023), https://www.bloomberg.com/news/articles/2023-02-23/doj-preparing-suit-to-block-adobe-s-20-billion-deal-for-figma#xj4y7vzkg ("The Justice Department is preparing an antitrust lawsuit seeking to block Adobe Inc.'s $20 billion acquisition of startup Figma Inc."); *UK CMA launches probe into Adobe's $20bn acquisition of Figma*, NS BUSINESS (2023) ("The UK

category of acquiring technological assets that would help facilitate renewal.[189] The merger was positioned by Adobe as the centerpiece of a necessary transformation that it seeks to effectuate.[190] Adobe apparently rejected comparisons to the FTC's description of Facebook's acquisition of Instagram, noting that "the Figma's design tool doesn't compete with [Adobe's] most important products. Figma has said joining Adobe will give it the resources needed to accelerate development."[191]

If first impressions from an external observer are correct, Figma's capabilities will help Adobe migrate to a next-generation suite of collaborative products. This will enable it to stay relevant, thereby providing stronger competition to Microsoft and possibly Oracle and Salesforce.

Public policy should favor a competitive landscape with heterogeneous firms making heavy investments in R&D and related innovation activities, engaging in business-model experimentation, introducing and scaling new technologies to displace older ones, and constantly renewing their capabilities

Competition and Markets Authority (CMA) has launched a phase [1 investigation] into the previously announced software major Adobe's $20bn acquisition of web-first collaborative design platform Figma.").

189 Figma is a web-based collaborative design platform, as described at *supra* note 180. Adobe agreed to acquire Figma for approximately $20 billion in 2022. The acquisition is being reviewed by regulators around the world and the DOJ is reportedly preparing to file a lawsuit to block the acquisition. *See,* Adobe Press Release, *Adobe to Acquire Figma* (Sep. 15, 2022), https://news.adobe.com/news/news-details/2022/Adobe-to-Acquire-Figma/default.aspx [https://perma.cc/6YBA-QH65]; Leah Nylen, Anna Edgerton & Brody Ford, *DOJ Preps Antitrust Suit to Block Adobe's $20 Billion Figma Deal,* BLOOMBERG (Feb. 23, 2023), https://www.bloomberg.com/news/articles/2023-02-23/doj-preparing-suit-to-block-adobe-s-20-billion-deal-for-figma [https://perma.cc/C3UW-SGCC].

190 *See* Brody Ford, *Adobe's Plan for Transformation Hinges on DOJ Nod on Figma Deal*, BLOOMBERG LAW (Nov 7, 2022), https://news.bloomberglaw.com/antitrust/adobes-plan-for-transformation-hinges-on-doj-nod-on-figma-deal [https://perma.cc/C94D-99AY].

191 Brody Ford, *Adobe's Plan for Transformation Hinges on DOJ Nod on Figma Deal*, BLOOMBERG LAW (Nov 7, 2022), https://news.bloomberglaw.com/antitrust/adobes-plan-for-transformation-hinges-on-doj-nod-on-figma-deal [https://perma.cc/C94D-99AY].

and resources. Value capture begets value creation in environments where there is considerable technological opportunity. The current regulatory skepticism of all-things tech betrays the required public policy perspective and risks bringing enforcement actions back some 50 years to a static, structure-performance paradigm where presumptions of illegality reigned and dynamic competition was chilled if not suffocated.

Profits are obviously necessary for innovators to keep attracting the capital needed to fund innovation. If incumbents benefit from "moats," it is because they have invested in building castles. Competition policy should encourage the investment required to construct the castles and understand the need to preserve value by digging moats, especially when intellectual property protection is weak.

To help crystalize the above "disruption" analysis, Table 4 in the Appendix lists some contrasting perspectives, assumptions, and understandings of competition economists and strategic management scholars. The left-hand columns in each table list standard concepts in static competition economics.. The right-hand columns list analogous concepts and assumptions in the field of innovation management. Clearly, the focuses and priorities of innovation management (which informs dynamic competition) are different from those of the neoclassical model. The challenge is to get these ideas understood and made administrable.

With the improved understanding of competition that the dynamic competition paradigm allows, the assessment of business practices under "rule of reason" standards proceeds in a new light. Whether restrictive practices (to help capture value and prevent free riding), cooperative arrangements, or M&A activity to facilitate systemic innovation is at stake, the dynamic framework of competitive analysis has important policy implications. By making clear those practices that facilitate innovation and capability-building, the paradigm also helps identify those practices that do not, allowing enforcement to be focused on conduct that is truly anticompetitive rather than condemning conduct that only superficially resembles it.

C. Potential competition and mergers and acquisitions

The importance of potential competition is readily apparent from the foregoing discussion of disruption, renewal, and supply-side rejuvenation. The dynamic competition framework is solicitous of the prospect of potential competition, and the static competition model is skeptical of it. Current enforcement policies seem to view potential competition as speculative and often not sufficient to discipline the perceived immediate anticompetitive effects of a merger,[192] yet cases are brought against mergers allegedly to protect potential competition even when the threat to that competition has not been substantiated.[193]

How does one judge the plausibility of potential competition? The dynamic competition paradigm provides some fresh insights. An initial lesson is that one should take potential competition seriously as a disciplining factor to monopoly power, especially where rapid technological change is present. As is evident in many of the quotations from tech business executives, potential competition can be as much a

[192] *See* MERGER GUIDELINES, *supra* notes 127, 129, 133, 156, 158 (explaining that the Guidelines limit consideration of potential competition by defining the relevant market narrowly, identifying market participants restrictively, and subjecting entry to severe criteria.).

[193] *See also* Fed. Trade Comm'n v. Meta Platforms Inc., 2023 WL 2346238, *32 (N.D. Cal. 2023) ("[T]he FTC has failed to demonstrate that it was 'reasonably probable' that Meta was perceived as a potential competitor into the relevant market."; Fed. Trade Comm'n v. Steris Corp., 133 F. Supp. 3d 962, 963, 984 (N.D. Ohio 2015) ("The FTC asked the Court to grant immediate injunctive relief . . . to prevent Steris from acquiring its alleged potential competitor, Synergy . . . [I]ts motion for preliminary injunction is hereby denied" for lack of evidence linking the proposed merger to the alleged reduction in potential competition. *See, e.g.*, United States v. UnitedHealth Grp. Inc, __F. Supp. 3d __, *15-*16 (D.D.C. Sept. 21, 2022) (noting that the government claims the merger will cause "UHC's rivals [to] innovate less" because UHC will "gain broad access and use rights to the claims data of UHC's rivals," which it would "have an incentive to share," but finding that "the Government [has failed to] put forward real-world evidence that United's rivals are likely to innovate less" because of the data misuse); *id.* at *24 ("Yet the Government provided zero real-world evidence that rival payers are likely to reduce innovation.").

galvanizing factor as actual competition in the tech sector. The assessment of potential competition requires digging deeper into the supply side (and in particular, into capability issues), both with respect to the target and also with respect to other market participants.

Richard Gilbert identified four major schools of thought with respect to potential competition: (1) limit pricing; (2) dynamic limit pricing; (3) the theory of contestable markets, and (4) the market efficiency model.[194] None of these "schools of thought," to use Gilbert's descriptor, takes capabilities or innovation into account. Dynamic limit pricing, despite its title, is not about innovation or enterprise development.

While Gilbert's survey rightfully concludes that "potential competition is important as a mechanism to control market power,"[195] there is next to nothing in the standard industrial organization literature he surveys to assist enforcement agencies in identifying and calibrating potential competition/potential entrants.[196] Gilbert laments the lack of generality in the existing literature. He notes that "models that explain competitor behavior in one industry may be inappropriate to describe behavior in another."[197] He may well be right in that regard. But to have any chance of coming up with new insights, it is first necessary to build a framework of enterprise-level capabilities, evolution, growth, and potential entry, which competition economists have so far been reluctant or unable to do.[198]

194 *See* Richard J. Gilbert, *The Role of Potential Competition in Industrial Organization,* 3 J. ECON. PERSPECTIVES 107 (1989).

195 *See* Richard J. Gilbert, *The Role of Potential Competition in Industrial Organization,* 3 J. ECON. PERSPECTIVES 107, 123 (1989).

196 Gilbert observes that with contestability theory "potential competitors were elevated to a status comparable to that of actual competitors." *See* Richard J. Gilbert, *The Role of Potential Competition in Industrial Organization,* 3 J. ECON. PERSPECTIVES 107, 123 (1989).

197 *Id.* at 124.

198 A very recent CPI *Antitrust Chronicle* issue devoted to "The Economics of Potential Competition" provides little comfort that there are new developments since Gilbert's review 30 years ago. The lack of research relevant to the structure of today's issues is disturbing, although a few

Being bereft of any helpful theories, courts have quite sensibly tried to conduct factually oriented inquiries, based on the evidence that the parties have presented to them, concerning whether firms were poised to enter a market. They have tended to look at (1) competition in a relevant market and trends, (2) business attributes of the alleged potential entrants, and (3) decisions and actions that the identified potential entrant has taken in the recent past.[199] The focus is rarely an investigation of the capabilities of the potential competitor or an assessment of the likely evolutionary path of the business or of the development of their capabilities.[200]

forward-looking glimpses might be gleaned from a sympathetic review of the *Antitrust Chronicle* volume cited above.

199 *Fed. Trade Comm'n v. Steris Corp.*, 133 F. Supp. 3d 962, 966 (N.D. Ohio 2015) ("In order to obtain injunctive relief, the FTC has to show a likelihood of proving at trial that, absent the merger, Synergy probably would have entered the U.S. contract sterilization market … within a reasonable period of time. The Court concludes, for the following reasons, that the FTC has not met its burden."); id. at 978 ("the most significant reason Synergy opted to discontinue the U.S. ex-ray project was lack of customer commitment,"); id. at 981 ("despite Synergy's best efforts, it was unable to harness the capital costs to build x-ray facilities in the United States"); id. at 982 ("Synergy was [not] poised to build x-ray sterilization facilities in the United States in the foreseeable future,"); id. at 984 ("the evidence unequivocally shows that the problems that plagued the development of x-ray sterilization … were the same problems that justified termination of the project in 2015: the failure to obtain customer commitments and the inability to lower capital costs."); Fed. Trade Comm'n v. Meta Platforms Inc., No. 5:22-CV-04325-EJD, 2023 WL 2346238, at *32 (N.D. Cal. Feb. 3, 2023) ("the FTC has failed to demonstrate that it was 'reasonably probable' that Meta was perceived as potential competitor into the relevant market,"); id. at *33 ("the FTC's evidence has not established that Meta's presence had a direct effect on Within's behavior…. [T]he objective evidence does not support a reasonable probability that firms in the relevant market perceived Meta as a potential entrant. Even if it did, the Court finds that there is no direct or circumstantial evidence to suggest that Meta's presence did in fact temper oligopolistic behavior or result in any other procompetitive effects.").

200 The merger guidelines, for example, do not identify a potential competitor as a constraint on post-merger conduct. The guidelines also do not identify a capabilities analysis nor an assessment of the evolutionary path of business as relevant in assessing the likelihood, sufficiency, or timeliness of entry. See MERGER GUIDELINES, *supra* note 127, § 9.

This is not because such an assessment is irrelevant, but because the parties have not presented the evidence and appropriate analytical frameworks to the courts. The required capabilities analysis is also difficult, and there has been no help from mainstream economic theory.

A new and better approach would require assessing the capabilities of potential competitors along with their financial wherewithal, and the basic economics at work (e.g., scale, scope, and network effects). These issues are important enough that the enforcement agencies and competition policy scholars must now begin to rise to this challenge. Those issues are not in lieu of the factors noted above that courts currently consider but are in addition to them. A capabilities analysis provides a much fuller profile of likely potential competition and a firmer basis on which to make judgments about potential competition.

Richard Langlois has observed that competition economists need to think "less about firms and markets and more about economic capabilities and where they come from."[201] Elzinga et al. note that one needs to analyze "the evolution of the competitive landscape" and observes that "the likelihood that the product of the nascent competitor will evolve to become a competitive constraint on the incumbent firm can depend on … how the competitive landscape evolves."[202] However, he does not go down that path himself. Langlois recalls the Microsoft case discussed in section 2 where Microsoft "portrayed its position as that of a dynamic competitor in an ever-changing market, perennially besieged by threats ranging from the dimly perceptible to the radically unknown."[203]

Looking at the situation in 2020, noted technology analyst Benedict Evans observed that Microsoft's fall from dominance

[201] Richard N. Langlois, *Potential Competition as Process and Structure,* CPI ANTITRUST CHRON., 4, 52 (Feb. 2022).

[202] Andrew Elzinga, Nikhil Gupta, Margaret Kyle & Vivek Mani, *Economic Issues in Assessing Potential and Nascent Competition,* 1 CPI ANTITRUST CHRON. 15, 17–18 (Winter 2022).

[203] Richard N. Langlois, *Potential Competition as Process and Structure,* CPI ANTITRUST CHRON. 49, 50 (Feb. 2022).

had less to do with antitrust intervention and more with the actual appearance of unforeseen competition.[204] At the time of the US v Microsoft trial, Microsoft executives were well aware of the high likelihood of new competition but, as noted earlier, their opinions were ridiculed by the economics profession, the press, and the enforcement agencies.

Retrospection demonstrates that Microsoft's status as the then-most relevant computing environment was doomed with the rise of the internet. The internet was already advanced by the time of trial, having gotten started with ARPANET in the 1980s. Even though it still provided the "client" for users to access the internet (i.e., the Windows PC), Microsoft lost dominance over the client to smartphones when Apple proposed a better client model (i.e., the mobile iPhone).[205]

There was a failure by the professionals involved, both in the U.S. and Europe, to understand the changing nature of competition. The intellectual blinders of the agencies likely stemmed from strong adherence to the static model. It led to a significant waste of enforcement dollars and a distraction to the business and legal communities, including at Microsoft.

Clearly, the potential competition literature needs to be rebooted. A modest effect in that regard is attempted in the next section in the context of discussing nascent competitors, which are related potential competitors as nascent

204 *See* Benedict Evans, *How to Lose a Monopoly*, BENEDICT EVANS (Jan. 1, 2020), https://www.ben-evans.com/benedictevans/2020/01/01/microsoft-monopoly-and-dominance [https://perma.cc/QF84-4NB8].

205 Back in 2007 when the iPhone was launched, Microsoft's CEO at the time, Steve Ballmer, ridiculed the iPhone for its expense and lack of a keyboard which be believed was needed to make it a good email machine. *See* Jordan Weissmann, *iPhone Turns 5: A Short History of Its Famously and Loudly Wrong Critics*, THE ATLANTIC (Jun. 29, 2012), https://www.theatlantic.com/business/archive/2012/06/iphone-turns-5-a-short-history-of-its-famously-and-loudly-wrong-critics/259171/ [https://perma.cc/G3J8-4TRD]. In 2016, Ballmer admitted that it was also good business model innovation by Apple to get the operator to bundle the phone with a service agreement . . . thereby lowering the entry price for consumers. *See* Tim Hardwick, *Former Microsoft CEO Steve Ballmer Admits He Was Wrong About the iPhone*, MACRUMORS (Nov. 7, 2016), https://www.macrumors.com/2016/11/07/former-microsoft-ceo-steve-ballmer-wrong-iphone/ [https://perma.cc/ZJ2D-66ZN].

competitors stand ready to expand from the periphery to the center of an ecosystem.

D. Considering Nascent Competition as a Proxy for Potential Competition

While potential competition involves assessing (or forecasting) future entry, such as when generic pharmaceuticals might compete with proprietary pharmaceuticals, the term "nascent competitor" describes an existing new entrant but one that is not yet a significant competitive constraint, but could be in the future.[206] Both potential and nascent competitors can in principle deliver future competition. The likelihood that a nascent competitor will evolve to become a competitive constraint depends, of course, on its strategy and its capabilities, as compared to the capabilities of the incumbent and other actual or potential competitors.

Hemphill and Wu claim that nascent competitors "are a distinct analytical category." [207] They do note that "nascent competitor means different things to different people" and go on to note that their approach emphasizes prospective innovation by a future direct competitor.[208] They also note that "a hesitant enforcer might insist on strong proof that the competitor, if left alone, probably would grow into a fully-fledged rival, yet in doing so, neglect an important category of anticompetitive behavior."[209] They counsel a "bias to [enforcement] action"; yet they do not think about the potential negative consequences for innovation (including in particular venture-capital investment in startups, for which a sale of the company is the most common monetization

[206] C. Scott Hemphill & Tim Wu, *Nascent Competitors*, 168 U. PA. L. REV. 1879 (2020).

[207] *Id.* at 1881l. The authors define a nascent competitor as a firm whose prospective innovation represents a serious threat to the incumbent.

[208] *Id.*

[209] *Id.*

mechanism[210])., They do, however, offer a possible methodology for reducing the risk around interventions.[211]

Hemphill and Wu lay out three (but only three) criteria which must be met to warrant illegality of the merger between an established and a nascent competitor. A nascent firm must (1) be an innovator, (2) have future potency, and (3) be a threat to the incumbent.[212] They exclude "firms producing complements that, absent exclusion or acquisition by the incumbent, might facilitate third party competition."[213] Future potency seems to refer to likely future capabilities;[214] but the authors do not offer a theory of capabilities to inform their analysis.

There is always a concern that an acquisition would nip a likely successful competitor in the bud. In the language of error costs, one can worry about the false negatives that could have resulted in payoffs (presumably positive impacts for dynamic competition). Hemphill and Wu are worried only about nascent competitors that pose "serious threats to the incumbent."[215] If the incumbent has monopoly power, concerns about lost competition are heightened.[216] Their approach applies not only to M&A activity, but to exclusionary

210 Gary Dushnitsky & D. Daniel Sokol, *Mergers, Antitrust, and the Interplay of Entrepreneurial Activity and the Investments That Fund It*, 24 VAND. J. ENT. & TECH. L. 255, 277 (2022).

211 C. Scott Hemphill & Tim Wu, *supra* note 207, at 1882. Our suggestion is that, at most, the firm or firms most threatened by the nascent competitor should not be allowed to buy out the threat. For most acquisition targets, that approach would block acquisition by (at most) one suitor. Thus, investors can expect a payout even if payment by the threatened incumbent is blocked. And so, for example, if Google instead of Facebook had bought WhatsApp, investors would still see a substantial return with less competitive concern. These limits greatly reduce concerns about overenforcement that might otherwise chill desirable behavior. Such concerns are further reduced if care is taken to avoid false positives, an issue we return to in Part III.

212 *Id.* at 1886–89.

213 *Id.* at 1889.

214 *Id.* at 1887–88.

215 *Id.* at 1888.

216 *Id.* at 1891.

conduct.[217] They advocate a revision of the merger guidelines to take nascent competitors into account, not as a constraint on the merger of two other parties, but to direct regulators' attention to the potential anticompetitive effect of the acquisition of a nascent competitor.[218]

Hemphill and Wu do not acknowledge the importance that the acquisition of a nascent competitor can provide to building complementary competencies that enable systemic (architectural) innovation. Such an acquisition can enhance the innovation and the R&D productivity of the combined enterprises and accelerate commercialization by marrying the target's innovation assets with the incumbent's ability to scale. Just such a combination may be necessary to achieve systemic innovation and achieve next-generation product development.

A real concern that might animate policy is the acquisition of the nascent firm that could create or shape the next technological paradigm and would likely get shut down as a result of the acquisition. However, such an acquisition is likely to be prohibitively expensive for an incumbent, as far-sighted owners and managers of (and investors in) such a nascent enterprise can achieve considerable rewards (and global recognition) from growing the nascent enterprise and keeping it independent. Moreover, ambitious startup founders are under no obligation to accept an incumbent's offer, as illustrated by Facebook's rejection of an offer of $1 billion from Yahoo! in 2006, Twitter's rejection of an offer of $500 million from Facebook in 2008,[219] and Groupon's rejection of an offer of $6 billion from Google in 2010.[220] That is not to say that short-termers might not sell out for a premium, but if they do,

217 *Id.* at 1892.

218 *Id.* at 1909–10.

219 Henry Blodget, *Twitter Rejects $500 Million Takeover Offer From Facebook*, BUS. INSIDER (Nov. 24, 2008) https://www.businessinsider.com/2008/11/twitter-rejects-500-million-takeover-offer-from-facebook [https://perma.cc/D3NR-R27T].

220 Nicholas Carlson, *Why Groupon Said No To Google's $6 Billion*, Bus. Insider (Dec. 8, 2010) https://www.businessinsider.com/why-groupon-said-no-to-google-2010-12 [https://perma.cc/K7N3-E8U8].

they reveal themselves as short-termers, which raises doubts that they have the capacity as managers of a stand-alone enterprise to overturn the status quo.

Given that nascent enterprises that would be status quo disrupters (whose function "is to reform or revolutionize the pattern of production" to quote Schumpeter)[221] are likely to be rare, interventions preventing acquisitions of nascent competitors should be infrequent and not assessed with a presumption of skepticism. When challenged, the enforcers must have compelling testimony by qualified experts and supporting evidence in the business records of the acquirer and the target.

In addition, an audit of the nascent enterprise would be necessary to establish the credibility of the enforcer's hypothesis. Minimal criteria include (1) proof of technological viability, (2) proof of business model viability, (3) strong indications that cash flow and/or venture capital, private equity, or IPO funds are already or likely available to give the target a prospect of competitive successes, and (4) the target has a viable strategy for impeding imitation of its innovation (whether through intellectual property, bundling with the incumbent's complementary assets, or other appropriability mechanisms).[222]

There is always uncertainty in merger enforcement, which ought to lead to caution because markets will generally self-correct, particularly in the technology sphere. For example, in 2019, AT&T acquired Time Warner after prevailing against the DOJ in an antitrust challenge to the merger;[223] in 2022,

[221] JOSEPH A. SCHUMPETER, CAPITALISM, SOCIALISM, AND DEMOCRACY 132 (2003 ed.) (1942) (footnote omitted).

[222] *See* Nicolas Petit & David J. Teece *Capabilities Checklist for Mergers with Nascent Competitors,* 14 J. EUR. COMPETITION LAW AND PRACTICE 135 (2023).

[223] Diane Bartz & David Shepardson, *U.S. Justice Department Will Not Appeal AT&T, Time Warner Merger After Court Loss*, REUTERS (Feb. 26, 2019) https://www.reuters.com/article/us-timewarner-m-a-at-t/u-s-justice-department-will-not-appeal-att-time-warner-merger-after-court-loss-idUSKCN1QF1XB [https://perma.cc/6WS8-ZSHU].

AT&T sold Time Warner at a loss of about $47 billion,[224] putting to rest widely expressed concerns that the deal would enable AT&T to "dominate" the market for streaming content. In the unlikely event that markets do not self-correct, post-transaction enforcement actions under both Section 7 and Section 2 are possible.[225] It is only in the rarest of circumstances that the effects of a false negative will be insurmountable.

The risk of intervention is not just on the occasional false negative; it's the chilling effect on entrepreneurship and investment that results from the prospect of unnecessary investigation and enforcement actions. This harms competition by reducing access to risk capital and compelling incumbents to conduct innovation internally in an environment that tends to lack the "high-powered" incentives (and associated compensation structure) that is necessary to motivate disruptive innovation.

To summarize, for an acquisition of a nascent competitor to properly concern regulators, the nascent competitors would have to be able develop into a mature and able competitor alone or by being purchased/supported by a non-incumbent enterprise. In addition, the nascent competitor would have to be able to bring competency-destroying innovation to a putative incumbent acquirer that possesses monopoly power. At least the following six conditions would need to be met:

1. Acquiring firm has monopoly power.

2. The nascent firm's technology has passed proof of concept (i.e., the technology works).

3. The nascent firm has a proven business model to monetize the technology.

4. The nascent firm has an existing entrepreneurial leadership team and strong capabilities to carry the enterprise forward for at least 5–10 years, or has a credible succession plan in place.

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224 James B. Stewart, *Was This $100 Billion Deal the Worst Merger Ever?* N.Y. TIMES (Nov. 19, 2022) https://www.nytimes.com/2022/11/19/business/media/att-time-warner-deal.html [https://perma.cc/UD3E-KBSM].

225 DuPont under Section 7; FTC v. Meta under Section 2.

5. The nascent firm's technology will be disruptive to core revenue streams of the acquiring firm.

6. The technology of the nascent firm is not competency-enhancing (complementary) to the acquiring firm. Rather, it's primarily competency-destroying and, hence, threatening.

7. There are no other nascent competitors similarly situated.

The nascent competitor must have strong ordinary, super-ordinary, and dynamic capabilities (point 4) to constitute a competitive threat to the incumbent. Determining this will require the enforcement agencies to look under the hood of the target and the acquirer in ways the agencies have not yet done. As noted earlier in Section 5a, they have the investigation tools to do so. Absent the strengthening of agency capabilities, trying to identify actionable mergers involving nascent competitors is a fool's errand.

VI. CONCLUSIONS

Half a century ago, the Chicago School improved antitrust economics and associated jurisprudence by injecting economic logic and theory into antitrust law. It succeeded in persuading the courts that (static) microeconomic analysis, and the associated efficiency focus, was relevant. It would have been far better if Chicago had injected innovation economics, not static microeconomics, into antitrust economics and the law.

Post-Chicago economists did little to improve the situation. They have generated more sophisticated versions of the static equilibrium models that tend to emphasize strategic behavior; but innovation is still largely ignored along with organizational capabilities, despite their obvious importance. More recent work on the nature of platform competition, while recognizing systems effects and interdependencies amongst various sides, has continued in much the same vein.[226]

[226] The exception here is the work of David Evans. *See* David S. Evans, *Why the Dynamics of Competition for Online Platforms Leads to Sleepless Nights but Not Sleepy Monopolies* (Working Paper, Aug. 23 2017), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3009438 [https://perma.cc/XW8M-ES49].

Competition scholars and practitioners must now confront an inconvenient and overlooked truth: Innovation drives competition at least as much as competition drives innovation, and, given inexorable human ingenuity, innovation is likely the dominant causal agent. This endogeneity requires one to recognize that prioritizing dynamic (non-static) competition will benefit consumers, certainly in the long run if not also in the short run.

The pace with which dynamic competition and innovation are receiving their proper place in the analytical frameworks of competition law and economics is glacial in part because antitrust economics has trouble grappling with dynamic concepts and organizational capabilities. Another factor is that regulators sometimes endeavor to advance their own careers by "bringing to justice" firms that are purportedly "attempting to lessen competition" through mergers.

Fortunately, a large body of research in evolutionary economics, the behavioral theory of the firm, management, information science, entrepreneurship, complexity economics, and strategic management is available. (Table 4 in the Appendix summarizes contrasting assumptions and understandings of mainstream competition economics and strategic management.) Existing concepts and frameworks beyond the current purview of competition economics can be used to hasten the transition toward a more enlightened approach that better approximates real-world conditions and minimizes the negative consequences of (static) antitrust analysis. If nothing else, the recognition of innovation-related dynamic issues will temper the false certainty that is often attributed to competition analyses. Mastering these literatures is by no means an impossible task but will require enforcement agencies to broaden their talent base.

Competition is a process, not an outcome; yet innovation and business evolution remain the road not travelled in the analysis of competition. The birth of static neoclassical paradigms almost a century ago cut off what was likely a natural path along which economic science, industrial economics, and competition policy could have proceeded. It's now time to yoke the managerial scholarship on innovation to

competition economics. Antitrust scholars and practitioners must also recognize that effective and beneficial competition policy requires coordination with technology and industrial policy. Mergers and acquisitions are an inevitable and desirable way to accomplish the asset orchestration needed for innovation and dynamic competition. Benefits are not primarily about efficiencies but about innovation and capability enhancement, which in turn powers dynamic competition.

I conclude by endorsing Cliff Winston's view that "more research is needed to guide competition policy as new technologies create challenges."[227] That research must, in my view, incorporate a deep understanding not just of innovation but of how business enterprises innovate, grow, develop, build capabilities, and compete. Without such a focus, additional research is likely to be banal and remote from the reality of technology-based competition. In a recent article, Frederic Jenny has encapsulated what's at stake. His final comments are adopted as final comments here too:

> "[A]n exigent intellectual effort is the only way to ensure that competition authorities will avoid the risks of inadvertently giving in to the political pressure of economic populism or ideology or issuing misguided decisions which may be ineffective or, even worse, restrict competition or innovation."[228]

[227] Clifford Winston, *Back to the Good—or Were They the Bad—Old Days of Antitrust? A Review Essay of Jonathan B. Baker's The Antitrust Paradigm: Restoring a Competitive Economy*, 59 J. ECON. LIT. 265, 282 (2021).

[228] Frederic Jenny, *Competition Law and Digital Ecosystems: Learning to Walk Before We Run*, 30 INDUS. AND CORP. CHANGE 1143, 1165 (2021).

APPENDIX

Figure 1. Selected Technologies Shaping/Driving Dynamic Competition 2023

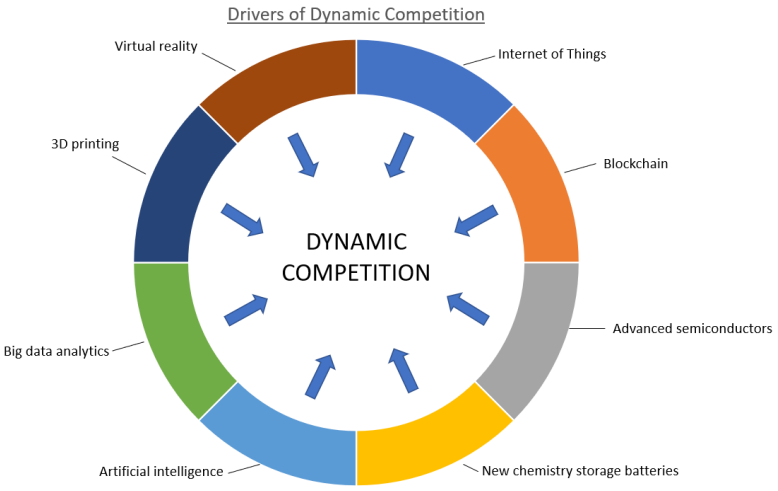
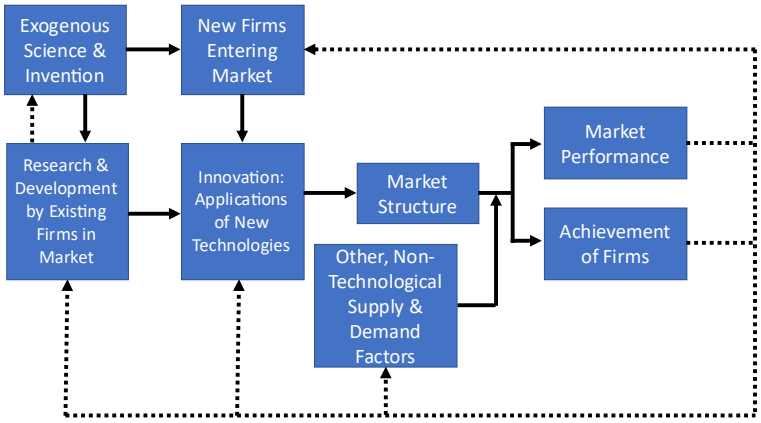


Figure 2. Phillip's Eclectic System of Relations between Market Structure, Market Performance, and Technological Change. [229]



[229] *See* ALMARIN PHILLIPS, TECHNOLOGY AND MARKET STRUCTURE: A STUDY OF THE AIRCRAFT INDUSTRY 12 (1971).

Figure 3. Capability Taxonomies and Undergirding Processes

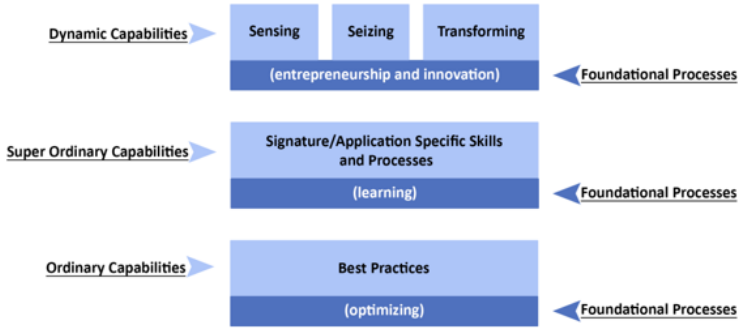


Table 1. Static v Dynamic Competition Paradigms: Summary

	STATIC COMPETITION	DYNAMIC COMPETITION
PRIMARY FOCUS	Efficiency; existing markets	Innovation; future markets
MANAGEMENT OBSESSION	Competitors	Customers/users
FIRM STRATEGY	Compete by offering lower prices	Compete by offering innovative products/services
MARKET OUTCOMES	Price reductions for familiar product/services	Innovation and customer solutions through new and better products/services
GUIDING PRINCIPLE	Equilibrium	Disequilibrium[230]

[230] The disequilibrium framework subsumes equilibrium analysis. That is, insights from equilibrium economics may sometimes still be applicable to the special case of equilibrium within the more general framework of dynamic disequilibrium analysis.

COMPETITIVE ARENA	Relevant markets	Ecosystems
CONSUMER WELFARE	Minor improvements	With time, major improvements
KEY ACTIVITIES	Implementing best practices	Innovation, enterprise formation, learning, capability building, growth, disruption
LEVEL OF PROFITS	Mediocre but steady	Strong – with considerable vicissitudes
INTELLECTUAL HERITAGE	Neoclassical Economics	Austrian economics; capability, complexity, and evolutionary economics
RESOURCE ALLOCATION MECHANISMS	Prices	Prices; managerial asset orchestration according to future demand
MANAGERIAL CHALLENGE	Well defined problems; profit maximization goal	Wicked problem solving required in "VUCA" (volatility, uncertainty, complexity, and ambiguity) environments; profit seeking goal
RATIONALITY	Hyperrationality	"Bounded" rationality that recognizes and navigates uncertainty
TIME HORIZON	Short run	Longer term, depending on the length of innovation cycles

SYSTEM OF INNOVATION	Usually "closed" (within the scope of the parameters of current competition)	Often "open" (beyond the parameters of current competition and looking to the next generation)
THEORETICAL STRUCTURE	Competitive equilibrium models; mathematical rigor and (apparent) certainty favored over including variables that reflect the uncertainty of forward-looking conditions (real-world relevance)	Computational economics, evolutionary modelling, statistical analysis, case studies; real-world relevance favored over mathematical rigor and apparent certainty;
EVOLUTION OF FIRMS AND MARKETS	Stasis	Constantly transforming/evolving
SOURCE OF RENTS (PROFITS)	Optimization with known revenue and cost parameters	Ricardian (returns to scarcity), Schumpeterian (returns to innovation) / Knightian (reward for uncertainty)

Table 2. Indicia of Competition: Perspectives from Static and Dynamic Competition Frameworks

MAINSTREAM COMPETITION ECONOMICS	DYNAMIC COMPETITION
Unconcentrated markets	Robust innovation ecosystems
New entry	New entry/ and associated competency-enhancing and destroying innovation
Price competition	Amplified price competition
Introduction of improved products	Introduction of new products and new product categories and the creation of new markets
Changes in market share	Changes in competitive positioning
no comparable	High R&D/expenditures are investments in innovation
--no comparable	Active asset orchestration
--no comparable	Constant repurposing of assets, repositioning
Disruption is a manifestation of competition	Disruption and renewal/restructuring as manifestations of competition
--no comparable	Variety and experimentation in business methods and models
--no comparable	High rates of enterprise formation
Cost-reducing, efficiency-focused culture	Innovative organizational culture
Homogenous competitors	Heterogenous competitors and complementors
Zero economic profit	Positive Ricardian, Knightian and Schumpeterian profits

Table 3. Quantitative Overview of the Capability Assessment for the EV dimension[231]

	Incumbents (VW)	**Big Techs**[232] (Google/Waymo)	**New Ventures** (Tesla 2003-2005)→(2006-2014))	
Market Capabilities	2.00	1.44	-0.33	1.33
Technological Capabilities	1.44	0.67	0.11	1.22
Business Model Capabilities	2.40	1.11	-0.67	0.78
Total	**1.95**	**1.07**	**-0.30**	**1.11**

[231] *See* Johann Peter Murmann & Fabian Vogt, *A Capabilities Framework for Dynamic Competition: Assessing the Relative Chances of Incumbents, Start-Ups, and Diversifying Entrants*, 19 MGMT. & ORG. REV. 141, 149 (2023).

[232] Google/Waymo has been assessed by overlapping capabilities developed in its hardware unit since it does not pursue an EV strategy neither with Waymo nor with another project.

Table 4. Some Contrasting Assumptions/Understandings

MAINSTREAM COMPETITION ECONOMICS	**STRATEGIC MANAGEMENT**
Efficiency is the primary driver of competition	Innovation is the primary driver of competition
Entry barriers thwart competitors	Isolating mechanisms, including superior capabilities, are barriers to imitation
Competition comes from substitute products/services	Competition comes from both substitute and (indirectly) complementary products and services
Incumbency is always an advantage	Incumbency is often a liability
Management doesn't matter	Management matters
Business models of marginal relevance	Business models have high relevance
"Relevant markets" describe the domain of competition	With digital platforms, ecosystems-to-ecosystem competition is often a better way to describe competition
Competition is an outcome	Competition is a process
Potential competition	Latent competition
Business environment is characterized by quantifiable risk	Business environment is characterized by unquantifiable uncertainty
Profits encourage replacement investment	Profits encourage new investment
Societal goal is consumer welfare	Dynamic competition favors long-term consumer welfare and general prosperity.