

**What Antitrust Can Learn from Nature:
Regulating for a Healthier Tech Ecosystem**

by

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I. Introduction

Big tech is big business. The four largest American tech companies (Alphabet,¹ Apple, Meta², and Microsoft) make up more than 20% of the value of the S&P 500.³ Their combined worth of almost \$10 trillion dollars is more than the GDP of *most* of the world's countries, including the Netherlands, Switzerland, and Turkey.⁴ For humans, these numbers are incomprehensibly large—stacked in one-dollar bills, \$10 trillion would get us to the moon and back again.⁵ Today's technology firms have transformed industry dynamics and have forced nations across the globe to critically reevaluate the role of antitrust to deal with the many market failures they produce—from privacy to inflated prices. Revising competition law is risky, however, because any time the rules and constraints imposed on an industry are changed, market forces will shift, and oftentimes, unintended consequences will arise. This is especially true of complex, often difficult to discern industrial policies such as antitrust.

As a result, the creation of competitive markets that are good for consumers and society, and not merely concentrated interests, is incredibly difficult. Even measuring industrial concentration and its effects on a single market, much less the broader economy and society at large, are exceedingly taxing. However, when policymakers attempt to serve the goal of creating healthier markets, one question is rarely addressed: What can be learned from the natural world to move towards constructing these healthy, competitive business ecosystems? This paper seeks to address that question and begin to build a bridge between ecology and the application of antitrust and competition policy. By constructing a theory of the effects of antitrust generally from history and a useful analogy to nature, this paper contributes to the current debates surrounding antitrust's role in the regulation of big tech.

This paper comes at an inflection point for human collective understanding of antitrust legislation and its place in society. The Federal Trade Commission is now chaired by a person known for her skepticism of big tech, challenging contemporary interpretation of antitrust

¹ Formally known as “Google.” Conor Dougherty, *Google to Reorganize as Alphabet to Keep Its Lead as an Innovator*, N.Y. TIMES (Aug. 10, 2015), <https://www.nytimes.com/2015/08/11/technology/google-alphabet-restructuring.html>.

² Formerly known as “Facebook.” Mike Isaac, *Facebook Renames Itself Meta*, N.Y. TIMES (Oct. 28, 2021), <https://www.nytimes.com/2021/10/28/technology/facebook-meta-name-change.html>.

³ Andrew Bary, BARON'S, *Big 5 Tech Stocks Now Account for 23% of the S&P 500* (July 26, 2021, 11:56AM), <https://www.barrons.com/articles/big-tech-stocks-sp-500-51627312933?tesla=y>.

⁴ Shria Ovid, *Big Tech Has Outgrown This Planet*, N.Y. TIMES (July 29, 2021; updated Oct. 12, 2021), <https://www.nytimes.com/2021/07/29/technology/big-tech-profits.html>; WORLD BANK, *GDP (current \$US)*, https://data.worldbank.org/indicator/NY.GDP.MKTP.CD?most_recent_value_desc=false. (last visited on Jan. 3, 2022).

⁵ The number of objects a humans can instantly perceive is a mere seven and a stack of one trillion one-dollar bills would reach a quarter of the way to the moon or cover the state of Delaware twice over. NPR, *Any Way You Stack It, \$14.3 Trillion Is a Mind-Bender* (June 4, 2011), <https://www.npr.org/2011/06/04/136930966/how-much-is-14-3-trillion-it-s-a-brain-teaser>; THE ENDOWMENT FOR HUMAN DEVELOPMENT, *Grasping Large Numbers*, https://www.ehd.org/science_technology_largenumbers.php (last visited Jan. 3, 2022).

legislation, particularly in regard to big tech.⁶ Legislators such as Senators Amy Klobuchar and Elizabeth Warren have campaigned on the idea of strengthening antitrust enforcement.⁷ The European Union has recently unveiled massive new pieces of antitrust legislation specifically targeting big tech.⁸ This paper comes as the tech industry in Europe approaches a turning point. While traditionally a laggard region for tech startups, especially when compared to the United States, a new generation of tech startups in Europe is gaining momentum and the European Union is taking steps to foster the growth of this emerging ecosystem. This paper discusses the importance of the intersection of these two trends, providing a novel insight which may be helpful for policymakers and lay people alike around the world.

This Article proceeds as follows. Part I discusses the benefits of competitive, pluralistic markets and how fostering this competitive pluralism is a primary motivation of antitrust law. Part II introduces the story of the loss and reintroduction of the grey wolf in the western United States as a fitting analogy for the role antitrust regulation can foster diverse, competitive markets. Part III discusses the European Union's recent antitrust crackdown on primarily American "gatekeeper" firms in the technology space and its implications for the technology market in Europe and beyond, comparing it to the analogy of the wolf. Part IV reviews the European Union's broader plan to create an independent technology startup ecosystem independent of Silicon Valley and Shenzhen. It argues that the recent antitrust crackdown will create a "landscape of fear" for these "gatekeeper" firms, contributing to this goal of fostering a domestic, diverse technology ecosystem. Finally, Part V concludes by discussing possible implications for other markets and regulatory agencies.

II. When Liberation Becomes a Restraint

In introductory economics courses, the concept of monopoly is usually touched on, albeit briefly, and discussed as a desirable outcome for a firm, but undesirable for other firms and consumers. However, the exact mechanism, beyond intuition, is not often discussed in favor of more fundamental economic concepts. As most students, let alone future law students, take higher level economics courses, the intuitions imparted by introductory courses become important as they color the conversation around antitrust, monopoly, and competition policy. At this intersection of law and economics, judges, lawyers, and lawmakers have, for years, been forced to balance their knowledge of the law, personal judicial philosophy, and a perhaps incomplete understanding of economics when crafting and interpreting competition policy. This section examines the history of antitrust and argues for the inherent benefits of plurality and competition. In doing so, it is imperative to analyze the fundamental economic assumptions of the lawmakers and judges as well as how those assumptions have been shaped by their contemporary environment and everyday economic intuitions, even when they are perhaps misguided.

⁶ Sheelah Kolhatkar, *Lina Khan's Battle to Rein in Big Tech*, NEW YORKER (Nov. 29, 2021), <https://www.newyorker.com/magazine/2021/12/06/lina-khans-battle-to-rein-in-big-tech>. See also Lina M. Khan, *Amazon's Antitrust Paradox*, 126 YALE L.J. 710 (2017).

⁷ AMY KLOBUCHAR, ANTITRUST: TAKING ON MONOPOLY POWER FROM THE GILDED AGE TO THE DIGITAL AGE 2021); Sara Morrison, *Elizabeth Warren's Plan to Break Up Big Everything*, VOX (Apr. 5, 2022, 2:30 PM), <https://www.vox.com/recode/23003056/elizabeth-warren-big-tech-mergers>.

⁸ Comunicado de Imprensa, *Digital Markets Act, EP Committee Endorses Agreement with Council*, ATULIDADE (May 16, 2022), <https://www.europarl.europa.eu/news/pt/press-room/20220516IPR29641/digital-markets-act-ep-committee-endorses-agreement-with-council>.

A. When Restraining Trade Is Reasonable . . . and When It's Not
“Every contract, combination in the form of trust or otherwise, or conspiracy, in restraint of trade or commerce among the several States, or with foreign nations, is hereby declared to be illegal”

– Sec 1., Sherman Anti-Trust Act of 1890⁹

The familiar opening words of the United States’ oldest active industrial policy have doubtless rung through countless courtrooms over the past century and a half—with different meanings depending on when one hears it. Shortly after its passing, courts ruled that there is an implied “unreasonable” in this sentence, meaning it may only restrict actions which “unreasonably” restrict trade, whatever that happens to mean in each given situation.¹⁰ Similar reasoning is applied to the related Clayton Act of 1914.¹¹ Until the late 1970s, this word was interpreted quite broadly, perhaps too broadly. According to one Supreme Court Justice: “The sole consistency that I can find is that in litigation under [the Clayton Act], the government always wins.”¹² Courts were highly skeptical of any market concentration and would strike down mergers leading to concentration which, by today’s standards, appear mundane.

In line with the broader contemporary movement toward neoliberalism and the “Chicago School” economic ideology, many felt a broad interpretation of the Sherman and Clayton acts hurt trade more than it helped via unreasonable government-induced restraints on trade, a sentiment most famously expressed in Justice Robert Bork’s 1978 book *The Antitrust Paradox*.¹³ Proving quite influential, Bork’s ideas led to a drastic reformation of antitrust enforcement in the United States. It led to the implementation of a “consumer welfare standard”, which purports that the sole goal of antitrust is the maximization of economic welfare for consumers and that a restraint on trade is only “unreasonable” if it clearly reduces said consumer welfare.¹⁴ The resulting liberalization, or as its proponents might say, liberation of markets paved the way for a progressive concentration of markets which continues to the present.¹⁵

Recently though, in light of a supposed “Second Gilded Age” of massive technology companies and sprawling conglomerates, some have questioned the wisdom of reducing the goals of antitrust regulation to aggregate consumer welfare. Even many contemporaries of Bork found the new interpretation as problematic—and for good reason. Scholars have repeatedly pointed out the displacement of the original intent of antitrust policy, arguing for a broader range of policy objectives, namely insuring the dispersion of economic power to protect social and political processes, property and contract rights, and competition on merits.¹⁶ Importantly, this supposed

⁹ 15 U.S.C. § 18.

¹⁰ *The Antitrust Laws*, FED. TRADE COMMISSION, <https://www.ftc.gov/advice-guidance/competition-guidance/guide-antitrust-laws/antitrust-laws> (last visited May 1, 2022).

¹¹ 15 U.S.C. § 18. See also *Sherman Anti-Trust Act (1890)*, NAT’L ARCHIVES, <https://www.archives.gov/milestone-documents/sherman-anti-trust-act#:~:text=Approved%20July%20%2C%201890%2C%20The,U.S.%20Congress%20to%20prohibit%20trusts> (last visited May 1, 2022).

¹² Debra A. Valentine, *The Evolution of U.S. Merger Law*, FED. TRADE COMMISSION (Aug. 13, 1996), <https://www.ftc.gov/news-events/news/speeches/evolution-us-merger-law>.

¹³ ROBERT H. BORK, *THE ANTITRUST PARADOX* (1978)

¹⁴ Valentine, *supra* note 12.

¹⁵ Thomas Philippon, *The Economics and Politics of Market Concentration*, NAT’L BUREAU OF ECON. RSCH. (Dec. 2019), <https://www.nber.org/reporter/2019number4/economics-and-politics-market-concentration>.

¹⁶ John J. Flynn, *The Regan Administration’s Antitrust Policy, “Original Intent” and the Legislative History of the Sherman Act*, 3 ANTITRUST BULL. 259 (1988), <https://collections.lib.utah.edu/details?id=707108>.

original intent of dispersion of economic power is either viewed as a means to many ends or an end in itself, not merely a means to a single end—consumer welfare—as neoliberals may claim.

The Sherman Act itself, as the first national level antitrust legislation, was drafted in response to the United States' first Gilded Age, where the effects of concentrated economic power had many negative knock-on effects on society beyond straightforward consumer price increases. In fact, oil prices decreased as the oil market—a primary target of the original Sherman Act—concentrated between 1863 and 1900, suggesting that avoiding price increases via plurality was not the exclusive goal of the legislation.¹⁷ There is ample evidence the legislation was crafted in response to the political and social consequences of concentration, in addition to the economic. As Sherman himself said, “If we would not submit to an emperor, we should not submit to an autocrat of trade.”¹⁸ He and his Senate colleagues also discussed concerns over the inherent threat to the public of a select few individuals controlling the fundamental infrastructure of an economy and society.¹⁹ Here it is clear that these legislators intended market plurality as a fundamental policy goal of the Sherman Act, not a means to some unmentioned end. These legislators lived in an environment of extreme economic concentration, so it is reasonable to assume they were not ignorant of its broad consequences. Similarly, legislators supporting the Clayton Act spoke of the inherent threats to democratic society of excessive private economic power beyond the markets in which these trusts directly engaged.²⁰

B. The “Per Se” Benefits of Market Plurality

Despite the original intentions of the Sherman and Clayton Acts, many may still support the “Chicago School” interpretation on functionalist grounds. Perhaps Bork’s economic argument that a broad interpretation of antitrust legislation harms competition by preventing good concentration, the kind which would, in fact, be in the public interest, holds some truth. Fortunately, this thesis is testable as antitrust enforcement in the United States has progressively loosened over the past four decades, allowing the social, political, and economic effects of such an interpretation to become clearer. To begin, industrial concentration has increased dramatically. For a majority of industries, revenue shares for the largest 50 firms increased between 1997 and 2012, with the chance of a top firm being replaced by another within three years dropping from a coin flip in the 1990s to under 30% today.²¹ The concentration ratio for non-manufacturing firms grew by 10 in the same time period, with the portion of employment accounted for by new businesses falling by 30% over the past 30 years.²² The Fortune 500’s share of GDP has grown by over 15% and a mere 20 firms account for 20% of GDP compared to 60 firms in 1954.²³ Tech, media, and telecom are the industries which experienced the greatest increase in concentration.

¹⁷ Werner Troesken, *The Letters of John Sherman and the Origins of Antitrust*, 15 REV. AUSTRIAN ECON. 275, <https://www.proquest.com/docview/208994432?accountid=11278>.

¹⁸ Sandeep Vaheesan, *Accommodating Capital and Policing Labor: Antitrust in the Gilded Ages*, 78 MD. L. REV. 766, <https://digitalcommons.law.umaryland.edu/cgi/viewcontent.cgi?article=3832&context=mlr>

¹⁹ *Id.*

²⁰ *Id.*

²¹ THOMAS PHILIPPON, *THE GREAT REVERSAL: HOW AMERICAN GAVE UP ON FREE MARKETS* (2019).

²² William A. Galston & Clara Hendrickson, *The Consequences of Increasing Concentration and Increasing Competition—and How to Remedy Them*, BROOKINGS INST. (Jan. 5, 2018), <https://www.brookings.edu/blog/fixgov/2018/01/05/the-consequences-of-increasing-concentration-and-decreasing-competition-and-how-to-remedy-them/>

²³ *Id.*

So, what are the results of this concentration? Between 1970 and 2002, corporate profit margins have increased from an average of 7% to 10% while investment as a percentage of profits has fallen from 30 to 20%; real wages have stagnated while employee compensation as a percent of gross value added has fallen.²⁴ Skeptics may claim this is for reasons largely beyond the scope of antitrust, and they may be partially correct. However, this concern is easily dispelled with a comparison to the United States' transatlantic counterpart, the European Union. The EU has generally been more skeptical of large mergers and the "oeconomica solum" (economics only) interpretation of antitrust legislation championed in the United States. As a result, over the past 20-40 years, EU markets have become more competitive and had lower barriers to entry than their US counterparts, a reversal of the historical norm.²⁵ Airlines and telecommunications provide excellent case studies, expressing this point poignantly.

Beyond economic concerns, concentration has led to political and social issues as well. To begin, there is a well-documented, positive relationship across societies between economic concentration and political instability.²⁶ In October 2021, an internal whistleblower from Facebook exposed how the company greatly harms political society by intentionally favoring disinformation and implicitly forcing politicians to skew negative in online political discourse.²⁷ In February 2021, Facebook intentionally blocked important government pages and other critical sources of public information to strong-arm Australian regulators into passing more favorable legislation.²⁸ In 2018, Sinclair media, a conglomerate who slowly acquired an effective monopoly over local television news stations, had their anchors all over the country recite the exact same script on the topic of misinformation on social media.²⁹ The script discussed misinformation as a threat to democracy, mentioning nothing of the consolidation of social media which allows such misinformation to have such a large effect. The irony is that Sinclair's market consolidation, is similarly dangerous to democracy as many supposedly independent news stations are all controlled by the same actor. Sinclair functions as effectively the only arbiter for a certain type of critical infrastructure, forcing regulators to come to the table and make concessions. Such political power to openly influence legislation against the will of the people shows how a lack of plurality can directly lead to negative consequences in other realms.

Excessive size need not be limited to a single market, either. Amazon and Facebook, for instance, operate in several markets, but their size allows them to conduct "buy or bury" acquisitions of any potential nascent competitors or creators of new markets, allowing them to

²⁴ Philippon, *supra* note 15.

²⁵ *Id.*

²⁶ Anar Ahmadov, *Political Determinants of Economic Diversification in Natural Resource Rich Developing Countries* (2012), https://www.researchgate.net/profile/Anar-Ahmadov/publication/265532890_Political_Determinants_of_Economic_Diversification_in_Natural_Resource-Rich_Developing_Countries/links/57ced10108ae83b374622af3/Political-Determinants-of-Economic-Diversification-in-Natural-Resource-Rich-Developing-Countries.pdf.

²⁷ Jeff Horwitz, *The Facebook Files*, WALL ST. J. (Oct. 1, 2021, 7:59 AM), <https://www.wsj.com/articles/the-facebook-files-11631713039>.

²⁸ Keach Hagey, Mike Cherney, & Jeff Horwitz, *Facebook Deliberately Caused Havoc in Australia to Influence New Law, Whistleblowers Say*, WALL ST. J. (May 5, 2022, 12:31 PM), <https://www.wsj.com/articles/the-facebook-files-11631713039>.

²⁹ Jacey Fortin & Jonah Engel Bromwich, *Sinclair Made Dozens of Local News Anchors Recite the Same Script* N.Y. TIMES (Apr. 2, 2018), <https://www.nytimes.com/2018/04/02/business/media/sinclair-news-anchors-script.html>.

further concentrate financial, and thus, political power by swallowing new markets as they arise.³⁰ Such activity stifles any potential diversity, preventing firms from accessing consumers in any way independent from the pre-established industry giants. While the loss is perhaps impossible to quantify, it is difficult to imagine the rapid and forceful incorporation of almost all new firms into preexisting paradigms as having positive effects on innovation. For all the reasons enumerated above, it is assumed competition and pluralism in markets are “per se” benefits to consumers and societies.

III. The Wolf and Wall Street: Antitrust Lessons from Nature

When faced with a hard problem baffling collective intuition, humanity has often turned to nature for inspiration. Whether it is artificial intelligence, with the structure of neural networks modeled after that of the brain, or plane wings shaped like those of large, gliding birds, there is no shortage of examples where humanity has found in nature a solution to some of its grandest problems. The natural processes of competition and natural selection mean only those species and specimens who are fit for the environment will survive; those who are inefficient or ill-adapted do not last long. Actors vie for finite resources and those who can make best use of them survive. The natural world can provide valuable lessons for markets, as firms and consumers also vie for resources in a finite world. In particular, the setting of Yellowstone National Park serves as an excellent analogy for markets: a finite, bounded area with finite resources and many species competing for those resources. The flora and fauna of Yellowstone, like businesses, trend toward a competitive equilibrium. Detailing the extinction and reintroduction of the grey wolf to Yellowstone, the resulting knock-on ecological impacts inspire the construction a theory of antitrust legislation’s impacts on the broader economy and society.

A. A Tale of Two Extinctions

In modern times, antitrust *enforcement* in the United States is something of an endangered species. Vertical merger *enforcement*, for example, has dwindled to the rate of just one case per year since the year 2000.³¹ The Chicago School’s ideology and the “consumer welfare” standard became the norm, with assumptions about markets as inherently self-correcting leading to an overall skepticism about litigating in all but the most obvious and harmful cartels.³² Generally, the kinds of activities courts would declare anticompetitive and the number of enforcement actions brought by the Federal Trade Commission have both decreased dramatically since the 1970s.³³ For many sections of the Sherman and Clayton Acts, enforcement has been driven to local extinction. Until recently, with the contemporary backlash against large technology companies, there have been no major efforts to revive and reintroduce robust antitrust regulation.

³⁰ FTC Alleges Facebook Resorted to Illegal Buy-or-Bury Scheme to Crush Competition After String of Failed Attempts to Innovate, FED. TRADE COMMISSION (Aug. 19, 2021), <https://www.ftc.gov/news-events/news/press-releases/2021/08/ftc-alleges-facebook-resorted-illegal-buy-or-bury-scheme-crush-competition-after-string-failed>

³¹ D. Bruce Hoffman, *Vertical Merger Enforcement at the FTC*, FED. TRADE COMMISSION (Jan. 10, 2018), <https://www.ftc.gov/news-events/news/speeches/vertical-merger-enforcement-ftc>.

³² Maurice E. Stucke and Ariel Ezrachi, *The Rise, Fall, and Rebirth of the U.S. Antitrust Movement*, Harv. Bus. Rev. (Dec. 15, 2017), <https://hbr.org/2017/12/the-rise-fall-and-rebirth-of-the-u-s-antitrust-movement>.

³³ *Modern Antitrust Enforcement*, YALE SCH. OF MGM’T, <https://som.yale.edu/centers/thurman-arnold-project-at-yale/modern-antitrust-enforcement> (last visited May 22, 2022).

With this trend in mind, enter another endangered species, driven nearly to extinction, which is also seeking to make a return: the grey wolf. A species which used to roam two-thirds of the United States but now remains largely confined limited ranges in some western US states, the grey wolf is a medium-sized, group hunting predator whose preferred diet consists of large, hoofed mammals—think deer, elk, and moose—though they will, if necessary, hunt smaller mammals.³⁴ Between the late 1800s and 1920s, the once prolific species had been eradicated from Yellowstone National Park and the surrounding areas, generally by ranchers fearful the predator would kill their livestock.³⁵ In the wolf’s absence, elk populations exploded and the large herbivore dominated the ecosystem, trampling brush, killing trees, and crowding out other animals from the food supply. Both the destruction of habitat and the loss of food stock caused by the elk, who suddenly had no predator to fear, led to a massive drop in biodiversity in the form of birds, small mammals, trees, and even scavengers.³⁶ With the reintroduction of the wolf in the 1990s, there began a cascade of trophic effects, reducing the elk population once again to stable levels and increasing overall biodiversity in the park.³⁷

While seemingly unrelated, the analogy of the grey wolf in Yellowstone is quite apt for understanding the role antitrust enforcement plays in the fostering of a diverse, competitive business landscape. To begin, it is understood in ecology that preserving biodiversity as an inherent good and necessary for the health of an ecosystem.³⁸ This biodiversity can be likened to the plurality of markets, which, as discussed before, can also be thought of as an inherent good. Analogizing, one can think of firms as the animals, with larger, more established firms being the hoofed mammals and smaller animals being the smaller firms. Both animals and firms are competing for the same resources, whether that is food and shelter or capital and market demand. The wolf in this case can be thought of as the antitrust regulator, determining where the elk can and cannot roam, occasionally culling or penalizing those who step out of line. Similar to how the wolf prefers large animals but will occasionally hunt small, antitrust regulators have a bias toward the big, dominating firms.

Just as the removal of the wolf allowed for an explosion in elk and deer populations, the near extinction of antitrust enforcement has allowed for large companies to use their size to dominate the market relatively unchecked. Just as the hoofed mammal domination led to a decline in biodiversity, American industry has heavily consolidated and been dominated by large incumbent firms. While an overpopulation of wolf is bad for biodiversity, as it could kill too many elk or begin killing too many small mammals, removing the wolf led to a massive decline in biodiversity. This implies that there is a “sweet spot” range of wolf population necessary to preserve healthy homeostasis in the ecosystem. If the mechanism by which the wolf once again returned biodiversity to Yellowstone is also analogous, this could hold important implications for antitrust policy and enforcement. After all, courts and lawmakers were receptive to Bork’s thesis for a reason. It is commonly accepted that antitrust enforcement had become overly aggressive prior to the Chicago School reforms, resulting in excessive economic harm even to small companies,

³⁴ *Gray Wolf*, NAT’L WILDLIFE FOUNDATION, <https://www.nwf.org/Educational-Resources/Wildlife-Guide/Mammals/Gray-Wolf> (last visited May 22, 2022).

³⁵ Tori Peglar, *1995 Reintroduction of Wolves in Yellowstone*, YELLOWSTONE NAT’L PARK TRIPS (May 13, 2022), <https://www.yellowstonepark.com/park/conservation/yellowstone-wolves-reintroduction/>.

³⁶ Christopher C. Wilmers, et al, *Trophic Facilitation by Introduced Top Predators: Grey Wolf Subsidies to Scavengers in Yellowstone National Park*, 72 J. ANIMAL ECOLOGY 909 (2003).

³⁷ *Id.*

³⁸ Yves Meinard & Philippe Grill, *The Economic Valuation of Biodiversity as An Abstract Good*, 70 ECOLOGICAL ECON. 1707 (2011).

reducing competition and consumer welfare.³⁹ Now it appears enforcement has swung too far in the opposite direction, indicating a great need of yet another correction.⁴⁰

B. The “Landscape of Fear”

In addition to the base fact that the wolf’s reintroduction led to cascading trophic effects on biodiversity, the mechanism by which it did so is also important and analogous to the role antitrust enforcement can play in an economy. When the wolf was reintroduced, their presence not only had a direct effect on the hoofed mammal population by directly killing many, but, importantly, it also where and when elk could freely roam. The simple fear of predation, or perceived predation risk resulting from the mere presence of the wolf, resulted in an ecological effect far greater than that of direct killing.⁴¹ This effect, known as the “landscape of fear” is a longstanding concept in ecology and serves as an explanation for this excess impact on prey populations. It purports that prey animals will avoid locations where a member of their species was killed, especially at times when predators are active, leading to an effective reduction in habitat for said prey. In Yellowstone, the wolf effectively limits the elk’s ability to completely dominate the ecosystem by allowing for many other kinds of flora and fauna to thrive in niches where the wolf is present.⁴²

Analogizing this mechanism to antitrust enforcement, the mere presence of rigorous antitrust enforcement could similarly create a “landscape of fear” among large firms in the market, especially when these large firms are considering actions like those which another large company has already been penalized for. Such a landscape, if not overly oppressive, could allow for greater plurality and competition in the market as niches would develop in the areas where antitrust enforcement is present. The spatial landscape of a biome is a useful tool for thinking about markets. Those who can find a niche and make efficient use of its resources survive; those who do not will fail and cease to exist. In an area of law rife with paradoxes, there is yet another: more aggressive antitrust enforcement—the revival of the wolf—leads to healthier, less restrictive, markets. Antitrust policy shows promise to thwart the tendency of other regulation to capture and consolidate markets. Instead, it shows promise to liberalize and diversify. Whether it be forcefully usurping niches or dominating the means of survival, the natural world provides us with a tactful metaphor for how a larger competitor can stifle diversity and harm the ecosystem in the absence of threats to their dominance.

IV. Europe’s Big Tech Battle

For most of this discussion, the focus has largely been on the story of antitrust enforcement, or lack thereof, in the United States. However, in recent years—and particularly in the past year—the European Union has been the one taking the lead on antitrust enforcement, especially regarding big technology companies. While the EU has generally been more skeptical of mergers and monopolies, this new wave of regulation and enforcement is both novel and unprecedented. Regardless of the EU’s motives, one can apply the analogy of the wolf in Yellowstone to intuit what the consequences of such action are on the European tech ecosystem.

³⁹ BORK, *supra* note 13.

⁴⁰ See generally TIM WU, *THE CURSE OF BIGNESS: ANTITRUST IN THE NEW GILDED AGE* (2018)

⁴¹ Michel T. Kohl et al., *Diel Predator Activity Drives a Dynamic Landscape of Fear*, 88 *ECOLOGICAL MONOGRAPHS* 638 (2018).

⁴² *Id.*

A. Big Tech and EU Antitrust

“Any abuse by one or more undertakings of a dominant position within the internal market or in a substantial part of it shall be prohibited”
– Article 102, Treaty on the Functioning of the European Union⁴³

Antitrust in the European Union is generally governed by Articles 101 and 102 similarly to how American antitrust follows the Sherman and Clayton Acts. They both seek many of the same public policy objectives and adhere to many of the same procedural principles. There are, however, important historical and legal differences in competition policy between the two blocs. For one, EU antitrust is much newer and emphasizes the concepts of “dominant position” and “abuse,” while US law tends to hinge more on the term “monopolization.”⁴⁴ European Court of Justice case law implies a broader range of harms, incorporating more tests for determining harms than the singular American “consumer welfare standard.”⁴⁵ Overall, European law has far less faith in markets and recognizes a broader range of competitive abuses than in the US.⁴⁶

These differences in case law help to explain the often large differences in antitrust enforcement in big tech, with the EU bringing dozens of antitrust and merger cases against just Microsoft, Google, Facebook, Amazon, and Apple over the past 15 years—a stark contrast to the more laissez-faire Federal Trade Commission. To cite a few examples, Google was forced to pay a 2.4 billion euro fine for “giving illegal advantages to another Google product, its online shopping comparison service.”⁴⁷ In April 2021, the Commission ruled Apple abused its dominant position in distributing streaming apps, unfairly favoring their own music streaming service.⁴⁸ In November 2020, the EU announced Amazon had engaged in anticompetitive activity by using third party seller data to inform its own strategic decisions, particularly in lowering its own prices.⁴⁹ The list goes on; every one of the aforementioned big tech companies has faced at least one antitrust action from the European Commission.

Recently, the European Union took a huge step in expanding antitrust regulation of big tech, with the European Parliament and Council of the European Union agreeing to the Digital Markets Act on March 24, 2022. While the Digital Services Act and New Competition Tool are also relevant for the regulation of big tech, this paper focuses on the DMA as it is the piece of legislation most impactful for big tech antitrust considerations. The Act specifically targets “gatekeeper” firms, defined as companies offering “core platform service” operating in the social media, search engine, or other related markets and either a 75-billion-euro market cap or 7.5 billion euros in

⁴³ Consolidated Version of the Treaty on European Union art. 102, 2008 O.J. 0089.

⁴⁴ Maria Coppola & Renato Nazzini, *The European and U.S. Approaches to Antitrust and Tech: Setting the Record Straight*, CPI INT’L (2020), <https://www.ftc.gov/system/files/attachments/key-speeches-presentations/europe-column-may-2020-full.pdf>.

⁴⁵ *Id.*

⁴⁶ *Id.*

⁴⁷ Karen Gilchrist & Anita Balakrishnan, *EU Hits Google with a Record Antitrust Fine of \$2.7 Billion*, CNBC (Jun. 27, 2017, 7:04 AM), <https://www.cnbc.com/2017/06/27/eu-hits-google-with-a-record-antitrust-fine-of-2-point-7-billion.html>.

⁴⁸ Silvia Amaro, *EU Says Apple’s App Store Breaks Competition Rules After Spotify Complaint*, CNBC (Apr. 30, 2021, 6:20 AM), <https://www.cnbc.com/2021/04/30/eu-says-apples-app-store-breaches-competition-rules.html>.

⁴⁹ Silvia Amaro & Katrina Bishop, *EU Says Amazon Breached Antitrust Rules, Opens Second Investigation Into Its E-Commerce Business*, CNBC (Nov. 10, 2020, 6:42 AM), <https://www.cnbc.com/2020/11/10/eu-hits-amazon-with-antitrust-charges-for-distorting-competition.html>.

annual turnover.⁵⁰ Importantly, many of these firms are American and very few European. The Act prohibits engaging in self-preferencing and creates novel obligations for interoperability, penalizing firms up to 20% of total annual global turnover for repeated violations.⁵¹ Such actions seek to reduce path dependence in the technology market resulting from these “gatekeeper” firms pre-installing, favoring, or forcing their own accessory or complimentary products. For example, Apple would likely have to switch from its own lightning adaptor to USB-C and Microsoft could not pre-install Edge, its in-house search engine, with Windows.⁵² One can think of the obligations of interoperability as preventing implicit tying agreements. For example, if a healthcare software company intentionally makes any data in its system completely untransferable to systems from other companies and also is the only firm offering a certain kind of product, it can effectively force hospitals to buy into its ecosystem entirely, lest they lose out on a valuable new software capability. While theoretically the hospital could just buy one product from this company, in practice they also need other, compatible products, functionally creating a tying agreement. This new antitrust action against self-preferencing is unprecedented, carving out new markets, new niches in which the pre-established firms can no longer use their size and nascency to shut out potential competitors. Understanding the likely consequences of the Act are important, as it will shape market dynamics, especially in the tech startup space, for years to come.

B. The Act’s Impact on the Tech Ecosystem

Returning to the analogy of the grey wolf and antitrust enforcement, one can imagine the Digital Markets Act as the introduction of the wolf to a new ecosystem. The ecosystem, or market, is new because previous antitrust law failed to incorporate many aspects of the technology market in Europe, meaning the large firms, analogous to the elk, were free to dominate the environment. Given the consequences these elk had on their environment and the comparison of monopolizing firms to these elk, it is possible to draw some conclusions about the consequences of introducing the wolf of strict antitrust enforcement on these large technology firms and the tech ecosystem more broadly.

To begin, the Act and its strict penalties are likely already creating a “landscape of fear.” Like the wolves, the Act primarily hunts big game—the big tech “gatekeepers”—and not smaller actors, who are freer to self-preference as they do not have the market power to cause harms deemed significant enough for legislation. Such heavy penalties provide ample incentive for the big tech companies to stay away from behavior detailed in the Act, even when it is not directly litigated. Such an effect is compounded by the fact that the Act was created in response to specific actions by a mere few firms, making it impossible to “blend in with the crowd.” The structure of the Act also makes it apt for comparison to the grey wolf. By preventing the use of platforms to self-preference, it opens the door for other firms to compete on even footing with the giants, creating economic “niches” akin to how the “landscape of fear” caused by the grey wolf created physical niches where the elk could not suppress other species. Additionally, as the elk were not entirely excluded from affected areas, being able to go at times of day when the wolf does not hunt, likewise

⁵⁰ European Parliament, *Deal on Digital Markets Act: EU Rules to Ensure Fair Competition and More Choice for Users*, Eur. Parliament, (Mar. 24, 2022, 1:24 PM), <https://www.europarl.europa.eu/news/en/press-room/20220315IPR25504/deal-on-digital-markets-act-ensuring-fair-competition-and-more-choice-for-users>.

⁵¹ *Id.*

⁵² Morgan Meaker, *Europe’s Digital Markets Act Takes a Hammer to Big Tech*, WIRED (Mar. 25, 2022, 12:30 PM), <https://www.wired.com/story/digital-markets-act-messaging/>.

the “gatekeepers” are not prevented from competing in these niches. For example, Apple will still sell its own USB-C chargers and Microsoft will still promote Edge. Apple and Windows will simply have to cope with the fact that they cannot monopolize these related markets by virtue of their size. The implicit threat of “buy or bury” no longer holds the same weight it used to for many firms and products.⁵³

Given the aptness of the analogy, it is now possible to predict how this “landscape of fear” will impact the broader tech ecosystem in Europe. Firstly, there will likely be a diversification of actors in the technology space. While perhaps Apple will still dominate smartphones and Google will still dominate search, their dominance in other markets, especially those in nascent stages, is likely to be questioned. Since these regulations are taking place in Europe, this diversification will probably be of European companies for the European market. Expect a divergence in the tech ecosystems of the EU and United States, where, as of the writing of this paper, no significant act prohibiting self-preferencing exists. Just as the introduction of the grey wolf had trophic effects, diversifying the ecosystem by limiting where the elk could dominate, the Digital Markets Act will diversify the tech market in Europe by limiting where the “gatekeepers” can dominate by sheer virtue of size. Because of the inherent benefits of this plurality and competition, as previously mentioned in this paper, this legislation will likely lead to an overall healthier technology ecosystem with lower costs, greater selection of products, and a reduced threat to democracy.

V. A Piece of the Puzzle: Antitrust and Tech Independence

The Digital Markets Act’s construction and context seem to target a few firms in particular, none of which are European. Most of these companies are American. This fact was not lost in the Atlantic, with American politicians on both sides of the aisle have accusing the EU of “anti-Americanism,” calling the law “de facto discrimination” designed to favor smaller European firms.⁵⁴ While MEPs⁵⁵ may deny these claims, the law fits into the EU’s broader plan to create its own technology entrepreneurship ecosystem and foster greater market plurality for consumers—both of which have been lacking for decades.

A. The Lost Startups and Bringing Them Back

For decades, the EU has lost countless startups to Silicon Valley, largely due to a lack of venture capital funding and a divided market, with three quarters of European startups being acquired by US companies, with 70% acquired by Silicon Valley companies alone.⁵⁶ Though it produces 36% of all global start-ups, Europe only has 14% of the world’s unicorn—the nickname for startups with current valuation of \$1 billion or more.⁵⁷ European start-ups are also 30% less likely to

⁵³ U.S. HOUSE OF REPRESENTATIVES, 116TH CONG., REPORT ON INVESTIGATION OF COMPETITION IN DIGITAL MARKETS: MAJORITY STAFF REPORT AND RECOMMENDATIONS (2020), https://judiciary.house.gov/uploadedfiles/competition_in_digital_markets.pdf?utm_campaign=4493-519

⁵⁴ Lauren Feiner, *Bipartisan Lawmakers Want Biden to Tell Europe to Stop ‘Unfairly’ Targeting U.S. Tech Companies*, CNBC (Feb. 23, 2022, 8:17 AM), <https://www.cnbc.com/2022/02/23/lawmakers-ask-biden-to-tell-eu-to-stop-unfairly-targeting-us-tech-companies.html>.

⁵⁵ *Id.*

⁵⁶ Serena Orizi, *3 Out of 4 Startups Are acquired by U.S. Companies*, STARTUP EUR. PARTNERSHIP (Sept. 12, 2016), <https://startupeuropepartnership.eu/3-4-startups-acquired-us-companies/>.

⁵⁷ Kim Baroudy et al., *Europe’s Start-Up Ecosystem: Heating Up, But Still Facing Challenges*, MCKINSEY & CO., (Oct. 11, 2020), <https://www.mckinsey.com/industries/technology-media-and-telecommunications/our-insights/europes-start-up-ecosystem-heating-up-but-still-facing-challenges>.

succeed than their US counterparts, more often struggling to proceed through different rounds of funding, especially in the late stages.⁵⁸ These difficulties are for many reasons, namely a fragmented market, lack of resource-rich “superhubs”, greater pressure to succeed early, and, perhaps most importantly, and lower supply of late-stage capital.⁵⁹ What financing does come is mostly from outside the EU. Additionally, the EU has experienced a “brain drain” to the US of many of its most gifted scientists and entrepreneurs as they move to where their projects can be funded.⁶⁰ Such loss indicates not just a loss of profits, but a loss of human capital which the EU has a great incentive to reverse.

All of this contributes to EU-based startups falling behind in both number and scale compared to their US and Chinese counterparts. That is not to say unicorn companies do not operate in Europe. They do. Apple, Amazon, Google, Facebook, Microsoft, and even Chinese giants Tencent and Alibaba operate in Europe. From a political and economic perspective, these companies’ profits, especially in realms where they did not initially operate, represent a lost opportunity to keep those euros, be they in the form of profits or tax revenue, within the EU. Instead, as things currently stand, a plurality of the EU’s startups operate to maximize the wealth of American shareholders, not Europeans.

These startup difficulties and the lack of unicorns are well-known to European lawmakers. The European Commission has taken many steps over the past few years to foster a robust tech startup ecosystem—and, so far, they’ve been successful. Taking lessons from what has made Silicon Valley and Shenzhen so successful, the Commission has unveiled a number of initiatives aimed at encouraging and fostering EU-based startups and allowing them to grow up and remain in the bloc. These include creating the infrastructure for EU startups to receive EU-based funding, even at early stages, including the Digital Innovation and Scaleup Initiative (DISC), the European Innovation Council’s Accelerator and Fund, along with many other ventures connected with the broader Startup Europe initiative.⁶¹ The EIC Accelerator, not long after its launch, received four times as many requests as they initially expected, indicating there is no lack of EU-based startups seeking EU-based funding.⁶² Other initiatives, such as Startup Scaleup, Innovation Radar Platform, and the EU Startup Nation Standard all seek to establish nonfinancial startup infrastructure and build important connections across the continent to support those who wish to be entrepreneurial.⁶³ In the private sector, there are also signs of encouragement. European business-to-business startups outperform US peers⁶⁴ and EU venture capital continues to grow year over year.⁶⁵

⁵⁸ *Id.*

⁵⁹ *Id.*

⁶⁰ Politico, *Report Highlights “Lost Human Capital” of EU Brain-Drain to US*, POLITICO (Mar. 19, 2003, 5:00 PM), <https://www.politico.eu/article/report-highlights-lost-human-capital-of-eu-brain-drain-to-us/#:~:text=THE%20EU%20is%20suffering%20a,to%20a%20European%20Commission%20report.&text=It%20fo und%20that%20nearly%20three,America%20after%20completing%20doctorates%20there>.

⁶¹ European Innovation Council, *EIC Accelerator*, EUR. INNOVATION COUNCIL, https://eic.ec.europa.eu/eic-funding-opportunities/eic-accelerator_en (last visited May 22, 2022).

⁶² Pieter Haeck, *EU Startup Fund Overwhelmed by High Demand*, POLITICO (Jun. 25, 2021, 11:12 AM), <https://www.politico.eu/article/eu-startup-fund-overwhelmed-by-huge-demand-digital-economy/>

⁶³ *Startup Europe*, EUR. COMMISSION, <https://digital-strategy.ec.europa.eu/en/policies/startup-europe> (last visited May 22, 2022).

⁶⁴ Karel Dörner, Max Flötotto, Tobias Henz, & Tobias Strålin, *Europe’s Innovation Wunderkinds: The Rising B2B Start-up Ecosystem*, MCKINSEY & CO. (Apr. 14, 2021), <https://www.mckinsey.com/industries/technology-media-and-telecommunications/our-insights/europes-innovation-wunderkinds-the-rising-b2b-startup-ecosystem>.

⁶⁵ Robin Wauters, *Blooming Late: The Rise of Late-Stage Funding for European Tech Scale-Ups*, TECH EU (Nov. 4, 2019), <https://tech.eu/2019/11/04/blooming-late-stage-funding-europe-european-tech-report/>.

However, as the European tech startup scene begins to blossom, there are other concerns besides funding which the European regulator must consider when seeking to engender a healthy ecosystem, namely the behemoths which already inhabit its markets.

B. Scaring the Elk to Protect the Unicorns

Just as the EU’s technology startup ecosystem is reaching an inflection point, so does its regulatory attitude toward big tech—something which is likely no coincidence. Returning to the analogy of the wolf and antitrust law as it applies to the Digital Markets Act and other crackdowns on big tech, if one holds this analogy to be true, the recent crackdown will lead to creating an environment more conducive to smaller technology companies. It would allow for increased tech market plurality just as a new generation of homegrown startups is emerging, fitting perfectly into the European Commission’s broader strategy of creating the right conditions for its own unicorns to blossom. Just as the introduction of the wolf scared the elk and prevented them from crowding out smaller animals, the recent antitrust crackdown will turn the tables in favor of smaller EU-based firms. What the Digital Markets Act has done, in effect, is carve out new markets and protect new ones for these firms to compete in, where they would otherwise be forced out by the elks of GAAF, who previously held the “gatekeeper” powers to self-preference and swallow these markets for themselves.

Regardless of intent, the recent crackdown will likely help foster a robust homegrown tech industry. However, there is reason beyond speculation to suggest this is, in fact, their intent. The structure of the law itself is suspiciously specific in who it targets, such that no EU-company is included. Looking at the case of *Spotify v. Apple*, the courts ruled in favor of the European Spotify at the expense of the American “gatekeeper” Apple.⁶⁶ Observers have also long noted the geopolitical risks of overreliance on American and Chinese technology and proposed that the EU’s big tech regulatory crackdown is for reasons related to economic nationalism.⁶⁷ In short, the European Commission has both the means and the motive. It has taken the actions and made the statements to suggest that this recent antitrust push is, at least in part, to promote a homegrown tech ecosystem not reliant on foreign companies in order to keep the talent and profits from its educated population closer to home. Given the analogy of the wolf in Yellowstone, combined with the historical impacts of antitrust policy, this plan appears well calculated and likely to work.

V. What This All Means for Everyone Else

As previously mentioned, members of congress have already asked President Biden to speak out against the EU’s recent antitrust crackdown on primarily American companies—and that is no surprise. Big tech companies spend more on lobbying than any other industry⁶⁸ and, as seen in Australia, have a history of using coercive techniques on legislators to get their way.⁶⁹ Beyond corruption, these American politicians may have an understandable complaint; feeling as though

⁶⁶ Amaro, *supra* note 48.

⁶⁷ Michael G. Jacobides et al., *Regulating Big Tech in Europe: Why, so What, and How Understanding Their Business Models and Ecosystems Can Make a Difference*, (Dec. 20, 2020), <https://ssrn.com/abstract=3765324> (last visited May 22, 2022).

⁶⁸ *Id.*

⁶⁹ Keach Hagey, Mike Cherney, & Jeff Horwitz, *Facebook Deliberately Caused Havoc in Australia to Influence New Law, Whistleblowers Say*, WALL ST. J. (May 5, 2022, 12:31 PM), <https://www.wsj.com/articles/the-facebook-files-11631713039>.

a nation's companies are being discriminated against by supposed allies gives an aura of unfairness. Another reason why the US may be less willing to expand antitrust law like the EU is the idea of "better our company than someone else's"; that is, the US gains a tremendous amount of global influence and profits through the activities of its largest companies abroad.⁷⁰ Why put all that at risk? The EU, with its lack of unicorns, does not have this concern and thus may have less to fear from a tech antitrust crackdown.

However, given the history of antitrust in the United States and the analogy of the wolf in Yellowstone, perhaps it would be beneficial for the United States to introduce similar policies. Whether the procompetitive and pluralistic benefits of doing so would outweigh the risks of disrupting the national champions and fit the more established US tech ecosystem is a topic of future research. Perhaps now that Europe has introduced this legislation, the potential negative consequences of the US doing the same are decreased and the consequences better known.

Conclusion

In an era of rapidly changing technology and novel threats to competition and democracy, it is important to understand the role that competition policy plays not just in markets, but in broader society, politics, and geopolitics. By constructing an analogy between ecological and legal-economic processes, one can better understand said processes to predict future events and craft smarter policy. In the case of the European Union's quest to foster its homegrown technology ecosystem, it is promoting its self-interest by invoking the benefits of antitrust on smaller, newer businesses. Only time will tell what new companies and technologies may emerge as a result.

⁷⁰ Jacobides et al., *supra* note 70.