

THE FALSE CHOICE BETWEEN DIGITAL REGULATION AND INNOVATION

Anu Bradford

ABSTRACT—This Article challenges the common view that more stringent regulation of the digital economy inevitably compromises innovation and undermines technological progress. This view, vigorously advocated by the tech industry, has shaped the public discourse in the United States, where the country’s thriving tech economy is often associated with a staunch commitment to free markets. U.S. lawmakers have also traditionally embraced this perspective, which explains their hesitancy to regulate the tech industry to date. The European Union has chosen another path, regulating the digital economy with stringent data privacy, antitrust, content moderation, and other digital regulations designed to shape the evolution of the tech economy toward European values around digital rights and fairness. According to the EU’s critics, this far-reaching tech regulation has come at the cost of innovation, explaining the EU’s inability to nurture tech companies and compete with the United States and China in the tech race. However, this Article argues that the association between digital regulation and technological progress is considerably more complex than what the public conversation, U.S. lawmakers, tech companies, and several scholars have suggested to date. For this reason, the existing technological gap between the United States and the EU should not be attributed to the laxity of American laws and the stringency of European digital regulation. Instead, this Article shows there are more foundational features of the American legal and technological ecosystem that have paved the way for U.S. tech companies’ rise to global prominence—features that the EU has not been able to replicate to date. By severing tech regulation from its allegedly adverse effect on innovation, this Article seeks to advance a more productive scholarly conversation on the costs and benefits of digital regulation. It also directs governments deliberating tech policy away from a false choice between regulation and innovation while drawing their attention to a broader set of legal and institutional reforms that are necessary for tech companies to innovate and for digital economies and societies to thrive.

AUTHOR—Henry L. Moses Professor of Law and International Organization, Columbia Law School. I am grateful for colleagues who

discussed ideas, read drafts, and offered reading suggestions, including John Armour, Jan Blokk, Rachel Brewster, Adam Chilton, John Coates, Harold Edgar, Ron Gilson, Jack Goldsmith, Jeffrey Gordon, Katerina Linos, Ed Morrison, Nicolas Petit, Elizabeth Pollman, Mathias Siems, Nathalie Smuha, Thomas Streinz, Matt Waxman, Tim Wu and the participants at workshops at Columbia Law School, the European University Institute in Florence, and the International Studies Association 2024 Annual Convention. I also owe special thanks to Matt Bartlett, Jerry Du, Jamie Herring, Victoria Jin, Anita Kapyur, Qasim Mian, Jaxon Williams-Bellamy, and Duoye Xu for excellent research assistance.

INTRODUCTION	378
I. EXISTING VIEWS ON DIGITAL REGULATION AND INNOVATION.....	383
A. <i>Digital Regulation in the United States</i>	387
B. <i>Digital Regulation in the European Union</i>	390
C. <i>The Perceived Relationship Between Digital Regulation and Innovation</i>	393
II. RETHINKING DIGITAL REGULATION AND INNOVATION	401
A. <i>Key Insights from Scholarship on Regulation and Innovation</i>	402
B. <i>How Data Privacy Regulation Affects Innovation</i>	404
C. <i>How Antitrust Regulation Affects Innovation</i>	411
D. <i>How AI Regulation Affects Innovation</i>	415
III. ALTERNATIVE DRIVERS FOR INNOVATION AND TECHNOLOGICAL PROGRESS	419
A. <i>Absence of a Digital Single Market Limits Scaling of Innovations</i>	422
B. <i>Shallow and Fragmented Capital Markets Impede Innovation Funding</i>	428
C. <i>Punitive Bankruptcy Laws and the Culture of Risk-Aversion Discourage Entrepreneurship</i>	435
D. <i>Inability to Harness Global Talent Contributes to Skills Deficit</i>	440
CONCLUSION	450

INTRODUCTION

There is a widely held view that more stringent regulation of the digital economy compromises innovation and undermines technological progress. Regulation is commonly portrayed as a burden that diverts resources away from firms’ innovative activities.¹ Proponents of this view point to concrete

¹ Nicholas Crafts, *Regulation and Productivity Performance*, 22 OXFORD REV. ECON. POL’Y 186, 187 (2006); Philippe Aghion, Antonin Bergeaud & John Van Reenen, *The Impact of Regulation on Innovation* 20 (Nat’l Bureau of Econ. Rsch., Working Paper No. 28381, 2021), <https://www.nber.org/>

examples that appear, at least initially, to prove this assertion correct. They highlight the astounding success of the leading American tech companies, which have transformed economies and societies while generating tremendous wealth for their founders and investors. These companies were able to grow and scale in a permissive regulatory environment, which directly and significantly contributed to these companies' commercial success, the argument goes.² Evidence from Europe serves as a cautionary tale that further affirms this view: European tech regulations are extensive, but globally successful European tech companies are hard to come by.³ These observations are then used to claim that there is a causal relationship between a country's digital regulations and its tech industry's performance.⁴

Until recently, most governments have refrained from regulating the tech industry precisely because of their fear that attempts to interfere with tech companies' operations would undermine their innovative capacity. The United States has led this charge against regulation, insisting on the primacy of free markets, free speech, and free internet as foundations of the digital economy.⁵ The American regulatory approach reflects a view that the country's technology leadership derives from an unregulated marketplace. The U.S. regulatory regime, with its deeply embedded techno-libertarian ethos, consists of weakly enforced antitrust laws, the absence of a federal

papers/w28381 [https://perma.cc/34K3-BBY2] (showing that companies are hesitant to invest in their operations when hiring more employees increases regulatory oversight); James Andrew Lewis, *Tech Regulation Can Harm National Security*, CTR. FOR STRATEGIC & INT'L STUD. (Nov. 28, 2022), <http://www.csis.org/analysis/tech-regulation-can-harm-national-security> [http://perma.cc/AD3T-JWUY] ("Technological innovation does not flourish in an environment of risk-averse and burdensome regulation."); see also Shira Ovide, *The Hands-Off Tech Era Is Over*, N.Y. TIMES (June 16, 2023), <https://www.nytimes.com/2022/06/15/technology/government-intervention-tech.html> [https://perma.cc/44PF-CMRM] (acknowledging that "[m]ore government intervention will slow tech down" and inviting normative conversation on the societal implications of digital regulation).

² See Anupam Chander, *How Law Made Silicon Valley*, 64 EMORY L.J. 639, 642 (2015) (attributing Silicon Valley's success to "key substantive reforms" in American law that "dramatically reduced the risks faced by Silicon Valley's new breed of global traders"). See generally Tal Z. Zarsky, *The Privacy-Innovation Conundrum*, 19 LEWIS & CLARK L. REV. 115 (2015) (exploring the links between privacy and innovation); Josh Withrow, *Don't Stifle U.S. Tech Innovation with Europe's Rules*, R STREET (Oct. 9, 2022), <https://www.rstreet.org/commentary/withrow-dont-stifle-u-s-tech-innovation-with-europes-rules-opinion/> [https://perma.cc/CC9X-8D94].

³ Withrow, *supra* note 2.

⁴ See Chander, *supra* note 2, at 677 (concluding that European copyright directives were "less flexible in responding to technological developments than American fair use"); Zarsky, *supra* note 2, at 139; *Shaking Up Europe: Andrew McAfee Argues for Less Regulation*, MIT INITIATIVE ON DIGIT. ECON. (Sept. 8, 2021), <https://ide.mit.edu/insights/shaking-up-europe-andrew-mcafee-argues-for-less-regulation/> [https://perma.cc/HK4L-BZ9L]; Mark Minevich, *Can Europe Dominate in Innovation Despite US Big Tech Lead?*, FORBES (Dec. 3, 2021, 11:41 AM), <https://www.forbes.com/sites/markminevich/2021/12/03/can-europe-dominate-in-innovation-despite-us-big-tech-lead/?sh=6bfd6c1f1d75> [https://perma.cc/GE3N-Y2QK].

⁵ ANU BRADFORD, DIGITAL EMPIRES: THE GLOBAL BATTLE TO REGULATE TECHNOLOGY 33 (2023).

data privacy law, and permissive content-moderation rules that shield tech companies from liability. In contrast, the European Union (EU) has frequently leveraged its regulatory powers—including antitrust laws, data privacy regulation, and rules on content moderation—in an effort to rein in tech giants and protect the rights of European citizens.⁶ These regulations have significantly impacted tech companies’ daily operations, constraining the way they collect, process, or share data; design their products; and interact with internet users or other businesses in the marketplace.

However, public sentiment in the United States is now shifting. American citizens increasingly recognize the societal harms caused by tech companies.⁷ U.S. political leadership has also started to question the benefits of an unregulated tech economy,⁸ and Congress has introduced various bills aimed at curtailing the power of tech companies.⁹ Despite growing public

⁶ ANU BRADFORD, *THE BRUSSELS EFFECT: HOW THE EUROPEAN UNION RULES THE WORLD* xiv (2020) (defining the “Brussels Effect” as “the EU’s unilateral power to regulate global markets”); BRADFORD, *supra* note 5, at 111, 116, 124.

⁷ See Monica Anderson, *Most Americans Say Social Media Companies Have Too Much Power, Influence in Politics*, PEW RSCH. CTR. (July 22, 2020), <https://www.pewresearch.org/fact-tank/2020/07/22/most-americans-say-social-media-companies-have-too-much-power-influence-in-politics/> [<https://perma.cc/ZK6N-HBSC>].

⁸ See Eric Johnson, *Nancy Pelosi Says Trump’s Tweets “Cheapened the Presidency”—and the Media Encourages Him*, VOX (Apr. 12, 2019, 12:50 PM), <https://www.vox.com/2019/4/12/18307957/nancy-pelosi-donald-trump-twitter-tweet-cheap-freak-presidency-kara-swisher-decode-podcast-interview> [<https://perma.cc/S9UK-FU7K>] (addressing Rep. Pelosi’s perspective on the Communications Decency Act § 230); *Fact Sheet: Executive Order on Promoting Competition in the American Economy*, WHITE HOUSE (July 9, 2021), <https://www.whitehouse.gov/briefing-room/statements-releases/2021/07/09/fact-sheet-executive-order-on-promoting-competition-in-the-american-economy/> [<https://perma.cc/3R2B-XZZN>].

⁹ See, e.g., American Innovation and Choice Online Act, S. 2992, 117th Cong. (as reported by S. Comm. on the Judiciary, Mar. 2, 2022), <https://www.congress.gov/bill/117th-congress/senate-bill/2992> [<https://perma.cc/Q8ZV-AA8P>] (describing the bill as one seeking to “prohibit[] certain large online platforms from engaging in” preferential and anticompetitive acts); Press Release, Ro Khanna, Rep., U.S. House of Reps., Rep. Khanna Releases ‘Internet Bill of Rights’ Principles, Endorsed by Sir Tim Berners-Lee (Oct. 4, 2018), <https://khanna.house.gov/media/press-releases/release-rep-khanna-releases-internet-bill-rights-principles-endorsed-sir-tim> [<https://perma.cc/RS54-PEZG>] (discussing the need to “provide Americans with basic protections online”); CONSENT Act, H.R. 5815, 115th Cong. (2018) (requiring the FTC to “establish privacy protections for customers of online edge providers”). For a discussion on the Merger Filing Fee Modernization Act of 2021, enacted as the Merger Filing Fee Modernization Act of 2022, 15 U.S.C. § 18b, see *infra* note 104 and accompanying text; and see also Kellen Browning, David McCabe & Karen Weise, *Judge Rejects F.T.C. Delay of \$70 Billion Microsoft-Activision Deal*, N.Y. TIMES (July 11, 2023), <https://www.nytimes.com/2023/07/11/technology/microsoft-activision-deal-ftc.html> [<https://perma.cc/76FZ-EGS8>]. For further discussion, see also Tonya Riley, *The FTC’s Biggest AI Enforcement Tool? Forcing Companies to Delete Their Algorithms*, CYBERSCOOP (July 5, 2023), <https://cyberscoop.com/ftc-algorithm-disgorgement-ai-regulation/> [<https://perma.cc/FBT2-G3VA>], which discusses how a comprehensive federal privacy law would remove current limitations on FTC ability to regulate tech companies; and *Crypto Assets and Cyber Enforcement Actions*, SEC (June 15, 2023), <https://www.sec.gov/spotlight/cybersecurity-enforcement-actions> [<https://perma.cc/L6WP->

and political support for digital regulation, the U.S. government has to date failed to institute any meaningful regulatory reforms.¹⁰ This reflects, in part, a persisting fear that an interventionist regulatory approach will undermine tech companies' innovative activities and thus halt the country's economic and technological progress.¹¹ This concern is heightened in today's era of the U.S.–China tech war, which accentuates the importance of retaining—or, some would argue, reclaiming—American technological leadership.¹² Thus, a deep-rooted concern remains that a more regulated digital economy would force the United States to relinquish its role as a technological leader, leaving the country without many beneficial innovations and ceding to China's supremacy in the unfolding tech race.

At first sight, it seems understandable that the United States is reluctant to follow the EU's path in digital regulation. It is tempting to presume causation between the EU's stringent regulatory regime and its dearth of leading tech companies. After all, there is no European Amazon, Apple, Alphabet, Meta, or Microsoft. European companies contribute less than 4% of the market capitalization of the world's seventy largest platforms, while the United States' share is 73%.¹³ Various other metrics all point to the same unambiguous conclusion that the EU currently lags behind the United States in technological prowess. European firms trail their U.S. counterparts in profitability, growth, and innovation—contributing to a significant technology gap between the United States and the EU.¹⁴ At the same time, the EU has earned a reputation as the world's regulatory “superpower.”¹⁵ Consumers may not be able to name any leading European tech companies,

JJYX], which demonstrates that the SEC has increased its enforcement actions against tech companies since 2020.

¹⁰ Megan McCluskey, *After a Year of Focus on Big Tech's Harms, Why We're Still Waiting on Reform*, TIME (Sept. 14, 2022, 1:47 PM), <https://time.com/6212145/big-tech-reforms-us-free-speech/> [<https://perma.cc/AK2F-R3JM>].

¹¹ See *infra* Section I.C.

¹² Nitasha Tiku, *Big Tech: Breaking Us Up Will Only Help China*, WIRED (May 23, 2019, 7:00 AM), <https://www.wired.com/story/big-tech-breaking-will-only-help-china/> [<https://perma.cc/C3YJ-BDMS>].

¹³ *The EU Wants to Set the Rules for the World of Technology*, ECONOMIST (Feb. 20, 2020), <https://www.economist.com/business/2020/02/20/the-eu-wants-to-set-the-rules-for-the-world-of-technology> [<https://perma.cc/FB4D-VLEQ>].

¹⁴ SVEN SMIT, CHRIS BRADLEY, KWEILIN ELLINGRUD, MARCO PICCITTO, OLIVIA WHITE & JONATHAN WOETZEL, MCKINSEY GLOB. INST., *SECURING EUROPE'S COMPETITIVENESS* vi (Sept. 2022), <https://www.mckinsey.com/~media/mckinsey/business%20functions/strategy%20and%20corporate%20finance/our%20insights/securing%20europes%20competitiveness%20addressing%20its%20technology%20gap/securing-europes-competitiveness-addressing-its-technology-gap-september-2022.pdf> [<https://perma.cc/F3M9-NS7C>].

¹⁵ BRADFORD, *supra* note 6, xiii.

but most have likely heard about the “GDPR,” the EU’s data privacy law.¹⁶ Thus, while the EU may not be capable of generating the world’s leading tech companies, it has shown itself more than capable of generating regulations to govern those companies.

Although the transatlantic technology gap is unquestionable, it is less clear that the EU’s demanding tech regulations explain why today’s tech giants were founded in the United States and not in the EU. This prevailing view oversimplifies the relationship between digital regulation and innovation. It also reflects several misunderstandings about the strengths and weaknesses of the American and European regulatory regimes and their respective tech ecosystems. Instead, a closer examination of U.S.–EU differences suggests that the EU’s inability to cultivate an equally successful tech industry can be traced to various other factors. These include (1) the fragmented digital single market that limits the scaling of innovations within the EU, (2) underdeveloped capital markets that limit tech companies’ ability to grow in the EU, (3) Europe’s punitive bankruptcy laws and cultural attitudes that deter risk-taking, and (4) the absence of a proactive immigration policy that would allow the EU to harness foreign tech talent. At the same time, these exact factors are inherent strengths of the U.S. legal regime and tech ecosystem, directly contributing to the success of U.S. tech companies. There is much that Europe is not getting right in terms of nurturing innovation and cultivating leading tech companies, but choosing to regulate the tech industry in the name of safeguarding individual rights and societal freedoms is not where the problem lies.

In advancing our understanding of the relationship between digital regulation and innovation, this Article makes several contributions. First, this Article shows that lenient tech regulation is not necessary for the development of a thriving tech sector or, conversely, that stringent tech regulation does not inherently prevent powerful tech companies from emerging. Second, this Article demonstrates how a country’s broader legal, economic, political, and cultural attributes shape its digital economy and determine whether tech companies are likely to thrive or falter. Any causal claims about the relationship between tech regulation and innovation must first account for a host of other variables that may ultimately have a more substantial effect on the relative success of a country’s tech industry. Third, the scholarly insights of this Article offer concrete policy implications for both the United States and the EU. By rejecting the view that Europe’s tech regulations hinder Europe’s tech industry, this Article lends normative

¹⁶ *What Is GDPR, the EU’s New Data Protection Law?*, GDPR.EU, <https://gdpr.eu/what-is-gdpr/> [<https://perma.cc/6DTQ-GCAZ>]. GDPR stands for General Data Protection Regulation. *Id.*

support to the EU's ambitious digital regulatory agenda. This should embolden the EU to continue pursuing its regulatory aspirations built around fundamental rights, democracy, and fairness as hallmarks of the digital economy. At the same time, by identifying other factors that adversely affect the European tech industry, this Article provides the EU with a long and urgent list of policy reforms, which European leaders ought to prioritize if they want the EU to not only generate tech regulations but also cultivate leading tech companies.

Similarly, this Article should offer solace to any American decision-maker—or any other foreign government—looking to regulate the tech industry but hesitating to do so for fear of compromising the country's economic and technological progress. Choosing to regulate the tech industry will not force the United States to forgo the benefits of innovation or lose the race for technological leadership to China. Instead, the United States can balance significant tech regulation with impressive tech innovation—as long as it continues investing in the key strengths that have sustained its tech leadership to date.

This Article proceeds as follows. Part I describes the common view under which countries seeking to regulate their tech industry face an inevitable trade-off between technological and economic progress and innovation. Part II challenges this view and shows how the relationship between the level of tech regulation and the rate of innovation is more complex than public conversation has often acknowledged. In doing so, it rejects the argument that the U.S.–EU technology gap can be primarily attributed to tech regulation. Part III offers an alternative explanation for U.S. tech companies' relative success compared to their European rivals. It argues that U.S.–EU differences in technological prowess can be predominantly traced to existing differences in market integration, capital markets, bankruptcy regimes and risk-taking, and talent acquisition. The Conclusion draws lessons for scholars and policymakers from the discussion, inviting a new way to think about the relationship between digital regulation and innovation.

I. EXISTING VIEWS ON DIGITAL REGULATION AND INNOVATION

Many of today's leading tech companies hail from the United States or, increasingly, China.¹⁷ In stark contrast to the American tech behemoths—including Alphabet, Amazon, Apple, Meta, Microsoft, and Nvidia—or the

¹⁷ Jonathan Ponciano, *The World's Largest Technology Companies in 2023: A New Leader Emerges*, FORBES (June 8, 2023, 8:45 AM), <https://www.forbes.com/sites/jonathanponciano/2023/06/08/the-worlds-largest-technology-companies-in-2023-a-new-leader-emerges/?sh=76f88f9b5d1d> [https://perma.cc/X458-7FWQ].

Chinese tech giants—including Alibaba, Baidu, Huawei, JD.com, Tencent, and Xiaomi—European countries have nurtured few leading tech companies. With the exception of perhaps Spotify, few European companies are even known to global internet users.¹⁸ A look at almost any key tech indicator reveals the extent to which the EU currently lags behind the technological prowess of the United States.¹⁹ It raises the question: why has the EU been unable to create a vibrant tech industry of its own?

For example, Apple, Microsoft, Amazon, and Google were the four most valuable brands in the world in 2023.²⁰ Consumers and investors alike embrace these brands. Alphabet, Amazon, Apple, Meta, and Microsoft collectively recorded over \$1 trillion in revenue in 2020 while earning an income of \$197 billion.²¹ These companies, together with the recent surge of the semiconductor giant Nvidia, collectively had a market capitalization exceeding \$10 trillion as of February 2024.²² In 2021, the combined market capitalization of Alphabet, Amazon, Apple, and Meta exceeded the value of the over 2,000 companies listed on the Tokyo Stock Exchange; Apple and Meta together were worth more than the 100 companies with the highest market capitalization listed on the London Stock Exchange; and Amazon alone eclipsed the entire German DAX Index, which represents around 80% of the market capitalization of companies publicly listed in Germany.²³

Other statistics tell a very similar story. On *Forbes'* 2023 list of “The World’s Largest Technology Companies,” only three EU-based companies—ASML, SAP, and Accenture—made it into the top twenty; meanwhile, eleven U.S. companies appear on that list.²⁴ Other statistics

¹⁸ See Gary Shapiro, *How the EU’s War on U.S. Innovation Stifles European Creativity*, INV.’S BUS. DAILY (Sept. 12, 2016, 5:04 PM), <https://www.investors.com/%20politics/commentary/how-the-eus-war-on-u-s-innovation-stifles-european-creativity/> [https://perma.cc/G29N-SYCS].

¹⁹ See Frances G. Burwell & Kenneth Propp, ATL. COUNCIL, *The European Union and the Search for Digital Sovereignty: Building “Fortress Europe” or Preparing for a New World?* 4 (June 22, 2020) <https://www.atlanticcouncil.org/wp-content/uploads/2020/06/The-European-Union-and-the-Search-for-Digital-Sovereignty-Building-Fortress-Europe-or-Preparing-for-a-New-World.pdf> [https://perma.cc/P584-2T74].

²⁰ *Leading Brands Worldwide in 2023, by Brand Value*, STATISTA (Feb. 16, 2024), <https://www.statista.com/statistics/264826/most-valuable-brands-worldwide-in-2009/> [https://perma.cc/K9GN-N8EV].

²¹ Alison Beard, *Can Big Tech Be Disrupted?*, HARV. BUS. REV. (2022), <https://hbr.org/2022/01/can-big-tech-be-disrupted> [https://perma.cc/X7BM-3VHZ]; *Mega-Cap Companies Saw Strong Gains in 2023 Amid Tech Optimism*, REUTERS (Jan. 2, 2024, 4:54 AM), <https://www.reuters.com/markets/us/global-markets-marketcap-2024-01-02/> [https://perma.cc/XX7D-2TXC].

²² Brian Baker, *Trillion-Dollar Companies: 6 Most Valuable Tech Giants*, BANKRATE (June 19, 2024), <https://www.bankrate.com/investing/trillion-dollar-companies/> [http://perma.cc/CY7R-UL45].

²³ Leo Lewis, *Tokyo Stock Market Eclipsed by the Four Tech Leviathans*, FIN. TIMES (Sept. 1, 2021), <https://www.ft.com/content/460747da-a410-41aa-a8a4-0c991f264c06> [https://perma.cc/SQB2-C9G3].

²⁴ Ponciano, *supra* note 17.

reinforce this picture. When focusing on the world's top one hundred unicorns—private companies with valuations over \$1 billion as of January 2024—only fourteen were European, with six of those hailing from the United Kingdom as opposed to the EU.²⁵ A well-documented transatlantic technology gap permeates many cutting-edge technologies, including quantum computing and AI.²⁶ The ten largest companies investing in quantum computing come from the United States and China.²⁷ Similarly, U.S. companies' investment in AI is six times higher than that of European companies.²⁸ The EU also trails the United States and China in AI patent filings.²⁹ It was therefore no surprise to anyone that OpenAI and its much-hyped large language model chatbot, ChatGPT, emerged from the United States and not Europe. These statistics paint a clear picture of the EU's relative weakness in the global tech race and raise the important question of why the EU lags behind the United States in tech innovation.

Several critics attribute the dearth of tech companies hailing from Europe to the EU's stringent approach toward tech regulation, including the EU's exacting data privacy laws or its propensity to leverage its antitrust laws to challenge dominant online platforms.³⁰ Over the past decade, the EU has gained a reputation as the primary jurisdiction regulating tech companies.³¹ It has promulgated a myriad of regulations that significantly impact the daily operation of tech companies, constraining the way they collect, process, or share data; design their products; or interact with internet users or other businesses on the marketplace.³² In stark contrast to the EU, the United States has adopted a *laissez-faire* approach toward digital regulation, prioritizing free markets, free speech, and free internet.³³ Scholars have traced the success of U.S. tech companies to the lenient regulatory environment, which enables these companies to grow and innovate unconstrained by regulatory burdens. They have similarly explained the

²⁵ *The Complete List of Unicorn Companies*, CB INSIGHTS, <https://www.cbinsights.com/research-unicorn-companies> [<https://perma.cc/ZF69-FXVQ>].

²⁶ SMIT ET AL., *supra* note 14, vi.

²⁷ *Id.*

²⁸ *Id.*

²⁹ See Shana Lynch, *The State of AI in 9 Charts*, STAN. UNIV. HUM.-CENTERED A.I. (Mar. 16, 2022), <https://hai.stanford.edu/news/state-ai-9-charts> [<https://perma.cc/BD6X-LRZW>] (indicating East Asia and Pacific as “[leading] the rest of the world with 62.1% of all patent applications, followed by North America (17.07%) and Europe and Central Asia (4.16%)”).

³⁰ *See infra* Section I.C.

³¹ BRADFORD, *supra* note 6, xiv.

³² *See infra* notes 61–70.

³³ BRADFORD, *supra* note 5, at 33.

EU's failure to replicate the United States' success in tech innovations by pointing to the regulatory burdens that EU companies face.³⁴

The discussion below first examines the United States' approach toward tech regulation before contrasting that with the EU's regulatory approach. The United States has adopted a so-called "market-driven regulatory model," where protecting free speech, free internet, and incentives to innovate form central pillars of its regulatory regime.³⁵ In contrast, the EU has embraced what has been labeled a "rights-driven regulatory model," where fundamental rights and the notion of a fair marketplace take center stage.³⁶ This comparison reveals significant differences in regulations that tech companies encounter in Europe and the United States. The discussion then shows how these differences are commonly thought to explain the EU's failure to match the United States in the global tech race, with policymakers, tech companies, and some legal scholars drawing a causal link between the EU's stringent tech regulations and the relatively weaker performance of European tech companies.

A few notes on terminology and the scope of the analysis before proceeding. The terms "tech regulation" and "digital regulation" refer to legislative, administrative, or enforcement actions that either target the tech sector or digital economy specifically or have a substantial effect on the way tech companies operate. For example, rules on content moderation, including the EU's newly adopted Digital Services Act, are a clear example of digital regulation.³⁷ In contrast, data privacy regulation—such as the EU's GDPR—applies to a wide range of industries but can be viewed as digital regulation given its profound impact on tech companies whose business models rely on collecting and monetizing data.³⁸ Similarly, antitrust law is not limited to the tech sector but over the past decade has become a key policy tool—especially in the EU—to shape the tech industry, with a flurry of enforcement actions targeting the largest online platforms.³⁹ The EU recently adopted the Digital Markets Act, a specific digital regulation designed to enhance competition in the digital economy. For the purposes of this Article, all these measures geared at constraining the operation of the tech companies and shaping the digital economy fall under the rubric of "tech regulation" or "digital regulation."

³⁴ *E.g.*, Chander, *supra* note 2, at 642.

³⁵ BRADFORD, *supra* note 5, at 33.

³⁶ *Id.* at 105.

³⁷ Council Regulation 2022/2065, 2022 O.J. (L 277) 1, 2 [hereinafter Digital Services Act].

³⁸ Council Regulation 2016/679, 2016 O.J. (L 119) 1 [hereinafter GDPR].

³⁹ Council Regulation 2022/1925, 2022 O.J. (L 265) 1, 2 [hereinafter Digital Markets Act].

The discussion below focuses on EU-level regulation, even though there have been significant legislative developments on the individual EU member state level that have shaped the broader European approach toward the digital economy. The analysis also omits any discussion of tech regulation in China. However, China's regulatory posture has until very recently resembled that of the United States' in terms of maximizing Chinese tech companies' ability to grow and innovate largely unburdened by regulatory constraints.⁴⁰ China has also managed to nurture a powerful domestic tech industry, further contributing to the perception that lax regulation and technological progress, indeed, go hand in hand.

A. *Digital Regulation in the United States*

The United States' approach toward regulating the digital economy is shaped by the country's uncompromised faith in markets and skepticism toward government regulation.⁴¹ This market-driven regulatory model reflects the nation's deep-rooted techno-optimism, which places its trust in tech companies' ability to self-regulate.⁴² Regulation is viewed as an impediment to innovation as it increases costs and constrains innovative behavior. As a result, the government needs to step aside to maximize the private sector's unfettered innovative zeal and, with that, economic growth. According to this American techno-libertarian view, government intervention not only compromises the efficient operation of markets—it also undermines individual liberty and societal progress. Thus, although the United States' commitment to innovation and growth provides the economic rationale against government intervention, its commitment to individual liberty and freedom is invoked as a political reason to limit the government's role in the digital economy.

These free-market ideas are deeply entrenched in the existing U.S. legal regime. No other law captures the techno-libertarian ethos of the American market-driven model better than § 230 of the Communications Decency Act (CDA) of 1996.⁴³ This law provides immunity for online intermediaries, shielding these companies from liability for any third-party content that they host on their platforms.⁴⁴ For example, Alphabet cannot be held responsible

⁴⁰ See generally Angela Huyue Zhang, *Agility over Stability: China's Great Reversal in Regulating the Platform Economy*, 63 HARV. INT'L L.J. 457, 471–83 (2022) (describing the various factors contributing to China's lax approach toward tech regulation).

⁴¹ See *Read the Framework*, CLINTON WHITE HOUSE, <https://clintonwhitehouse4.archives.gov/WH/New/Commerce/read.html> [<https://perma.cc/WV7G-RMJM>].

⁴² BRADFORD, *supra* note 5, ch. 1.

⁴³ 47 U.S.C. § 230.

⁴⁴ 47 U.S.C. § 230(c)(1).

when a user uploads a YouTube video that promotes violence, and Meta cannot be accused of defamation when a Facebook user posts a libelous comment about someone. At the same time, if YouTube chose to take the illegal video down or Meta chose to remove the defamatory post, these companies would be free to do so without fear that they are violating the user's free speech rights. This immunity that protects platforms' action and inaction alike has been viewed as essential for online services to grow and flourish.⁴⁵

The United States' anti-regulation stance extends to other facets of tech regulation, including data privacy. Even as most countries in the world have recently adopted data privacy laws, no comprehensive federal privacy law has emerged from Congress.⁴⁶ Congress has also not updated its dated antitrust statutes that many consider ill-suited to address the problems of today's digital economy.⁴⁷ Nor has Congress acted to regulate AI, protect the rights of gig workers, or impose obligations on platforms to share revenue with creators of copyright-protected content. This minimalist U.S. legislative framework stands in stark contrast to the legislative activity of the EU, which has regulated extensively across these and many other domains of the digital economy, as discussed in the next Section. The U.S. courts have also vigorously defended the unregulated tech economy, lending their legitimacy to the free-market ethos that underlies the United States' regulatory approach toward the digital economy.⁴⁸

This American commitment to free market ideals has remained unchanged across different administrations, with both Democrats and Republicans shunning tech regulation. For example, the Obama Administration's 2011 International Strategy for Cyberspace identified the promotion of open markets as a policy priority, explaining how the role of the government was to "sustain that free-trade environment, particularly in

⁴⁵ Danielle Keats Citron & Mary Anne Franks, *The Internet as a Speech Machine and Other Myths Confounding Section 230 Reform*, 2020 U. CHI. LEGAL F. 45, 54.

⁴⁶ McCluskey, *supra* note 10.

⁴⁷ See, e.g., Press Release, Amy Klobuchar, Sen., U.S. Senate, Senator Klobuchar Reintroduces Bill to Promote Competition and Improve Antitrust Enforcement (May 16, 2024), <https://www.klobuchar.senate.gov/public/index.cfm/2024/5/klobuchar-reintroduces-bill-to-promote-competition-and-improve-antitrust-enforcement> [<https://perma.cc/CWE5-CVX8>] (discussing stalled legislation designed to "overhaul[]" and "moderniz[e]" antitrust law).

⁴⁸ *Zeran v. Am. Online, Inc.*, 129 F.3d 327, 330 (4th Cir. 1997) (stressing the congressional focus on freedom of speech); see also Kate Klonick, *The New Governors: The People, Rules, and Processes Governing Online Speech*, 131 HARV. L. REV. 1598, 1606–09 (2018) (discussing the *Zeran* case and laying out the two objectives of § 230); *Batzel v. Smith*, 333 F.3d 1018, 1027 (9th Cir. 2003).

support of the high-tech sector, to ensure future innovation.”⁴⁹ Only very recently have some members of Congress started to question the free market orthodoxy as a foundation of the digital economy. Several bills calling for more governmental oversight over tech companies are pending in both the House of Representatives and the Senate.⁵⁰ However, persistent partisan gridlock has ensured that Congress has not been able to harness the needed political consensus to pass any such proposed legislation to date. Thus, Congress—through its inaction—continues to sustain the market-driven regulatory model as the foundation of the U.S. digital economy today.

Close links between Silicon Valley and Washington, D.C., have likely contributed to the United States’ laissez-faire approach toward tech regulation. Tech companies’ outsized influence over the political process in the United States is undeniable, and the lax regulatory environment, in part, reflects the tech industry’s persistent lobbying efforts.⁵¹ These tech companies’ significance to the United States’ economic growth and innovation base is clear, making political leaders more susceptible to their views. For example, Apple, Amazon, Alphabet, and Meta combined spent more than \$55 million on lobbying the federal government in 2021, up from \$34 million in 2020.⁵² In 2021, Amazon alone spent a record-high \$19 million on lobbying, while Meta spent over \$20 million.⁵³ These tech companies often cite innovation and competitiveness as reasons for the government to refrain from regulating them. During congressional antitrust hearings in 2022, these companies argued that more robust antitrust legislation would give a “free pass” to foreign companies, hurting U.S. competitiveness.⁵⁴

Thus, the United States’ ideological commitment to free markets, paired with relentless corporate lobbying and congressional dysfunction,

⁴⁹ WHITE HOUSE, INTERNATIONAL STRATEGY FOR CYBERSPACE: PROSPERITY, SECURITY, AND OPENNESS IN A NETWORKED WORLD 17 (2011), https://obamawhitehouse.archives.gov/sites/default/files/rss_viewer/international_strategy_for_cyberspace.pdf [http://perma.cc/A3C5-VNC8].

⁵⁰ See, e.g., American Innovation and Choice Online Act, S. 2992, 117th Cong. § 2 (as reported by S. Comm. on the Judiciary, Mar. 2, 2022); Press Release, Ro Khanna, *supra* note 9; CONSENT Act, H.R. 5815, 115th Cong. § 2 (2018).

⁵¹ Emily Birnbaum, *Tech Spent Big on Lobbying Last Year*, POLITICO (Jan. 24, 2022, 10:24 AM), <https://www.politico.com/newsletters/morning-tech/2022/01/24/tech-spent-big-on-lobbying-last-year-00001144> [https://perma.cc/MB2J-2REN].

⁵² *Id.*

⁵³ Cat Zakrzewski, *Tech Companies Spent Almost \$70 Million Lobbying Washington in 2021 as Congress Sought to Rein in Their Power*, WASH. POST (Jan. 21, 2022, 2:51 PM), <https://www.wapo.com/technology/2022/01/21/tech-lobbying-in-washington/> [https://perma.cc/2MZ3-A7Z2].

⁵⁴ Kent Walker, *The Harmful Consequences of Congress’s Anti-Tech Bills*, GOOGLE: PUB. POL’Y (Jan. 18, 2022), <https://blog.google/outreach-initiatives/public-policy/the-harmful-consequences-of-congresss-anti-tech-bills/> [https://perma.cc/N6F5-8JNU].

likely explains why the country has refrained from regulating its tech industry to date. Although this regulatory approach has faced criticism, many believe it has ensured that the American culture of innovation and commitment to technological progress has remained untouched, contributing to economic growth and social progress.

B. Digital Regulation in the European Union

The EU acknowledges that tech companies' innovative products and services generate vast benefits for individuals and societies and that their development should therefore be encouraged.⁵⁵ At the same time, the European approach towards the tech industry reflects its concern that the digital transformation has ushered in an exceedingly concentrated economy where a few powerful tech companies possess vast economic wealth and political power.⁵⁶ With their economic power, these companies can abuse their market dominance and restrict competition to the detriment of their rivals and consumers.⁵⁷ The EU also maintains that unmitigated free speech online does not always serve societies well.⁵⁸ This is consistent with an increasingly common view that these companies have become platforms for disinformation, hate speech, and other repulsive content, often undermining the safety and dignity of individuals while dividing societies and destabilizing democracies.⁵⁹ They have also violated individuals' rights to data privacy by extracting vast data on their users' private lives and commercializing that information through targeted advertising.⁶⁰

In light of these concerns, the EU has engaged in extensive regulatory activity over the past decade, adopting a number of laws that restrict tech companies' business models. The EU protects the fundamental right to data privacy through the 2016 General Data Protection Regulation (GDPR).⁶¹ It also seeks to curtail the market power of dominant tech companies through active enforcement of antitrust laws, complemented by the 2022 Digital

⁵⁵ See EUR. COMM'N, 2030 DIGITAL DECADE: REPORT ON THE STATE OF THE DIGITAL DECADE 2023 6 (Sept. 27, 2023), <https://digital-strategy.ec.europa.eu/en/library/2023-report-state-digital-decade> [<https://perma.cc/49TG-WGAP>] (recognizing benefits of tech innovation in the context of the EU's digital transformation policy program).

⁵⁶ Digital Markets Act, *supra* note 39, at 2.

⁵⁷ *Id.*

⁵⁸ Digital Services Act, *supra* note 37, at 2.

⁵⁹ See generally TARLETON GILLESPIE, CUSTODIANS OF THE INTERNET: PLATFORMS, CONTENT MODERATION, AND THE HIDDEN DECISIONS THAT SHAPE SOCIAL MEDIA (2018) (calling for improvements to content moderation by social media platforms).

⁶⁰ See SHOSHANA ZUBOFF, THE AGE OF SURVEILLANCE CAPITALISM: THE FIGHT FOR A HUMAN FUTURE AT THE NEW FRONTIER OF POWER 15 (2019).

⁶¹ GDPR, *supra* note 38.

Markets Act (DMA).⁶² The DMA is a major piece of digital regulation which aims to enhance market competition by restricting certain business practices by digital “gatekeepers” that are deemed anticompetitive.⁶³ The EU regulates online content through a host of regulatory instruments, including the 2019 Copyright Directive⁶⁴ and the 2021 Regulation on Terrorist Content.⁶⁵ It has implemented codes of conduct targeting disinformation and hate speech,⁶⁶ which paved the way for an overarching regulation of online intermediaries, the 2022 Digital Services Act (DSA).⁶⁷ The EU’s ambitious and comprehensive Artificial Intelligence Act was adopted in 2024.⁶⁸ And further yet, the EU is enhancing the labor rights of platform workers with a Directive that is expected to be adopted in 2024.⁶⁹ These are but a few examples of the multifaceted regulatory agenda through which the EU is actively shaping the digital economy.⁷⁰

What these numerous digital regulations have in common is a focus on enhancing rights—be it the fundamental rights of internet users, the democratic rights of digital citizens, the social rights of platform workers, or various economic rights of smaller market actors. The EU’s extensive digital agenda also reflects a deep-seated belief that markets left to their own devices will not yield optimal outcomes and that government intervention is needed to preserve and strengthen these rights.⁷¹ In contrast to the American market-driven model, which emphasizes how governments do not understand technology and should refrain from regulating it, the EU is more concerned that tech companies do not understand how technology implicates

⁶² Digital Markets Act, *supra* note 39.

⁶³ *Id.* at 2.

⁶⁴ Directive (EU) 2019/790 of the European Parliament and of the Council of 17 April 2019 on Copyright and Related Rights in the Digital Single Market and Amending Directives 96/9/EC and 2001/29/EC, 2019 O.J. (L 130) 92, 93.

⁶⁵ Council Regulation 2021/784, 2021 O.J. (L 172) 79, 81.

⁶⁶ EUR. COMM’N, THE STRENGTHENED CODE OF PRACTICE ON DISINFORMATION 2022 1 (2022), <https://ec.europa.eu/newsroom/dae/redirection/document/87585> [<https://perma.cc/R35G-UN29>]; EUR. COMM’N, CODE OF CONDUCT ON COUNTERING ILLEGAL HATE SPEECH ONLINE 1 (2016), https://ec.europa.eu/newsroom/just/document.cfm?doc_id=42985 [<https://perma.cc/4EHF-PLSG>].

⁶⁷ Digital Services Act, *supra* note 37, at 2.

⁶⁸ Council Regulation 2024/1689, 2024 O.J. (L) 1.

⁶⁹ *Proposal for a Directive of the European Parliament and of the Council on Improving Working Conditions in Platform Work*, COM (2021) 762 final (Dec. 9, 2021).

⁷⁰ For other examples, see Council Regulation 2023/2854, 2023 O.J. (L), which regulates data access and use; Council Regulation 2022/868, 2022 O.J. (L 152) 1, 2, which regulating data sharing and governance; and Foo Yun Chee, *EU’s Planned Digital Levy to Cover Hundreds of Firms, Vestager Says*, REUTERS (July 2, 2021, 12:08 PM), <https://www.reuters.com/business/exclusive-eus-planned-digital-levy-cover-hundreds-firms-vestager-says-2021-07-02/> [<https://perma.cc/TXM4-LKNE>], which discusses a tax on digital companies.

⁷¹ Anu Bradford, *Europe’s Digital Constitution*, 64 VA. J. INT’L L. 1, 12 (2023).

individuals' fundamental rights or democratic institutions—which their products and services frequently undermine.⁷² Thus, the EU perceives that the digital economy needs to be regulated to ensure that it will be rights-preserving, democracy-enhancing, and, ultimately, capable of distributing the benefits of the digital transformation more widely and fairly.

The EU's pro-regulation stance is not limited to the technology sector, but instead reflects a broader view of the operation of markets and the optimal role of government. Compared to the United States, the state enjoys greater public trust in the EU and can therefore assume a more prominent role in regulating markets.⁷³ In terms of the influential literature on “varieties of capitalism,” most European countries exhibit features of a “coordinated market econom[y]” as opposed to a “liberal market econom[y],” meaning they reserve a greater role for government regulation and nonmarket institutions.⁷⁴ Andreas Schwab, a Member of the European Parliament and the Parliament's chief negotiator for the DMA, captured this view when he recently commented on the passage of the DMA in Parliament. He emphasized that the “message is clear: the EU will enforce the rules of the social market economy also in the digital sphere, and this means that lawmakers dictate the rules of competition, not digital giants.”⁷⁵

The EU's rights-driven regulatory approach reflects an ideological commitment to a human-centric digital economy. This regulatory approach also has strong backing from the European citizenry, revealed by several large public opinion surveys that show significant support for more extensive digital regulation.⁷⁶ This public support has lent both democratic legitimacy

⁷² See Paul Nemitz, *Constitutional Democracy and Technology in the Age of Artificial Intelligence*, PHIL. TRANSACTIONS ROYAL SOC'Y A, Nov. 28, 2018, at 5.

⁷³ The EU's commitment to the social market economy is explicitly mentioned as a common objective for Europe. See Consolidated Version of the Treaty on European Union art. 3, 2012 O.J. (C 326) 13, 17 [hereinafter TEU]; Sneha Gubbala, *People Broadly View the EU Favorably, Both in Member States and Elsewhere*, PEW RSCH. CTR. (Oct. 24, 2023), <https://www.pewresearch.org/short-reads/2023/10/24/people-broadly-view-the-eu-favorably-both-in-member-states-and-elsewhere/> [https://perma.cc/UTQ6-B3VS].

⁷⁴ See PETER A. HALL & DAVID SOSKICE, *VARIETIES OF CAPITALISM: THE INSTITUTIONAL FOUNDATIONS OF COMPARATIVE ADVANTAGE* 8 (2001).

⁷⁵ Press Release, European Parliament, Digital Markets Act: Parliament Ready to Start Negotiations with Council (Dec. 15, 2021, 7:15 PM), <https://www.europarl.europa.eu/news/en/press-room/20211210IPR19211/digital-markets-act-parliament-ready-to-start-negotiations-with-council> [http://perma.cc/9FHM-UQY3].

⁷⁶ See, e.g., KANTAR PUB. BRUSSELS, KANTAR BELG., *SPECIAL EUROBAROMETER 477 REPORT: DEMOCRACY AND ELECTIONS* 5 (Nov. 2018) (discussing surveys relating to social networks roles in elections), <https://europa.eu/eurobarometer/api/deliverable/download/file?deliverableId=67373> [https://perma.cc/3MY3-QB4K]; KANTAR, KANTAR BELG., *SPECIAL EUROBAROMETER 503 REPORT: ATTITUDES TOWARDS THE IMPACT OF DIGITALISATION ON DAILY LIVES* 50 (Mar. 2020), <https://europa.eu/eurobarometer/api/deliverable/download/file?deliverableId=72615> [https://perma.cc/8EPT-MV3M].

and political momentum to the EU's regulatory agenda—momentum that even extensive lobbying by the tech industry has not been able to reverse.⁷⁷ The political environment in the EU has also been conducive to extensive rulemaking. In contrast to their American counterparts, European political elites are ideologically less divided and consequently more responsive to public demand for more stringent regulations. Parties across the ideological spectrum in Europe may differ in the extent of their support for regulation, but they share a fundamental commitment to a regulated market economy.⁷⁸ The DMA illustrates this political consensus particularly well. The law was adopted in the European Parliament with 588 votes in favor, 11 against, and 31 abstentions, with parties across the political spectrum lending resounding support.⁷⁹ This degree of consensus is revealing of Europe's faith that governments, not tech companies, ought to be the guardians of the digital economy.

C. *The Perceived Relationship Between Digital Regulation and Innovation*

The above discussion reveals that the EU regulates the digital economy with a relatively heavy hand compared to the United States. The EU's restrictive regulatory approach is often thought to increase the operating costs of companies and to deter innovation, casting a shadow over the EU's technology sector and leaving the EU behind the United States and China in the unfolding tech race. Thus, a common criticism associated with the European regulatory approach is that it overdoes regulation—to the extent that it kills innovation and stifles economic progress. According to this view, the EU may be more successful in safeguarding the fundamental rights of individuals and the democratic structures of society, but its stringent regulatory approach deprives societies of economic opportunities and technological innovations. This concern stems from a widely held belief that there is an inevitable trade-off between regulation and innovation.

Several tech entrepreneurs and industry analysts explicitly trace EU tech companies' relative lack of success to the level of tech regulation they face. Andrew McAfee, cofounder of the MIT Initiative on the Digital

⁷⁷ Adam Satariano & Matina Stevis-Gridneff, *Big Tech Turns Its Lobbyists Loose on Europe, Alarming Regulators*, N.Y. TIMES (Dec. 14, 2020), <https://www.nytimes.com/2020/12/14/technology/big-tech-lobbying-europe.html> [<https://perma.cc/G2LY-PN54>]; Javier Espinoza, *How Big Tech Lost the Antitrust Battle with Europe*, FIN. TIMES (Mar. 21, 2022), <https://www.ft.com/content/cbb1fe40-860d-4013-bfcf-b75ee6e30206> [<https://perma.cc/4BZ8-9QXC>].

⁷⁸ Consolidated Version of the Treaty on European Union art. 3, Oct. 26, 2012, 2012 O.J. (C 326) 13.

⁷⁹ *European Parliament's Plenary Adopts the Digital Services Act and Digital Markets Act*, ECOMMERCE EUR. (July 7, 2022), <https://ecommerce-europe.eu/news-item/european-parliaments-plenary-adopts-the-digital-services-act-and-digital-markets-act/> [<https://perma.cc/JHV9-9K38>].

Economy, predicts that the “expensive and time-consuming requirements” in the EU’s proposed AI rules “will generate less tech innovation.”⁸⁰ Jack Ma, the cofounder of Alibaba Group, has also suggested that the EU’s “tighter regulation could hamper its ability to innovate.”⁸¹ Other major industry voices concur, arguing that the EU’s proposed AI rules “will have a negative impact on Europe’s technology sector over the long term.”⁸² Further yet, a 2020 study, conducted by Oxera but commissioned by Amazon, strikes a similar tone, warning that the EU’s DMA “risk[s] reducing innovation overall.”⁸³ These statements capture a common sentiment that assumes a direct link between the EU’s stringent tech regulations and its lackluster technological progress.

Most leading tech companies, unsurprisingly, frequently voice criticism that more tech regulation results in lesser innovation. In commenting on the EU’s proposed DMA, Apple noted that mandated data access obligations may hinder innovation, while warning that the Commission’s proposed measures on interoperability would “stifle the kind of consumer-focused innovation that Apple stands for.”⁸⁴ Google cautioned the Commission that with *ex ante* regulation such as the DMA, “there is a risk of chilling innovation to the detriment of consumers.”⁸⁵ For example, a blanket ban on self-preferencing—a practice for which the EU previously fined Google—would, according to Google, “deny users the benefits of innovation and product improvements.”⁸⁶ Microsoft, which has generally been more

⁸⁰ Andrew McAfee, *EU Proposals to Regulate AI Are Only Going to Hinder Innovation*, FIN. TIMES (July 25, 2021), <https://www.ft.com/content/a5970b6c-e731-45a7-b75b-721e90e32e1c> [<https://perma.cc/84Z2-QAEQ>].

⁸¹ Zen Soo, *Alibaba’s Jack Ma Says He Is ‘Worried’ Europe Will Stifle Innovation with Too Much Tech Regulation*, S. CHINA MORNING POST (May 17, 2019, 6:09 AM), <https://www.scmp.com/tech/big-tech/article/3010606/alibabas-jack-ma-says-he-worried-europe-will-stifle-innovation-too> [<https://perma.cc/CSK6-SBXT>].

⁸² Angus Loten, *Corporate Tech Leaders Are Mixed on EU Artificial Intelligence Bill*, WALL ST. J. (Apr. 21, 2021, 8:02 PM), <https://www.wsj.com/articles/corporate-tech-leaders-are-mixed-on-eu-artificial-intelligence-bill-11619049736> [<https://perma.cc/2WUW-RNEH>].

⁸³ OXERA, *THE IMPACT OF THE DIGITAL MARKETS ACT ON INNOVATION 1* (Nov. 2020), https://www.oxera.com/wp-content/uploads/2020/11/The-impact-of-the-Digital-Markets-Act-on-innovation_FINAL-3.pdf [<https://perma.cc/USE9-QWAS?view-mode=server-side>].

⁸⁴ APPLE, *APPLE RESPONSE TO DIGITAL SERVICES ACT CONSULTATION PROPOSAL FOR EX ANTE REGULATION OF GATEKEEPER PLATFORMS 11* (2020), https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/12417-Digital-Services-Act-deepening-the-Internal-Market-and-clarifying-responsibilities-for-digital-services/public-consultation_en [<https://perma.cc/S7B9-4HSJ>] (download “Documents annexed to contributions” file under “Contributions to the consultation,” then select document labeled “Public_Apple comments on the DSA_Gatekeeper Regulation_September 2020.pdf”).

⁸⁵ GOOGLE, *QUESTIONNAIRE FOR THE PUBLIC CONSULTATION ON A NEW COMPETITION TOOL: GOOGLE’S SUBMISSION 22* (2020), https://blog.google/documents/88/Googles_submission_on_a_New_Competition_Tool.pdf [<https://perma.cc/ZEX7-B8GV>].

⁸⁶ *Id.* at 9.

amenable to regulation than its counterparts, also expressed reservations about the DMA, noting that the lack of sufficiently clear guidance on gatekeepers “will create uncertainty” and “only hamper growth in digital markets and online platform innovation or otherwise reduce consumer welfare.”⁸⁷

The U.S. government and industry associations have frequently expressed concern over the EU’s approach toward tech regulation, criticizing EU regulation of data privacy, antitrust, and AI alike. In commenting on the GDPR in 2015, the American Chamber of Commerce to the European Union welcomed harmonized EU rules while cautioning that the “GDPR falls short of striking a balance between stimulating innovation and protecting personal information,” costing the EU both jobs and investment.⁸⁸ The U.S. government also raised numerous concerns about the DMA in 2022, warning against “unintended adverse consequences, such as inadvertent cybersecurity risks or harms to technological innovation” and expressing concern that the DMA was discriminating against U.S. companies.⁸⁹ Eric Schmidt, the Chair of the U.S. National Security Commission on AI and the former CEO of Google, has criticized the EU’s AI Act as being “a very big setback” for Europe.⁹⁰ According to Schmidt, the EU should be an “innovation partner to the U.S.” so that the two allies can better compete with China, but instead “the EU did regulation first and . . . that’s a mistake.”⁹¹

Tech companies have invoked similar concerns when opposing tech legislation in the United States by stressing their critical role in sustaining the American innovation economy.⁹² Congress’s efforts to subject tech

⁸⁷ MICROSOFT, MICROSOFT RESPONSE TO DIGITAL SERVICES ACT CONSULTATION PROPOSAL FOR EX ANTE REGULATION OF GATEKEEPER PLATFORMS 6 (2020), <https://blogs.microsoft.com/wp-content/uploads/prod/sites/73/2020/09/Microsoft-Position-Paper-re-Proposed-DSA-Ex-Ante-Regulation-FINAL.pdf> [<https://perma.cc/GG46-VPZ2>].

⁸⁸ *GDPR Falls Short of Its Ambition*, AMCHAM EU (Dec. 16, 2015), <https://www.amchameu.eu/media-centre/press-releases/gdpr-falls-short-its-ambition> [<https://perma.cc/HSE3-RCJB>].

⁸⁹ Samuel Stolton, *US Pushes to Change EU’s Digital Gatekeeper Rules*, POLITICO (Jan. 31, 2022, 1:16 PM), <https://www.politico.eu/article/us-government-in-bid-to-change-eu-digital-markets-act/> [<https://perma.cc/5THV-2BWF>].

⁹⁰ Pieter Haeck, *Ex-Google Boss Slams Transparency Rules in Europe’s AI Bill*, POLITICO (May 31, 2021, 5:57 PM), <https://www.politico.eu/article/ex-google-boss-eu-risks-setback-by-demanding-transparent-ai/> [<https://perma.cc/FCY5-RHRN>].

⁹¹ *Id.*

⁹² *See, e.g.*, Letter from Timothy Powderly, Senior Dir. of Gov. Affs. for the Americas, Apple to Senator Dick Durbin, Chairman, Comm. on the Judiciary, Senator Chuck Grassley, Ranking Member, Comm. on the Judiciary, Senator Amy Klobuchar, Chair, Subcomm. on Competition Pol’y, Antitrust & Consumer Rts., Comm. on the Judiciary, and Senator Mike Lee, Ranking Member, Subcomm. on Competition Pol’y, Antitrust, & Consumer Rts., Comm. on the Judiciary (Jan. 18, 2022), <https://9to5mac.com/wp-content/uploads/sites/6/2022/01/Apple-letter-full.pdf> [<https://perma.cc/PAQ4->

companies to greater antitrust scrutiny have faced particularly stark opposition from tech companies. According to Google President of Global Affairs Kent Walker, the proposed American Innovation and Choice Online Act—a bill drafted to rein in the anticompetitive practices of the leading tech companies—“would be a dramatic reversal of the approach that has made the United States a global technology leader, and risks ceding America’s technology leadership and threatening our national security.” It would “[h]andicap[] America’s technology leaders” while leaving foreign companies “free to innovate.”⁹³ Leading tech companies have made similar arguments when seeking to debunk other types of tech regulation. In a congressional hearing on social media privacy and abuse of data, Meta’s Mark Zuckerberg emphasized the importance of “enabling innovation” when regulating sensitive technologies such as facial recognition, invoking the threat of Chinese companies gaining competitive advantages if U.S. companies’ ability to innovate is curtailed by extensive regulation.⁹⁴

In addition to tech companies’ direct lobbying efforts, many industry associations and think tanks have sought to persuade Congress to retain its hands-off approach, arguing that tech regulation would hurt innovation and the United States’ international competitiveness. In 2022, the U.S. Chamber of Commerce warned that proposed antitrust bills, if enacted, “would drag the United States down in an unfolding global technological competition,” constraining companies that are “the strongest drivers of U.S. innovation” while causing “self-inflicted wounds to our competitiveness” by “turning antitrust into a weapon against dynamic and successful U.S. firms.”⁹⁵ James Andrew Lewis from the Center for Strategic and International Studies has emphasized how “[t]echnological innovation does not flourish in an environment of risk-averse and burdensome regulation.”⁹⁶ Executives from

UC6P] (warning against regulatory overreach when commenting on American Innovation and Choice Online Act, emphasizing how its “App Store has been an incredible engine for economic growth and innovation since its founding in 2008,” and an “economic miracle for developers,” who—thanks to Apple—have been able to reach users around the world. Interfering with the App Store would undermine security and privacy, which have been hallmarks of Apple’s product development).

⁹³ Walker, *supra* note 54.

⁹⁴ Facebook, *Social Media Privacy, and the Use and Abuse of Data: Joint Hearing Before the S. Comm. on Com., Sci. & Transp. and the S. Comm. on the Judiciary*, 115th Cong. 22 (2018) (statement of Mark Zuckerberg, Chairman and CEO, Facebook), <https://www.congress.gov/event/115th-congress/senate-event/LC64510/text?q=%7B%22search%22%3A%5B%22%5C%22CONSENT+act%5C%22%22%5D%7D&s=6&r=27> [<https://perma.cc/MQ88-5BVP>].

⁹⁵ U.S. CHAMBER OF COM., U.S. ANTITRUST LEGISLATIVE PROPOSALS: A GLOBAL PERSPECTIVE 3 (2022), <https://www.uschamber.com/assets/documents/u.s.-antitrust-legislative-proposals-a-global-perspective-final-locked-2.16.22.pdf> [<https://perma.cc/NV45-U4QR>].

⁹⁶ James Andrew Lewis, *Tech Regulation Can Harm National Security*, CTR. FOR STRATEGIC & INT’L STUD. (Nov. 28, 2022), <https://www.csis.org/analysis/tech-regulation-can-harm-national-security> [<https://perma.cc/RV6U-5JW9>].

the American Enterprise Institute and the National Security Institute have similarly stressed the costs on U.S. tech companies' competitiveness, warning against "voluntarily ceding critical technological and economic advantage to countries such as China at a time when leading in key technologies and tech markets is critical for [the] nation's long-term thriving."⁹⁷ Josh Withrow from the R Street Institute has urged the United States not to "stifle U.S. tech innovation with Europe's rules," noting how "[the EU's] proclivity for precautionary regulation is one of the reasons that almost none of the large tech companies they aim to govern are actually from Europe," and describing the EU's approach as being "[i]f you can't innovate, regulate."⁹⁸

U.S. lawmakers have often been receptive to these arguments, defending their regulatory inaction on the grounds that they are preserving tech companies' incentives to innovate. This has been the case since the early days when the Internet was commercialized in the 1990s and regulation was first debated in Congress. As acknowledged earlier, § 230 of the CDA reflected the view that tech companies should be protected from regulation in order to develop innovative internet services.⁹⁹ The regulation of data privacy has also been opposed due to fears that such regulation would stifle innovation. During congressional hearings on privacy in 2012, then-Representative and current Senator Marsha Blackburn warned the United States against following the "European privacy model," noting how that model "take[s] information out of the information economy" and causes "revenues [to] fall [and] innovation [to] stall[.]"¹⁰⁰ Even though many U.S. lawmakers have recently turned against the tech industry, no meaningful legislation has emerged from this new political environment. Tech companies have continued their relentless lobbying, ensuring that bills such as the American Innovation and Choice Online Act have failed.¹⁰¹ In refusing to back more stringent antitrust oversight, members of Congress have

⁹⁷ DON'T BREAK WHAT WORKS, SENATORS, EXPERTS: AMERICAN INNOVATION AND CHOICE ONLINE ACT HAS SERIOUS FLAWS 5 (2022) (quoting Klon Kitchen of the American Enterprise Institute and Jamil Jaffer of the National Security Institute), <https://dontbreakwhatworks.ccianet.org/wp-content/uploads/2022/03/Big-WTAS-Updated-3.9.pdf> [<https://perma.cc/9AHB-2PPM>].

⁹⁸ Withrow, *supra* note 2.

⁹⁹ See *supra* notes 45–48 and accompanying text.

¹⁰⁰ *Balancing Privacy and Innovation: Does the President's Proposal Tip the Scale?: Hearing Before the Subcomm. on Com., Mfr. & Trade of the H. Comm. on Energy & Com.*, 112th Cong. 11 (2012) (statement of Rep. Marsha Blackburn), <https://www.govinfo.gov/content/pkg/CHRG-112hhr81441/pdf/CHRG-112hhr81441.pdf> [<https://perma.cc/B7B4-E9ZB>].

¹⁰¹ See Emily Birnbaum, *Big Tech Divided and Conquered to Block Key Bipartisan Bills*, BLOOMBERG (last updated Dec. 20, 2022, 11:00 AM), <https://www.bloomberg.com/news/articles/2022-12-20/big-tech-divided-and-conquered-to-block-key-bipartisan-bills#xj4y7vzkg> [<https://perma.cc/8F66-2NJS>].

invoked various concerns—including national security and privacy—but one consistent ground for opposition has been the weakening of American innovation and global competitiveness.¹⁰²

In the 2020 antitrust hearings held by the U.S. House of Representatives, which brought in leading tech CEOs for extensive questioning, many representatives expressed concerns about tech companies' outsized market power and anticompetitive behavior.¹⁰³ Others remained concerned that the proposed antitrust bills would hamper tech innovation and economic growth. Representative Steve Chabot registered his opposition, noting his belief that the bills were “going to hurt innovation.”¹⁰⁴ He warned against allowing “government bureaucrats” to “dismantle successful companies,” while adding that “[w]riting legislation under the guise of antitrust law is not how we innovate if we want to compete with China.”¹⁰⁵ Several House members echoed these comments, with Representative Darrell Issa warning that the bills would “slow the rate of innovation,”¹⁰⁶ Representative Eric Swalwell expressing concern that the bills would “slow innovation and make [the country] less competitive, particularly to China,”¹⁰⁷ and Representative Zoe Lofgren emphasizing how the bills would “undercu[t] [the United States'] position relative to [its] international competitors.”¹⁰⁸ These comments illustrate how deep-seated the perception that tech regulation harms innovation is among U.S. lawmakers, contributing to the continuing regulatory stalemate in Congress.

In addition to these views expressed by tech companies, industry associations, and many U.S. lawmakers, a number of scholars have argued

¹⁰² See, e.g., DON'T BREAK WHAT WORKS, *supra* note 97 (noting Senator Chris Coons's comments opposing the bill because of its “potentially unintended negative consequences on [] competitiveness globally”).

¹⁰³ See Press Release, David N. Cicilline, Chair, House Judiciary Antitrust, Com. & Admin. L. Subcomm., Antitrust Subcommittee Chair Cicilline Statement for Hearing on “Online Platforms and Market Power, Part 6: Examining the Dominance of Amazon, Apple, Facebook, and Google” (July 29, 2020), <https://democrats-judiciary.house.gov/news/documentsingle.aspx?DocumentID=3199> [<https://perma.cc/LCR7-F942>].

¹⁰⁴ Markup of H.R. 3843, the “Merger Filing Fee Modernization Act of 2021”; H.R. 3460, the “State Antitrust Enforcement Venue Act of 2021”; H.R. 3849, the “Augmenting Compatibility and Competition by Enabling Service Switching Act of 2021” or the “ACCESS Act of 2021”; H.R. 3826, the “Platform Competition and Opportunity Act of 2021”; H.R. 3816, the “American Choice and Innovation Online Act”; and H.R. 3825, the “Ending Platform Monopolies Act”: Hearing Before the H. Comm. on the Judiciary, 117th Cong. 63 (2021) (unofficial transcript) (statement of Rep. Steve Chabot), <http://docs.house.gov/meetings/JU/JU00/20210623/112818/HMKP-117-JU00-Transcript-20210623.pdf> [<https://perma.cc/PWV2-ZK2B>].

¹⁰⁵ *Id.* at 829.

¹⁰⁶ *Id.* at 516 (statement of Rep. Darrell Issa).

¹⁰⁷ *Id.* at 233 (statement of Rep. Eric Swalwell).

¹⁰⁸ *Id.* at 832 (statement of Rep. Zoe Lofgren).

that tech regulation can compromise innovation—even if their argument is often more nuanced, qualified, or context-specific. For example, William Rogerson has warned that telecommunications regulation “may interfere with innovation both because it reduces incentives of firms to innovate, and because it reduces the diversity of the pool of innovators.”¹⁰⁹ Richard Epstein has argued that while some regulation of the technology industry is necessary, “allowing technology to be free from regulation will make the system both more competitive and more efficient.”¹¹⁰ Others have emphasized that tech regulation may be particularly ill-suited for guiding technological innovation given the fast pace of technological development and the slow pace of generating and implementing regulations,¹¹¹ whereas yet others have noted that “[r]egulation deters more startup innovation and activity, especially in areas where innovation can provide . . . the greatest benefits.”¹¹² Several scholars have criticized efforts to tighten antitrust regulation in particular; for example, Gus Hurwitz and Geoffrey Manne note how those efforts—which they refer to as “regulation by intimidation”—may “scare companies into inaction.”¹¹³ Carmelo Cennamo and Daniel Sokol describe the EU’s recently adopted DMA as “too blunt, with the risk of constraining value creation” while “produc[ing] stifling unintended consequences.”¹¹⁴ According to them, the DMA fails to account for “innovation dynamics.”¹¹⁵

¹⁰⁹ William P. Rogerson, *The Regulation of Broadband Telecommunications, the Principle of Regulating Narrowly Defined Input Bottlenecks, and Incentives for Investment and Innovation*, 2000 U. CHI. LEGAL F. 119, 128.

¹¹⁰ Richard A. Epstein, *Can Technological Innovation Survive Government Regulation?*, 36 HARV. J.L. & PUB. POL’Y 87, 97 (2013).

¹¹¹ See, e.g., Gary E. Marchant, *The Growing Gap Between Emerging Technologies and the Law*, in THE GROWING GAP BETWEEN EMERGING TECHNOLOGIES AND LEGAL-ETHICAL OVERSIGHT 27–28 (Gary E. Marchant, Braden R. Allenby & Joseph R. Herkert eds., 2011) (“Legal and regulatory systems have generally been oblivious to the growing lag between legal oversight mechanisms and the rapid pace of emerging technologies.”); Wulf A. Kaal & Robert N. Farris, *Innovation and Legislation: The Changing Relationship—Evidence from 1984 to 2015*, 58 JURIMETRICS 303, 305–06 (2018) (“The law and technology literature and the literature on dynamic regulation recognize that legal institutions’ capacity to react to innovative technologies is diminishing.”).

¹¹² LIYA PALAGASHVILI, MERCATUS CTR. AT GEORGE MASON UNIV., EXPLORING HOW REGULATIONS SHAPE TECHNOLOGY STARTUPS 32 (June 1, 2021), <https://www.mercatus.org/research/research-papers/exploring-how-regulations-shape-technology-startups> [<https://perma.cc/5N8U-ESYN>].

¹¹³ Gus Hurwitz & Geoffrey Manne, *Antitrust Regulation by Intimidation*, WALL ST. J. (July 24, 2023, 6:08 PM), <https://www.wsj.com/articles/antitrust-regulation-by-intimidation-khan-kanter-case-law-courts-merger-27f610d9> [<https://perma.cc/6AGG-XCJG>].

¹¹⁴ Carmelo Cennamo & D. Daniel Sokol, *Can the EU Regulate Platforms Without Stifling Innovation?*, HARV. BUS. REV. (Mar. 1, 2021), <https://hbr.org/2021/03/can-the-eu-regulate-platforms-without-stifling-innovation> [<https://perma.cc/GT3F-E7PR>].

¹¹⁵ *Id.*

Some legal scholars have specifically contrasted the United States and the EU approaches to regulation. Anupam Chander draws a connection between the success of U.S. tech companies and the permissive regulatory environment they have faced in their home market.¹¹⁶ In contrast, extensive regulatory constraints in Europe have held back the EU's tech sector, contributing to the existing innovation gap. Illustrating his argument through examples from data privacy, content moderation, and intellectual property, Chander argues that "reduced liability concerns for Internet intermediaries, coupled with low privacy protections," created an enabling legal environment in the United States in which new tech companies could thrive and innovate.¹¹⁷ While stringent data privacy rules "hobbled internet startups" in Europe,¹¹⁸ the "absence of privacy constraints proved especially conducive to Internet innovation" in Silicon Valley, Chander asserts.¹¹⁹ He also describes European rules on intermediary liability as less welcoming to tech companies, hence contributing to the relatively greater success of U.S. internet companies.¹²⁰

Other scholars have similarly argued that exacting tech regulations compromise innovation. Tal Zarsky claims that there is a link between lenient U.S. privacy laws and the success of U.S. tech companies and asserts that the EU's stringent privacy laws have contributed to the European tech industry's relative stagnation.¹²¹ In citing the EU's weak performance as a tech leader, Zarsky argues that "an inescapable linkage between the strength of privacy laws and the level of ICT innovation is evident."¹²² This, according to Zarsky, points toward a conclusion that the EU should consider easing its privacy laws while the United States should refrain from adopting stringent laws,¹²³ adding that "[i]f the whole world had been strictly subjected to the EU Data Protection Directive, we might not have had Facebook, Gmail, or Amazon."¹²⁴

Notwithstanding this perceived cost that tech regulation has on innovation, many commentators praise the EU's regulatory approach as necessary given the many manifest problems associated with today's tech

¹¹⁶ Chander, *supra* note 2, at 642.

¹¹⁷ *Id.*

¹¹⁸ *Id.*

¹¹⁹ *Id.* at 667.

¹²⁰ *Id.* at 670–73.

¹²¹ *See generally* Zarsky, *supra* note 2.

¹²² *Id.* at 154.

¹²³ *Id.* at 162.

¹²⁴ *Id.* at 165.

economy.¹²⁵ However, even proponents of the EU’s approach often assume that it involves a trade-off and comes at the expense of innovation—even if they are prepared to accept that trade-off.¹²⁶ Similarly, the absence of comprehensive privacy protections in the United States can be viewed as a “price to be paid” for innovations.¹²⁷ Under this view, the question becomes whether a society wants to pay the price. But that normative debate rests on the assumption that by pursuing stringent tech regulation, societies accept lower levels of innovation—an assumption questioned in the next Part.

II. RETHINKING DIGITAL REGULATION AND INNOVATION

The above discussion has shown how the perception that digital regulation impedes innovation often dominates public discourse. Some legal scholars have endorsed this view, but this question has not been extensively examined in the academic literature.¹²⁸ Scholarly discussion on the relationship between regulation and innovation has been more extensive in other areas of law to date, such as environmental regulation.¹²⁹ Academic analysis on the relationship between tech regulation and tech innovation is sparse in part because tech regulation remains a relatively recent phenomenon. Over the past few years, economists have begun to examine the effects of the GDPR on various market outcomes, but both theoretical and empirical literature on tech regulation beyond the nascent literature on data privacy remains undeveloped.¹³⁰ The below discussion first takes a closer look at various arguments on the relationship between regulation and innovation generally before examining how those arguments can be extended to digital regulation, focusing on data privacy, antitrust, and AI.

¹²⁵ See, e.g., *America Should Borrow from Europe’s Data-Privacy Law*, *ECONOMIST* (Apr. 5, 2018), <https://www.economist.com/leaders/2018/04/05/america-should-borrow-from-europes-data-privacy-law?> [<https://perma.cc/CB3V-STUN>].

¹²⁶ See, e.g., Chander, *supra* note 2, at 645 (comparing the lack of regulation of internet enterprises to the lack of regulation of nineteenth-century industrialization).

¹²⁷ *Id.* (“The limitations on Internet intermediary liability and the lack of omnibus privacy protections beyond those that are promised contractually by websites mean that there is a price to be paid for the amazing innovation of the past two decades.”).

¹²⁸ See, e.g., Aghion, *supra* note 1, at 1 (“There is considerable literature on the economic impacts of regulations, but relatively few studies on their impact on technological innovation.”).

¹²⁹ See Yafit Lev-Aretz & Katherine J. Strandburg, *Regulation and Innovation: Approaching Market Failure from Both Sides*, 38 *YALE J. ON REGUL. BULL.* 1, 5 (2020) (“The academic literature on the interplay between regulation and innovation focuses primarily on a few contexts, most notably environmental regulation.”).

¹³⁰ See, e.g., Laurent Belsie, *Impacts of the European Union’s Data Protection Regulations*, *NBER DIGEST* (July 1, 2022), <https://live-nber.pantheonsite.io/sites/default/files/2022-06/jul22.pdf> [<https://perma.cc/V7WK-6P9C>].

A. Key Insights from Scholarship on Regulation and Innovation

Few voices today would argue that markets left to their own devices produce optimal outcomes. Instead, there is broad consensus that some degree of regulation is needed for the proper functioning of a market economy and society. Regulation helps correct market failures, minimize negative externalities, and ensure that public interest is protected. However, even though academics and policymakers agree that regulation can advance beneficial social objectives, they remain concerned that regulation may curtail private actors' incentives to innovate. Innovation is central to economic growth, which is key for societies to thrive and provide public goods to their citizens. Thus, no government can afford to disregard the effects their regulations have on innovation, which makes innovation central to any debates on regulation.

Of course, "innovation" is a nebulous word and can be used to mean different things. Much of the critical assessment of the relationship between regulation and innovation—including the commentary discussed above—equates innovation with technological progress that results in economic growth. Perhaps the most common way regulation is thought to impede innovation is that it often increases compliance costs.¹³¹ It is well understood that regulations can be costly to implement. The public conversation often uses the term "regulatory burden," which assumes that regulatory compliance has a negative impact on economic activity.¹³² Regulation may adversely affect productivity, new investment, and innovation and slow down economic growth and technological progress.¹³³ If companies need to spend extensive resources on regulatory compliance, those resources may be diverted away from various R&D activities that are designed to support new innovations. As a result, regulation may lead to a reduced rate of innovation and more limited technological progress.¹³⁴

However, more regulation does not always mean less innovation. Certain types of regulation are by design susceptible to promoting innovation. For example, intellectual property protection incentivizes investments in R&D by granting a temporary monopoly for firms and individuals to enjoy the rewards of their innovations. There are also numerous historical examples that show how U.S. government regulation has spurred innovation, or even created new industries. For example, in the

¹³¹ Crafts, *supra* note 1, at 187.

¹³² *The Cumulative Regulatory Burden Is Substantial and Growing, Weighing on Businesses and the Broader U.S. Economy*, BUS. ROUNDTABLE, <https://s3.amazonaws.com/brt.org/CumulativeRegulatoryBurden.pdf> [<https://perma.cc/S9H6-QV2M>].

¹³³ Crafts, *supra* note 1, at 190.

¹³⁴ *Id.*

1970s, the U.S. government regulated the telecommunications monopoly AT&T, culminating in the breakup of the company in 1984.¹³⁵ This was widely seen as encouraging internet innovation.¹³⁶ Similarly, common carrier rules, including rules on “net neutrality”—a term that refers to internet carriers needing to offer all content providers equal access to the network—are commonly seen as having contributed to a thriving internet industry in the United States.¹³⁷

In his seminal work, Michael E. Porter has shown how regulation can spur innovation. Specifically, Porter has argued that regulation can incentivize firms to transform their products and production processes in ways that generate not only environmental, health, safety or other social benefits but also lead to economic gains.¹³⁸ This “Porter hypothesis” rests on the idea that regulation often spurs companies to upgrade or re-engineer their technologies. A company that successfully develops a new technology to meet the demands of a regulation can have a first-mover advantage, which can lead the firm to capture the market and reap notable economic rewards.¹³⁹ This way, “innovation offsets” generated by a regulation can exceed the compliance costs associated with regulation, leading to a net benefit in terms of innovation.¹⁴⁰ Regulations may not only catalyze incumbent firms to re-tool their production; they may also encourage new entrants to enter the market with new and innovative products that were designed to meet the regulatory demands, which can displace existing inferior technologies.¹⁴¹ Thus, the net impact of regulation on innovation depends on whether the “incentive effect” outweighs the compliance costs associated with regulation.¹⁴²

The Porter hypothesis focuses on the economic costs and benefits of regulation. However, a more comprehensive analysis also accounts for various social benefits—such as the mitigation of climate change—when

¹³⁵ Christos A. Makridis & Joel Thayer, *The Big Tech Antitrust Paradox: A Reevaluation of the Consumer Welfare Standard for Digital Markets*, 27 STAN. TECH. L. REV. 71, 101–02 (2023).

¹³⁶ See Tim Wu, *Antitrust via Rulemaking: Competition Catalysts*, 16 COLO. TECH. L.J. 33, 42–44 (2017).

¹³⁷ See *id.* at 59.

¹³⁸ Michael E. Porter, *America’s Green Strategy*, SCI. AM., Apr. 1991, at 168; see also Michael E. Porter & Claas van der Linde, *Toward a New Conception of the Environment-Competitiveness Relationship*, 9 J. ECON. PERSP. 97, 98 (1995).

¹³⁹ Porter & van der Linde, *supra* note 138, at 104–05.

¹⁴⁰ *Id.* at 98.

¹⁴¹ Nicholas A. Ashford & Ralph P. Hall, *The Importance of Regulation-Induced Innovation for Sustainable Development*, 3 SUSTAINABILITY 270, 277–78 (2011).

¹⁴² Knut Blind, *The Impact of Regulation on Innovation* 6 (Nesta Working Paper, Paper No. 12/02, 2012), https://media.nesta.org.uk/documents/the_impact_of_regulation_on_innovation.pdf [<https://perma.cc/MNN9-6NLH>].

analyzing the costs and benefits of regulations. Richard Stewart’s work on the interplay between regulation and innovation has been particularly influential in conceptually distinguishing between “market innovation” and “social innovation.”¹⁴³ Market innovation refers to the development of new products or processes that lead to productivity gains and thus create economic benefits that the firm can capture on the marketplace.¹⁴⁴ Social innovation refers to social benefits, such as cleaner air, that the firm cannot directly monetize through sales. At times, regulations may adversely affect market innovations but can still lead to social innovations as regulations incentivize firms to undertake investments that promote certain social objectives.¹⁴⁵ However, it is also possible for a given innovation to generate both types of benefits, leading to social innovations and market innovations at the same time.¹⁴⁶

These influential scholarly insights suggest that the relationship between regulation and innovation is not always straightforward. Instead, the innovation effects may depend on the particular regulatory design.¹⁴⁷ For example, more stringent regulations have been found to incentivize more radical innovations, whereas less stringent regulations tend to push firms toward more incremental innovations.¹⁴⁸ Stringent regulations may therefore be more effective in incentivizing more foundational or disruptive innovations compared to lenient regulations that can be satisfied with more incremental adjustments to firms’ products and processes. Also, while regulations often have negative effects on innovation in the short term, those effects can be positive in the long term.¹⁴⁹ This suggests that tech regulation is also unlikely to have a one-directional relationship to innovation—a proposition that seems validated when examining the regulation of data privacy, antitrust, and AI below.

B. How Data Privacy Regulation Affects Innovation

Tech companies often resist regulation on grounds that such regulation is costly. For example, Google noted that it had spent “hundreds of years of

¹⁴³ See generally Richard B. Stewart, *Regulation, Innovation, and Administrative Law: A Conceptual Framework*, 69 CALIF. L. REV. 1256 (1981).

¹⁴⁴ *Id.* at 1279.

¹⁴⁵ See *id.* at 1279, 1281.

¹⁴⁶ *Id.* at 1279.

¹⁴⁷ See Yafit Lev-Aretz & Katherine J. Strandburg, *Privacy Regulation and Innovation Policy*, 22 YALE J.L. & TECH. 256, 262–63 (2020) (“In general, well-designed regulation is likely to shift innovative activity into more socially desirable *directions*, rather than to reduce innovation overall.”).

¹⁴⁸ Blind, *supra* note 142, at 16.

¹⁴⁹ *Id.* at 25.

human time” to achieve GDPR compliance.¹⁵⁰ It was reported that U.S. Fortune 500 companies collectively spent approximately \$7.8 billion on GDPR compliance by May 2018, averaging \$16 million per company.¹⁵¹ While large tech companies often lament the costs of regulatory compliance, in relative terms these costs are even higher for small- and medium-sized tech companies—including many EU companies, which are often smaller than their U.S. counterparts—that have reduced capacity to engineer their products and services to meet the EU’s exacting regulatory demands.¹⁵² As a result, small tech companies may have fewer resources to dedicate to innovative activities after adjusting their products and services to meet the demands of the GDPR. When compliance costs are too high, these smaller tech companies may be forced to exit the market or, alternatively, never enter the market in the first place.¹⁵³

Recent empirical research offers support for the argument that the GDPR has imposed nontrivial costs, especially on small tech companies. According to a 2022 study, numerous apps exited the Google Play Store following the implementation of the GDPR, leading the researchers to conclude that “whatever [the GDPR’s] beneficial impacts on privacy protection, [it] also produced the unintended consequence of slowing innovation.”¹⁵⁴ The GDPR can thus reduce consumer choice and curtail innovation as smaller players are regulated out of the marketplace.

The incumbent firms’ incentives to innovate may also diminish in the face of less competition from smaller rivals or new entrants. Research surveying small AI startups has similarly shown that the GDPR can adversely affect early-stage companies.¹⁵⁵ Small startups often have access to limited data from their own pool of customers and rely on third-party data

¹⁵⁰ Ashley Rodriguez, *Google Says It Spent “Hundreds of Years of Human Time” Complying with Europe’s Privacy Rules*, QUARTZ (Sept. 26, 2018), <https://qz.com/1403080/google-spent-hundreds-of-years-of-human-time-complying-with-gdpr/> [<https://perma.cc/SP4H-BKTK>].

¹⁵¹ *The Internet and Digital Communications: Examining the Impact of Global Internet Governance: Hearing Before the Subcomm. on Comm’n, Tech., Innovation, & the Internet of the S. Comm. on Com., Sci., & Transp.*, 115th Cong. 35 (2018) (prepared statement of Denise E. Zheng, Vice President, Policy, Business Roundtable).

¹⁵² James Bessen, Stephen Michael Impink, Lydia Reichensperger & Robert Seamans, *GDPR and the Importance of Data to AI Startups* 13 (Apr. 1, 2020) (unpublished manuscript), <https://papers.ssrn.com/a=3576714> [<https://perma.cc/L3Q3-VJ6J>].

¹⁵³ See Rebecca Janßen, Reinhold Kesler, Michael E. Krummer & Joel Waldfoegel, *GDPR and the Lost Generation of Innovative Apps* 20–21 (Nat’l Bureau of Econ. Rsch., Working Paper No. 30028, 2022), https://www.nber.org/system/files/working_papers/w30028/w30028.pdf [<https://perma.cc/92DH-ARF5>]. However, one may criticize this study’s assumption that more apps always means more innovation, as some are likely only copycat apps as opposed to new apps that reflect genuine innovation.

¹⁵⁴ *Id.* at 37.

¹⁵⁵ Bessen et al., *supra* note 152, at 18–19.

to develop their algorithms.¹⁵⁶ With restrictions imposed on such data gathering, the GDPR increases the costs incurred by these firms to collect and analyze the data they need to develop AI applications.¹⁵⁷ Additionally, these companies may face greater difficulties in fundraising if investors price in the increased data acquisition costs and other compliance challenges associated with the GDPR.¹⁵⁸ This research suggests that one of the unintended consequences of the GDPR is that it may protect, or perhaps even further entrench, the relative power of the largest tech companies that are better placed to comply with demanding regulations such as the GDPR.¹⁵⁹

Any costs imposed by a regulation such as the GDPR are easier to justify if the regulation generated benefits that outweighed those costs. On this score, some may question the net benefit of the GDPR given the well-known deficiencies in its implementation. With limited resources, European privacy regulators have been criticized for having brought a small number of cases under the GDPR, which to date have often resulted in modest fines.¹⁶⁰ This suggests that, at worst, the GDPR has imposed compliance costs without generating the promised social innovation benefits by protecting privacy rights. This exposes the EU regulation to criticism that the intended benefits may not offset the compliance costs.¹⁶¹ However, there are signs that the EU is now moving toward more robust enforcement of the GDPR, as evidenced by a high-profile £1.2 billion fine that the Irish Data Protection Agency imposed on Meta in May 2023.¹⁶²

Data privacy rules have the potential to alter innovation pathways. After the GDPR entered into force, tech companies faced limits on collecting, combining, storing, and processing user data.¹⁶³ This presents a hurdle for tech companies, including AI firms, which need access to extensive data to

¹⁵⁶ *Id.* at 13.

¹⁵⁷ *Id.* at 3–4.

¹⁵⁸ Jian Jia, Ginger Zhe Jin & Liad Wagman, *The Short-Run Effects of the General Data Protection Regulation on Technology Venture Investment*, 40 MKTG. SCI. 661, 675 (2021).

¹⁵⁹ See BRADFORD, *supra* note 6, at 238; Garrett A. Johnson, Scott K. Shriver & Samuel G. Goldberg, *Privacy and Market Concentration: Intended and Unintended Consequences of the GDPR*, 69 MGMT. SCI. 5695, 5715 (2023).

¹⁶⁰ See, e.g., Madhumita Murgia & Javier Espinoza, *Ireland Fails to Enforce EU Law Against Big Tech*, FIN. TIMES (Sept. 12, 2021), <https://www.ft.com/content/5b986586-0f85-47d5-8edb-3b49398e2b08> [<https://perma.cc/6Z9J-JFKQ>] (discussing criticism of enforcement in Ireland).

¹⁶¹ See McAfee, *supra* note 80 (criticizing the GDPR as restricting innovation and reducing VC funding in Europe, while adding that “the benefits to the EU of all the extra governance are not obvious” given the suboptimal enforcement efforts).

¹⁶² Meta Platforms Ireland Limited 2023 (IN-20-8-1) (Ir. Data Pro. Comm’n May 12, 2023), https://www.edpb.europa.eu/system/files/2023-05/final_for_issue_ov_transfers_decision_12-05-23.pdf [<https://perma.cc/8GER-DBY4>].

¹⁶³ Bessen et al., *supra* note 152, at 3.

create more accurate AI applications.¹⁶⁴ In such instances, there is a potential trade-off between more data protection and less product innovation.¹⁶⁵ Another example relates to the way tech companies gather data for targeted advertising. In its 2022 decision, the European Data Protection Board (EDPB) held that Meta can no longer use data generated on its own platform to create personalized ads unless it obtains specific user consent for such targeted advertising¹⁶⁶—consent that may be difficult to obtain from users.¹⁶⁷ This ruling may fundamentally change Meta’s business model, forcing the company to retool its entire digital advertising business.¹⁶⁸ Thus, for anyone who considers targeted advertising to be valuable—for instance by allowing users to forgo a subscription fee and receive, in return, more relevant advertising based on users’ personal data—the privacy ruling can be viewed as costly or detrimental to innovation.

However, even if the GDPR entailed various compliance costs, it may still encourage social innovations. Protection of data privacy can be seen as creating a social benefit by enhancing the fundamental rights of individuals whose data would otherwise be vulnerable to exploitation by tech companies. The social benefits associated with the GDPR are therefore enhanced privacy, self-determination, and personal autonomy that individuals can enjoy.¹⁶⁹

These social benefits may reduce market benefits for tech companies whose business model relies on monetizing users’ personal data through advertising. However, there is also an argument that the GDPR confers both social and market benefits, especially in the long term. For a company like Apple, privacy-enhancing innovations have generated significant economic benefits. Apple’s privacy practices can be viewed as not only a response to

¹⁶⁴ *Id.* at 18.

¹⁶⁵ *Id.*

¹⁶⁶ Eur. Data Prot. Bd. Binding Decision 3/2022, (Dec. 5, 2022), https://edpb.europa.eu/our-work-tools/our-documents/binding-decision-board-art-65/binding-decision-32022-dispute-submitted_en [<https://perma.cc/VGP4-MAHB>].

¹⁶⁷ For a comparison, when Apple introduced its tracking tool and asked users specifically if they wanted to be tracked, a large majority chose not to be tracked. See Samuel Axon, *96% of US Users Opt Out of App Tracking in iOS 14.5, Analytics Find*, ARS TECHNICA (May 7, 2021), <https://arstechnica.com/gadgets/2021/05/96-of-us-users-opt-out-of-app-tracking-in-ios-14-5-analytics-find/> [<https://perma.cc/23U7-DAFJ>]; Jared Newman, *Most People Are Embracing iOS 14.5’s New Anti-Tracking Features*, FAST CO. (May 7, 2021, 1:59 PM), <https://www.fastcompany.com/90633965/ios-14-5-tracking-opt-out-rate> [<https://perma.cc/77AS-U98N>].

¹⁶⁸ Natasha Lomas, *Meta’s Behavioral Ads Will Finally Face GDPR Privacy Reckoning in January*, TECHCRUNCH (Dec. 6, 2022, 8:58 AM), <https://techcrunch.com/2022/12/06/meta-gdpr-forced-consent-edpb-decisions/> [<https://perma.cc/GZ47-CBHF>].

¹⁶⁹ See James Q. Whitman, *The Two Western Cultures of Privacy: Dignity Versus Liberty*, 113 YALE L.J. 1151, 1164 (2004) (discussing how social values of dignity and honor are reflected in European views of privacy); Charles Fried, *Privacy*, 77 YALE L.J. 475, 477 (1968).

EU regulation but also the company's conscious business strategy.¹⁷⁰ In April 2021, Apple rolled out an update on its iPhone that asks users whether they want apps, such as Facebook, to track them.¹⁷¹ This change is seen as a tremendous boon for user privacy but a devastating blow to companies such as Meta, which rely on retaining access to user data in Apple devices.¹⁷² Meta's stock price plunged 26% in February 2022 following Meta's disclosure that Apple's privacy change will cost the company billions of dollars annually.¹⁷³ At the same time, Apple itself has seen its advertising revenue soar as the company can still access the data generated on its own devices.¹⁷⁴ This shows how Apple has been able to monetize its pro-privacy innovations, enhancing users' privacy—thus generating social innovations—while at the same time reaping significant economic rewards by innovating product enhancements that were welcomed by users and that also tilted the marketplace in Apple's favor.

In the same vein, if Meta now responds to the adverse EDPB ruling by creating a new advertising model that is more responsive to users' privacy expectations, social innovation may occur. Initially, such innovation would likely reduce Meta's advertising revenue and be costly to the company. However, the Porter hypothesis suggests that the exacting regulatory demands may incentivize Meta to engage in more drastic innovation around digital advertising. This may lead Meta to develop a new business model that will, in the long run, generate commercial benefits for the company. Alternatively, the constraints imposed on Meta may invite entry from other tech companies whose business models are more responsive to users' privacy expectations, increasing these companies' incentives to innovate in ways that disrupt the existing digital advertising market.

The EU has consistently maintained that the GDPR and other European tech regulations increase social innovation. There are pressing social needs

¹⁷⁰ Kif Leswing, *Apple Is Turning Privacy into a Business Advantage, Not Just a Marketing Slogan*, CNBC (June 8, 2021, 6:52 PM), <https://www.cnbc.com/2021/06/07/apple-is-turning-privacy-into-a-business-advantage.html> [<https://perma.cc/QXH8-K96D>].

¹⁷¹ See Press Release, Apple, *Data Privacy Day at Apple: Improving Transparency and Empowering Users* (Jan. 27, 2021), <http://www.apple.com/newsroom/2021/01/data-privacy-day-at-apple-improving-transparency-and-empowering-users/> [<https://perma.cc/QQ8M-5RDB>].

¹⁷² See Patrick McGee, *Snap, Facebook, Twitter and YouTube Lose Nearly \$10bn After iPhone Privacy Changes*, FIN. TIMES (Oct. 31, 2021), <https://www.ft.com/content/4c19e387-ee1a-41d8-8dd2-bc6c302ee58e> [<https://perma.cc/T5GT-9AW2>].

¹⁷³ See Kate Conger & Brian X. Chen, *A Change by Apple Is Tormenting Internet Companies, Especially Meta*, N.Y. TIMES (Feb. 3, 2022), <https://www.nytimes.com/2022/02/03/technology/apple-privacy-changes-meta.html> [<https://perma.cc/P9CG-MZWD>].

¹⁷⁴ Nina Goetzen, *Apple Ad Revenues Skyrocket amid Its Privacy Changes*, EMARKETER (Jan. 31, 2022), <https://www.insiderintelligence.com/content/apple-ad-revenues-skyrocket-amid-its-privacy-changes> [<https://perma.cc/D2JL-2JHK>].

that call for regulations even if such regulations were to impose compliance costs or deter certain types of innovation.¹⁷⁵ However, according to the EU, its regulations also often contribute to market innovations and further technological progress.¹⁷⁶ The GDPR has elevated the consciousness of consumers, tech companies, and governments about data privacy, contributing to a shift in marketplace expectations.¹⁷⁷ As internet users become more conscious of privacy, they start viewing privacy as an element of product quality and increasingly turn to privacy-conscious products.¹⁷⁸ This way, firms developing privacy-enhancing technologies can reap economic gains as the market will reward them for innovations that reflect changing consumer preferences. Tech companies are already adjusting their business practices to EU rules, indicating that technological development is now moving in a more privacy-conscious direction. Most tech companies' privacy policies today are aligned with the GDPR, and companies such as Apple, Alphabet, Meta, and Microsoft offer GDPR protections to their global users.¹⁷⁹ This reveals that the EU's data privacy regulation is already changing the direction of tech companies' innovation activities.

According to the European Commission, firms adhering to higher privacy standards can gain a competitive advantage because consumers and

¹⁷⁵ *Stronger Protection, New Opportunities - Commission Guidance on the Direct Application of the General Data Protection Regulation as of 25 May 2018*, at 1, COM (2018) 43 final (Jan. 24, 2018) [hereinafter COM (2018) 43 final]; see also Venky Anant, Lisa Donchak, James Kaplan & Henning Soller, *The Consumer-Data Opportunity and the Privacy Imperative*, MCKINSEY & CO. (Apr. 27, 2020), <https://www.mckinsey.com/capabilities/risk-and-resilience/our-insights/the-consumer-data-opportunity-and-the-privacy-imperative> [https://perma.cc/YQT5-AZEK] (“In total, Fortune Global 500 companies had spent \$7.8 billion by 2018 preparing for GDPR.”).

¹⁷⁶ COM (2018) 43 final, *supra* note 175, at 16.

¹⁷⁷ See Jeanette Herrle & Jesse Hirsh, CIGI, *The Peril and Potential of the GDPR 5* (July 9, 2019), <https://www.cigionline.org/articles/peril-and-potential-gdpr> [https://perma.cc/84RD-9AFB] (“A global conversation on data protection and privacy is expanding, and the impact on non-EU countries is evident . . . : California’s upcoming Consumer Privacy Act, India’s soon-to-be-tabled Personal Data Protection Act and South Korea’s updating of its Personal Information Protection Act are among the standouts globally.”); EUR. COMM’N, TWO YEARS OF THE GDPR: QUESTIONS AND ANSWERS (June 24, 2020), https://ec.europa.eu/commission/presscorner/detail/en/qanda_20_1166 [https://perma.cc/ZPK6-CDLZ] (reporting an increase in citizens’ awareness of their data privacy rights). *But see* Herrle & Hirsh, *supra*, at 3 (“[C]itizens’ attitudes about and expectations of data governance are not keeping pace. Certainly, Europeans’ awareness of data protection and data privacy has increased[,] . . . [as] 73 percent of Europeans have heard about at least one of their new rights. Unfortunately, only three in 10 Europeans are aware of all of their rights.”).

¹⁷⁸ See Anant et al., *supra* note 175.

¹⁷⁹ See, e.g., *Preparing for a New Era in Privacy Regulation with the Microsoft Cloud*, MICROSOFT BLOG (Apr. 16, 2018), <https://www.microsoft.com/en-us/microsoft-365/blog/2018/04/16/preparing-for-a-new-era-in-privacy-regulation-with-the-microsoft-cloud/> [https://perma.cc/F49K-YYPW]; *Requests to Delist Content Under European Privacy Law*, GOOGLE TRANSPARENCY REPORT (May 29, 2014), <https://transparencyreport.google.com/eu-privacy/overview> [https://perma.cc/8DNE-ZBHN]. These numbers are accurate as of Aug. 15, 2022. Google updates the figures periodically.

users are likely to place more trust in their products and services.¹⁸⁰ Some tech companies, including Microsoft, have also endorsed this view.¹⁸¹ According to Microsoft, in the absence of strong privacy rules, “it will likely become harder for U.S. companies to keep the trust of consumers worldwide.”¹⁸² This will place U.S. providers at a competitive disadvantage as foreign customers are increasingly likely to turn to non-U.S. companies who they trust to keep their data safe. As a result, Microsoft asserted that “strong data protection practices are not the antithesis of innovative data usage” and that “privacy and big data can and must go hand-in-hand.”¹⁸³ Consistent with this view, Microsoft was an early supporter of the EU’s GDPR and has called for Congress to enact “[s]trong, comprehensive privacy legislation” in the United States.¹⁸⁴ Of course, it is less costly for Microsoft to take a strong pro-privacy stand as its business model does not rely on targeted advertising. It will therefore be interesting to see if Microsoft’s views on data privacy shift after its significant investment in OpenAI, which relies on extensive data gathering to train large language models, which risk conflicting with data privacy rules.¹⁸⁵ As a result, Microsoft now finds itself more exposed to regulatory constraints, testing its stance as a staunch advocate of data privacy rules.

The above discussion suggests that data privacy regulation generates both costs and benefits to tech companies by limiting certain types of innovation while encouraging other forms of innovation. While a regulation such as the GDPR can legitimately be criticized—including for its adverse distributional effect on small companies or its ineffective implementation—data privacy regulation does not have a one-directional effect on innovation that presents governments with a clear choice between regulation and innovation. Instead, data privacy regulation has spurred new innovations

¹⁸⁰ Viviane Reding, *The European Data Protection Framework for the Twenty-First Century*, 2 INT’L DATA PRIV. L. 119, 129 (2012); W. Gregory Voss & Kimberly A. Houser, *Personal Data and the GDPR: Providing a Competitive Advantage for U.S. Companies*, 56 AM. BUS. L.J. 287, 338 (2019).

¹⁸¹ Julie Brill, *Microsoft’s Commitment to GDPR, Privacy, and Putting Customers in Control of Their Own Data*, POLITICO (May 25, 2018, 9:00 AM), <http://www.politico.eu/sponsored-content/microsofts-commitment-to-gdpr-privacy-and-putting-customers-in-control-of-their-own-data/> [<https://perma.cc/3X8E-Y4UM>].

¹⁸² Letter from David A. Heiner, Vice President & Deputy Gen. Couns., Legal & Corp. Affs., Microsoft Corp., to John Morris, Nat’l Telecomms. & Info. Admin., U.S. Dep’t of Com. (Aug. 5, 2014), <https://www.ntia.doc.gov/files/ntia/microsoft.pdf> [<https://perma.cc/US74-JAQQ>].

¹⁸³ *Id.*

¹⁸⁴ *Id.*

¹⁸⁵ Charles Duhigg, *The Inside Story of Microsoft’s Partnership with OpenAI*, NEW YORKER (Dec. 1, 2023), <https://www.newyorker.com/magazine/2023/12/11/the-inside-story-of-microsofts-partnership-with-openai> [<https://perma.cc/33E7-7E7Z>].

in product development, many of which enhance social innovations and, arguably, also market innovations.

C. *How Antitrust Regulation Affects Innovation*

Antitrust law, correctly implemented, should contribute to greater innovation by reducing market concentration and fostering competition. However, some scholars have argued that a more concentrated market structure can sometimes have a positive effect on innovation. Prominent economists have debated this question, disagreeing on how much market power is optimal for creating or preserving firms' incentives for innovation. Joseph Schumpeter famously argued that the prospect of market power and the ensuing monopoly rents spur innovation.¹⁸⁶ Kenneth Arrow challenged this view, arguing instead that monopolists have less to gain from innovating and an interest in preserving the status quo.¹⁸⁷ According to Arrow, more competition increases firms' incentives to innovate.¹⁸⁸ Jean Tirole has similarly suggested that the monopolist is likely to hold back innovation because of the "replacement effect"—the idea that innovation would only replace a monopolist's existing rents.¹⁸⁹ Several commentators describe this long-standing debate as unresolved, but if there is a prevailing view today, it seems to be that neither an oligopolistic market structure nor highly competitive markets provide the most fertile environment for innovation, but that, on balance, competitive market structures foster innovation more than monopolistic markets.¹⁹⁰

While the debate on the relationship between *competition* and innovation is long-standing, there is currently limited empirical literature on the relationship between the *regulation* of competition and innovation. Some scholars have suggested that antitrust laws contribute to innovation, whereas others have argued that they deter innovation.¹⁹¹ There are several reasons to

¹⁸⁶ Jonathan B. Baker, *Beyond Schumpeter vs. Arrow: How Antitrust Fosters Innovation*, 74 ANTITRUST L.J. 575, 578 (2007). See generally JOSEPH A. SCHUMPETER, CAPITALISM, SOCIALISM, AND DEMOCRACY (1942).

¹⁸⁷ See generally KENNETH J. ARROW, ECONOMIC WELFARE AND THE ALLOCATION OF RESOURCES FOR INVENTION (1962). However, even Arrow acknowledged the benefit that large firms have in acting as their own insurance company, allowing them to pursue multiple projects at the same time—the benefit he still called “an imperfect solution.” *Id.* at 616.

¹⁸⁸ *Id.* at 622.

¹⁸⁹ JEAN TIROLE, THE THEORY OF INDUSTRIAL ORGANIZATION 392 (1997).

¹⁹⁰ MASSIMO MOTTA, COMPETITION POLICY: THEORY AND PRACTICE 57 (2004).

¹⁹¹ See, e.g., Dora Marinova, Michael McAleer & Daniel Slottje, *Antitrust Environment and Innovation*, 64 SCIENTOMETRICS 301, 309 (2005) (“[C]ivil antitrust filings by the DOJ have a statistically significant impact on the level of innovative activity.”); Andrew Thomas Young & William F. Shughart II, *The Consequences of the US DOJ's Antitrust Activities: A Macroeconomic Perspective*, 142 PUB.

expect that antitrust laws and their enforcement positively affect tech companies' incentives to innovate.¹⁹² Antitrust laws encourage entry and rivalry, which creates incentives for firms to reduce costs, improve product quality, or develop new products to increase their profits and stay ahead of their rivals. Empirical evidence also suggests that companies that are shielded from international competition fall behind and lose their ability to compete due to a lack of rivalry that would have driven them to innovate.¹⁹³ Jonathan Baker has taken a firm stand in arguing that antitrust enforcement today promotes innovation, urging scholars to “move beyond the ‘Schumpeter vs. Arrow’ debate and to embrace antitrust as essential for fostering innovation.”¹⁹⁴

Economist and technologist James Bessen has argued that today's concentrated digital markets are not optimal for innovation. He notes how the information revolution initially contributed to greater dynamism and innovation across industries.¹⁹⁵ By the late 1990s, several industries experienced rapid cycles of disruption where new players were challenging the incumbents, allowing startups and smaller firms to thrive.¹⁹⁶ However, the rate of disruption has declined over the past two decades as a handful of “superstar” firms have entrenched their control over the key technologies.¹⁹⁷ This has impeded the growth prospects of smaller firms and slowed productivity growth.¹⁹⁸ Thus, while small firms are still created, they face impediments to growth, which has reduced overall productivity growth for the economy. This has an adverse effect on innovation because, according to Bessen, the level of innovation is greatest when knowledge diffuses, and a diverse set of individuals and companies engage in the marketplace.¹⁹⁹

Others have advanced a different view. For example, Nicolas Petit and David J. Teece have called into question the relevance of market size and

CHOICE 409, 419–20 (2010) (“Innovations in antitrust law enforcement apparently do not constrain market power in the economy, but do hamper productivity growth, at least temporarily.”).

¹⁹² Baker, *supra* note 186, at 593–95; Carl Shapiro, *Competition and Innovation: Did Arrow Hit the Bull's Eye?*, in *THE RATE & DIRECTION OF INVENTIVE ACTIVITY REVISITED* (Josh Lerner & Scott Stern eds., 2012); George L. Priest, *Advancing Antitrust Law to Promote Innovation and Economic Growth*, in *RULES FOR GROWTH: PROMOTING INNOVATION AND GROWTH THROUGH LEGAL REFORM* 209 (Lacey Graverson, Sarah Gowen & Matt Rees eds., 2011).

¹⁹³ Michael E. Porter, *Competition and Antitrust: Toward a Productivity-Based Approach to Evaluating Mergers and Joint Ventures*, 46 *ANTITRUST BULL.* 919, 932 (2001).

¹⁹⁴ Baker, *supra* note 186, at 602.

¹⁹⁵ JAMES BESSEN, *THE NEW GOLIATHS* 8 (2022).

¹⁹⁶ *Id.* at 9.

¹⁹⁷ *Id.* at 16.

¹⁹⁸ *Id.* at 17.

¹⁹⁹ *Id.* at 190.

market concentration for assessing competition and innovation.²⁰⁰ According to them, this traditional debate focuses on static as opposed to dynamic models of monopoly and is ill-suited to analyze the dynamic competition that characterizes the tech industry.²⁰¹ The authors characterize today’s digital economy as dynamic and featuring “unprecedented productivity growth, rapid innovation, and new firm entry.”²⁰² They describe digital firms as diversified companies that compete across different markets, challenging each other’s dominance.²⁰³ This makes existing monopolists vulnerable to competition, which should alleviate concerns from antitrust regulators.²⁰⁴ This description of a “vigorous[.]” oligopolistic competition among the leading tech firms departs from the common narrative that focuses on tech companies’ uncontested monopoly power.²⁰⁵ This understanding of the market dynamics leads Petit and Teece to caution against strict antitrust rules designed to ban practices such as monopoly leveraging, which, according to them, would likely lead to reduced innovation.²⁰⁶

While disagreements over the optimal antitrust policy persist, a growing number of voices are calling for aggressive antitrust action, including breaking up monopolies such as Meta.²⁰⁷ While some argue that Meta should not be punished for its success and innovations, others assert that breaking up Meta would incentivize rivals to enter into the market and innovate.²⁰⁸ Excessive market concentration has also increased support to restrict mergers and acquisitions in the tech industry.²⁰⁹ Currently, many

²⁰⁰ Nicolas Petit & David J. Teece, *Innovating Big Tech Firms and Competition Policy: Favoring Dynamic over Static Competition*, 30 INDUS. & CORP. CHANGE 1168, 1173 (2021).

²⁰¹ *Id.* at 1170.

²⁰² *Id.* at 1169.

²⁰³ *Id.*

²⁰⁴ *Id.* at 1175.

²⁰⁵ Petit & Teece, *supra* note 200, at 1169.

²⁰⁶ *See id.* at 1170.

²⁰⁷ Chris Hughes, *It’s Time to Break Up Facebook*, N.Y. TIMES (May 9, 2019), <https://www.nyt.com/2019/05/09/opinion/sunday/chris-hughes-facebook-zuckerberg.html> [<https://perma.cc/Z2C8-8ZBM>]; Jack Kelly, *Senator Elizabeth Warren Says ‘It’s Time to Break Up Amazon, Google and Facebook’—And Facebook CEO Mark Zuckerberg Fights Back*, FORBES (Oct. 2, 2019, 10:43 AM), <https://www.forbes.com/sites/jackkelly/2019/10/02/senator-elizabeth-warren-says-its-time-to-break-up-amazon-google-and-facebook-and-facebook-ceo-mark-zuckerberg-fights-back/?sh=flc26cd67916> [<https://perma.cc/7CX6-3C9C>].

²⁰⁸ Nilay Patel, *It’s Time to Break Up Facebook*, VERGE (Sept. 4, 2018, 1:00 PM), <https://www.theverge.com/2018/9/4/17816572/tim-wu-facebook-regulation-interview-curse-of-bigness-antitrust> [<https://perma.cc/MT66-EZK7>].

²⁰⁹ *See generally* Org. for Econ. Coop. & Dev. [OECD], *Start-Ups, Killer Acquisitions and Merger Control*, at 3, OECD Doc. DAF/COMP/WD(2020)23 (June 11, 2020), https://www.ftc.gov/system/files/attachments/us-submissions-oced-2010-present-other-international-competition-fora/oced-killer_acquisitions_us_submission.pdf [<https://perma.cc/5BKS-MDK8>] (discussing U.S. methods for restricting tech mergers and acquisitions).

small tech companies are never able to challenge the incumbents, such as Meta, because these incumbents often acquire their rivals to fend off an emerging competitive threat—a phenomenon referred to as “killer acquisitions.” These concerns motivate the U.S. FTC’s ongoing suit against Meta.²¹⁰ The FTC is seeking to unwind the company’s past acquisitions of Instagram and WhatsApp, which the FTC sees as having been motivated by Facebook’s attempt to kill a nascent competitive threat to its business, thus diminishing rivalry-driven innovation in the market for social media. However, others caution that aggressive merger control may reduce innovation, particularly if startups fear that their chances of a successful exit through a future acquisition are diminished.²¹¹

The scholarly conversation on how antitrust regulation affects digital markets is intensifying in the wake of the EU’s adoption of the DMA. While it will be years until the DMA’s effect on competition and innovation can be empirically measured, its merits are already debated—including its predicted effect on innovation. The assumption behind the DMA is that digital markets today are too concentrated and hence anticompetitive.²¹² The goal of the DMA is to enhance the contestability of the marketplace so that new firms can enter and compete in the marketplace.²¹³ This, according to the European Commission, will augment rivals’ and new entrants’ incentives to innovate and challenge the incumbents.²¹⁴ At the same time, new rivals’ entry into the marketplace will likely incentivize existing tech giants to innovate as their position will now be challenged.²¹⁵ Arguably, while the DMA will introduce some trade-offs, including whether to prioritize innovation by incumbents or challengers, it has the potential to enhance the “diversity” of innovation that takes place.²¹⁶

²¹⁰ Press Release, Fed. Trade Comm’n, FTC Sues Facebook for Illegal Monopolization (Dec. 9, 2020), <https://www.ftc.gov/news-events/press-releases/2020/12/ftc-sues-facebook-illegal-monopolization> [<https://perma.cc/74EJ-UB7J>].

²¹¹ Tom Relihan, *Will Regulating Big Tech Stifle Innovation?*, MIT MGMT. SLOAN SCH. (Sept. 27, 2018), <https://mitsloan.mit.edu/ideas-made-to-matter/will-regulating-big-tech-stifle-innovation> [<https://perma.cc/LM3R-WMXC>]; Andrew Edgecliffe-Johnson & Kiran Stacey, *Top US Business Lobbyist Lambasts Joe Biden’s Antitrust ‘Over-Reach’*, FIN. TIMES (Jan. 11, 2022), <https://www.ft.com/content/6fd7d5c3-00b2-43fc-9308-7d96614c53bb> [<https://perma.cc/5ULD-JRFG>].

²¹² Impact Assessment Report Accompanying the Document Proposal for a Regulation of the European Parliament and of the Council on Contestable and Fair Markets in the Digital Sector (Digital Markets Act), paras. 7, 10, SWD (2020) 363 final (Dec. 15, 2020), <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52020SC0364> [<https://perma.cc/43KG-JZAK>].

²¹³ *Id.* para. 10.

²¹⁴ *Id.* para. 279.

²¹⁵ Pierre Larouche & Alexandre de Stree, *The European Digital Markets Act: A Revolution Grounded on Traditions*, 12 J. EUR. COMPETITION L. & PRAC. 542, 551 (2021).

²¹⁶ *Id.* at 552.

The EU's critics have questioned whether the DMA will lead to greater innovation. An Amazon-commissioned study by Oxera Consulting argues that the DMA will reduce aggregate innovation.²¹⁷ The study argues that any increase in rivals' incentives to innovate would not offset the decrease in large platforms' incentives to innovate under the new regulation.²¹⁸ Many innovations depend on the market size, allowing large firms with a global scale to better recoup the fixed costs of their R&D expenditures.²¹⁹ New entrants also know that their potential ability to gain success in the marketplace will lead to greater regulation, which dampens their incentives to innovate and pursue such success.²²⁰ As a result, the aggregate level of innovation will likely deteriorate following the DMA's entry into force. The authors of the study acknowledge that potential entrants often pursue disruptive innovations whereas incumbents have the incentive to pursue more incremental innovations. However, they conclude that both variants of innovations are beneficial and question the EU's choice of prioritizing only potentially disruptive innovations by rivals.²²¹

This discussion suggests that antitrust law, too, may have a more nuanced relationship to innovation than often presumed. There are well-reasoned arguments that show how overly constraining antitrust laws may adversely affect innovation or that the existing tech giants challenge each other and thus sustain the culture of innovation. At the same time, there are strong arguments that more competition leads to greater innovation and that the excessive concentration that characterizes today's tech industry has limited innovation. In particular, that reduction in innovation manifests in how difficult—if not impossible—it is to challenge the incumbents and provide consumers with a diversity of innovations from multiple sources. It is therefore difficult to see how the EU's antitrust laws and enforcement actions—or regulations such as the DMA—would categorically suppress innovation and explain why the EU has not developed a thriving tech industry.

D. How AI Regulation Affects Innovation

Given the nascent stage of AI regulation, it is too early to draw any definitive conclusions about the actual impact of those regulations on innovation. Much of the discussion on the relationship between AI regulation and technological development is still speculative and focused on predicting

²¹⁷ OXERA, *supra* note 83.

²¹⁸ *Id.* at 27.

²¹⁹ *Id.* at 4.

²²⁰ *Id.* at 2.

²²¹ *Id.* at 2–3.

various outcomes based on still-evolving regulatory proposals. Despite this uncertainty, the relationship between AI regulation and innovation is already subject to debate. Some commentators suggest that AI regulation will harm technological progress, while others argue that the effect is likely to be positive.

Critical voices assert that government efforts to regulate AI with binding rules will likely adversely affect the development of AI applications. This prediction relies on a familiar assumption that any tech regulation, by its very nature, entails compliance costs, which can adversely affect innovation.²²² However, others suggest that these costs can be mitigated if regulators help, in particular, small companies with their compliance efforts. For example, the EU's AI Act envisions the establishment of so-called "regulatory sandboxes," which are specifically created, controlled environments within which businesses can test their innovations under regulators' supervision.²²³ This practice is designed to alleviate regulatory risks before a new technology is introduced to the market, thus encouraging innovation.²²⁴

Even if compliance costs could be mitigated in some instances, AI regulation may still adversely affect technological development in other ways. One common criticism emphasizes regulators' inadequate understanding of particularly complex and fast-evolving AI systems.²²⁵ This information asymmetry between regulators and market actors might slow down innovation as a result of poorly-conceived or hard-to-follow regulations, and is often cited as an argument favoring industry-led standards. Another concern is that the EU's stringent regulatory requirements may oblige tech companies to retrain their AI systems—initially developed for the global market—for the European market if those AI systems are viewed as inconsistent with EU regulations.²²⁶ This may lower the quality of the AI applications made available in Europe, especially if those applications are trained on smaller datasets after all noncompliant

²²² ALESSIO TARTARO, ADAM LEON SMITH & PATRICIA SHAW, ASSESSING THE IMPACT OF REGULATIONS AND STANDARDS ON INNOVATION IN THE FIELD OF AI 3 (2023), <https://arxiv.org/pdf/2302.04110> [<https://perma.cc/U3G6-W3SN>]; see also Chris Reed, *How Should We Regulate Artificial Intelligence?*, PHIL. TRANSACTIONS ROYAL SOC'Y A, AUG. 6, 2018, at 5 (discussing the risks regulations pose to innovation).

²²³ TAMBIA MA DIEGA & ANNE LOUISE VAN DE POL, EUR. PARLIAMENTARY RSCH. SERV., PE 733.544, INTELLIGENCE ACT AND REGULATORY SANDBOXES 2 (2022).

²²⁴ *Id.* at 2–3.

²²⁵ Tartaro et al., *supra* note 222, at 6.

²²⁶ ANDREA RENDA ET AL., CEPS, ICF & WAVESTONE, STUDY TO SUPPORT AN IMPACT ASSESSMENT OF REGULATORY REQUIREMENTS FOR ARTIFICIAL INTELLIGENCE IN EUROPE 120 (2021).

data is removed.²²⁷ However, it is not clear how AI developers will respond to the EU's AI Act. Some, but likely not all, developers may choose to tailor their global products to the EU standard to ensure that the same AI system can be sold across the global market, eliminating the concern regarding systems tailored specifically for the EU.²²⁸

While these arguments are plausible, there are also several reasons why increased regulation may, in fact, be helpful in accelerating the development and usefulness of AI applications. One such argument emphasizes the ability of AI regulation to contribute to greater social innovation, by directing AI development toward more ethical, accurate, and safe AI systems. Such systems would be welfare-enhancing in that they would mitigate concerns such as large-scale discrimination that occurs when AI is trained on biased datasets.²²⁹ While regulation may initially hinder the development and adoption of AI, such regulation is ultimately welfare-enhancing in that it encourages firms to invest in more ethical and less error-prone AI applications, steering the industry toward more robust AI systems.²³⁰ This can create a positive market response if more consumers adopt AI as a consequence of trusting novel technologies that meet regulatory standards.²³¹ This argument is consistent with the Porter hypothesis and illustrates how AI regulation may redirect technological innovation in ways that can contribute to both social and market innovation.

The EU itself has defended its proposed AI Act as enhancing, rather than undermining, AI development. According to the Commission, its AI Act can enhance innovation in two primary ways: First, common European rules reduce complexity and enhance legal certainty, which decreases regulatory risk and paves the way for greater investment in AI innovations.²³² In its impact assessment, the Commission notes that the alternative to the EU's AI Act is not the wholesale absence of regulation but rather fragmented

²²⁷ *Id.*

²²⁸ See BRADFORD, *supra* note 5, at 338–39.

²²⁹ Mariano-Florentino Cuéllar, Benjamin Cedric Larsen, Yong Suk Lee & Michael Webb, *How Does Information About AI Regulation Affect Managers' Choices?*, BROOKINGS (July 28, 2022), <https://www.brookings.edu/articles/how-does-information-about-ai-regulation-affect-managers-choices/> [<https://perma.cc/2KMG-GVSP>].

²³⁰ See Kathryn Mueller, *We Can't Regulate AI*, AI MYTHS (2020), <https://www.aimyths.org/we-cant-regulate-ai> [<https://perma.cc/L4KJ-BZFC>] (discussing the need for “regulation to ensure that the innovation that causes harms is nipped in the bud to allow truly useful innovations to flourish”).

²³¹ Cuéllar et al., *supra* note 229.

²³² Eur. Comm'n, *Impact Assessment Accompanying the Proposal for a Regulation of the European Parliament and of the Council Laying Down Harmonised Rules on Artificial Intelligence (Artificial Intelligence Act) and Amending Certain Union Legislative Acts*, at 33, SWD (2021) 84 final (Apr. 21, 2021).

AI regulation promulgated by individual EU member states.²³³ Such a balkanized regulatory landscape would compound greater uncertainty, complexity, and compliance costs—a particular concern for AI applications, which require large pools of data to be effective.²³⁴ At worst, different national rules would require tailored AI systems to be developed for various member states within the EU.²³⁵

Second, the Commission has described how the proposed AI Act is designed to steer AI innovation toward ethical and safe applications, which are valued by consumers.²³⁶ The Act limits certain invasive AI technologies, such as mass surveillance or manipulative algorithms designed to exploit individuals' vulnerabilities. These regulations advance a set of social goals that European lawmakers have identified as beneficial for individuals and societies. In the short run, however, these regulations may well force tech companies to forgo some commercial opportunities and hence forgo revenue—even while contributing toward social innovation.

Yet, it is possible that market benefits may ensue as well. For example, the EU has argued that its AI regulation will give a commercial advantage to tech companies whose AI applications adhere to high regulatory standards.²³⁷ According to this view, compliance with stringent EU regulation can help firms obtain reputational gains and win over consumers, contributing to market innovations alongside social innovations. While there is genuine excitement about the possibilities around generative AI today, there is also a growing awareness of the severe risks AI presents. OpenAI's Sam Altman and other prominent AI technologists have even compared AI to nuclear war and warned about AI's potential to pose existential risks to humanity.²³⁸ According to the Commission, these risks and the existing “[m]istrust in AI would slow down AI development . . . [i]f citizens observe that AI repeatedly endangers the safety of individuals or infringes their fundamental rights, they are unlikely to be willing to accept the use of AI technologies for themselves

²³³ *Id.* at 26.

²³⁴ *See id.* at 27.

²³⁵ *Id.* at 26 (discussing the fragmentation concern and citing the German Data Ethics Commission proposal for a tiered system of regulation on AI based on five risk categories).

²³⁶ *Id.* at 18.

²³⁷ *See Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions Fostering a European Approach to Artificial Intelligence*, at 2–3, COM (2021) 205 final (Apr. 21, 2021).

²³⁸ Cade Metz, *How Could A.I. Destroy Humanity?*, N.Y. TIMES (June 10, 2023), <https://www.nytimes.com/2023/06/10/technology/ai-humanity.html> [<https://perma.cc/V36N-2VMK>]; Tristan Bove, *Sam Altman and Other Technologists Warn that A.I. Poses a 'Risk of Extinction' on Par with Pandemics and Nuclear Warfare*, FORTUNE (May 30, 2023, 9:32 AM), <https://fortune.com/2023/05/30/sam-altman-ai-risk-of-extinction-pandemics-nuclear-warfare/> [<https://perma.cc/HKV9-APDK>].

or by other users.”²³⁹ Some scholars have endorsed this view, noting how AI regulation enhances consumer confidence “through clear rules, legal certainty, higher trust, and greater social acceptance.”²⁴⁰

Several tech companies have acknowledged that AI regulation can serve their business interests, lending support to the notion that social innovation can also translate into market innovation. In particular, they recognize that tech regulation can enhance consumer confidence in new products, thus generating useful market innovations.²⁴¹ Among these industry voices, the chief technology officer of OpenAI recently called for the regulation of AI, warning that “AI can be misused.”²⁴² According to her, tech companies should not be left alone to ensure that the technology will be aligned with human values. The rapid advances in AI-driven large language models have unsettled many tech entrepreneurs and AI engineers, who recently called for a temporary moratorium on training such models, lending force to the argument that regulatory oversight is both necessary and desirable.²⁴³

III. ALTERNATIVE DRIVERS FOR INNOVATION AND TECHNOLOGICAL PROGRESS

The above Part suggests that the relationship between tech regulation and innovation is likely more intricate than what the public conversation and some scholars have suggested to date. As a result, any claims suggesting a causality between a country’s digital regulation and the strength of its tech sector requires additional analysis. The below discussion addresses this issue by asking whether the claims of Europe’s overregulation reflect, at least partially, a misattribution of the European tech sector’s failings to Europe’s digital regulation and whether the reasons for the EU’s inability to match the United States’ tech prowess may, in the end, be found elsewhere. If so, the perceived causal relationship between tech regulation and innovation may be illusory and explained by other variables that have little to do with tech regulation.

²³⁹ Eur. Comm’n, *supra* note 232, at 24.

²⁴⁰ Tartaro et al., *supra* note 222, at 5.

²⁴¹ See Brad Smith, *Facial Recognition Technology: The Need for Public Regulation and Corporate Responsibility*, MICROSOFT BLOG (July 13, 2018), <http://blogs.microsoft.com/on-the-issues/2018/07/13/facial-recognition-technology-the-need-for-public-regulation-and-corporate-responsibility/> [<http://perma.cc/67NP-GNJ9>].

²⁴² John Simons, *The Creator of ChatGPT Thinks AI Should Be Regulated*, TIME (Feb. 5, 2023, 9:00 AM), <https://time.com/6252404/mira-murati-chatgpt-openai-interview/> [<https://perma.cc/HA4R-EZRL>].

²⁴³ Chris Vallance, *Elon Musk Among Experts Urging a Halt to AI Training*, BBC (Mar. 30, 2023), <https://www.bbc.com/news/technology-65110030> [<https://perma.cc/W7MF-QAC2>].

There are a few obvious reasons to question the claim that tech regulation is the primary culprit explaining the absence of large European tech companies. Looking back, Europe’s digital economy was not heavily regulated before 2010, when the Commission opened its first antitrust investigation into Google.²⁴⁴ The EU’s 2000 e-Commerce Directive—the predecessor to the 2022 DSA—closely resembles § 230 of the CDA, shielding platforms from any general monitoring obligation.²⁴⁵ The only other notable EU tech regulation in force before 2010 was the 1995 Data Protection Directive, which was less protective of fundamental rights than the EU’s 2016 GDPR.²⁴⁶ During the years when companies such as Google and Facebook were founded—1998 and 2004 respectively—comparable companies did not emerge in Europe notwithstanding the EU’s more permissive regulatory framework.²⁴⁷

The EU’s digital regulations are also hardly as draconian as some of their critics seem to suggest, which calls into question their ability to dampen innovation in a meaningful way. All EU regulations emanate from a contested legislative process that calls for a compromise across twenty-seven individual member states with differing individual interests. This process serves to moderate any extreme versions of proposed regulations.²⁴⁸ What further balances EU tech regulations is that they always serve two goals, with European integration being one of them. For example, the GDPR is geared at both protecting the fundamental right to data privacy and also at

²⁴⁴ See Ernst Oliver Wilhelm, *A Brief History of the General Data Protection Regulation (1981-2016)*, IAPP (Feb. 2016), <https://iapp.org/resources/article/a-brief-history-of-the-general-data-protection-regulation/> [<https://perma.cc/AFH4-HDEL>]; James Kanter & Eric Pfanner, *Europe Opens Antitrust Inquiry into Google*, N.Y. TIMES (Nov. 30, 2010), <https://www.nytimes.com/2010/12/01/technology/01google.html> [<https://perma.cc/3LSM-3R33>].

²⁴⁵ See Directive 2000/31, of the European Parliament and of the Council of 8 June 2000 on Certain Legal Aspects of Information Society Services, in Particular Electronic Commerce, in the Internal Market, 2000 O.J. (L 178) 13; Scott Feira et al., *Section 230 of the Communications Decency Act of 1996: An Overview and Recent Developments*, 39 COMPUT. INTERNET LAW., Oct. 2022, at 4–5.

²⁴⁶ However, even before the GDPR was adopted, the European Court of Justice was moving towards a more rights-protective interpretation of the Data Protection Directive, in particular after the Lisbon Treaty made the Charter of Fundamental Rights binding. See Case C-131/12, *Google Spain SL v. Agencia Española de Protección de Datos*, ECLI:EU:C:2014:317 (May 13, 2014); Case C-362/14, *Maximillian Schrems v. Data Prot. Comm’r*, ECLI:EU:C:2015:650 (Oct. 6, 2015); see also Thomas Streinz, *The Evolution of European Data Law*, in *THE EVOLUTION OF EU LAW* 908 (3d ed. 2021) (discussing how the Lisbon Treaty recognized the need for “fundamental rights protection” of personal data).

²⁴⁷ Alphabet Inc., Quarterly Report (Form 10-Q) (Apr. 23, 2018), <https://www.sec.gov/Archives/edgar/data/1652044/000165204418000016/goog10-qq12018.htm> [<https://perma.cc/G54B-WQVY>]; Facebook, Inc., Amended & Restated Certificate of Incorporation (Oct. 28, 2021), <https://www.sec.gov/Archives/edgar/data/1326801/000132680121000071/a20211028-exhibit31.htm> [<https://perma.cc/DD46-Z5VH>].

²⁴⁸ See Bradford, *supra* note 71, at 55.

facilitating the transfer of personal data across the EU.²⁴⁹ The EU's digital regulations are not only enacted to protect some stated social objective but also aimed at fostering trade among EU member states, hence advancing European integration. This neoliberal foundation makes EU regulations inherently less stringent and more market driven. The EU's proposed new AI regulation illustrates this well, garnering criticism both from those who believe it goes too far and from those who do not think it goes far enough in protecting fundamental rights.²⁵⁰

Furthermore, the main target of the EU's digital regulation to date has been large U.S. tech companies, but few critics would suggest that the stringent EU regulations have discouraged those companies from innovating.²⁵¹ The EU has issued adverse antitrust decisions against Microsoft (2004), Intel (2009), and Google (2017, 2018, and 2019), extracted a settlement from Amazon (2022),²⁵² and is now challenging anticompetitive practices by Apple, Google, and Meta.²⁵³ Other European regulations, ranging from data protection to content moderation, and from online copyright rules to digital taxation, have also mostly affected U.S. tech

²⁴⁹ *Id.* at 39.

²⁵⁰ For contrasting positions, see Eva Simon, Jonathan Day, Karolina Iwańska & Kerttu Willamo, *Packed with Loopholes: Why the AI Act Fails to Protect Civic Space and the Rule of Law*, LIBERTIES (Apr. 4, 2024), <https://www.liberties.eu/en/stories/ai-act-analysis/45023> [<https://perma.cc/Y7ZL-YTET>]; and Eglė Markevičiūtė, *The EU's AI Act Will Stifle Innovation and Won't Become a Global Standard*, CONSUMER CHOICE CTR. (Feb. 6, 2024), <https://consumerchoicecenter.org/the-eus-ai-act-will-stifle-innovation-and-wont-become-a-global-standard/> [<https://perma.cc/A39G-Z6ZB>].

²⁵¹ Martin Coulter, *US Lawmakers Warn Biden to Probe EU Targeting of Tech Firms -Letter*, REUTERS (Dec. 18, 2023, 2:54 PM), <https://www.reuters.com/technology/us-lawmakers-urge-biden-probe-eu-targeting-tech-firms-letter-2023-12-18/> [<https://perma.cc/5FFA-7JT4>].

²⁵² Commission Decision of 24 May 2004 Relating to a Proceeding Pursuant to Article 82 of the EC Treaty and Article 54 of the EEA Agreement Against Microsoft Corporation, 2007 O.J. (L 32); James Kanter, *Europe Fines Intel \$1.45 Billion in Antitrust Case*, N.Y. TIMES (May 13, 2009), <https://www.nytimes.com/2009/05/14/business/global/14compete.html> [<https://perma.cc/9ZPM-M3G3>]; European Commission Press Release IP/17/1784, Antitrust: Commission Fines Google €2.42 Billion for Abusing Dominance as Search Engine by Giving Illegal Advantage to Own Comparison Shopping Service (June 27, 2017), https://ec.europa.eu/commission/presscorner/detail/en/IP_17_1784 [<https://perma.cc/HXY9-FZHN>]; Eur. Commission Press Release IP/18/4581, Antitrust: Commission Fines Google €4.34 Billion for Illegal Practices Regarding Android Mobile Devices to Strengthen Dominance of Google's Search Engine (July 18, 2018), https://ec.europa.eu/commission/presscorner/detail/en/IP_18_4581 [<https://perma.cc/ZHF5-QR2A>]; European Commission Press Release IP/19/1770, Antitrust: Commission Fines Google €1.49 Billion for Abusive Practices in Online Advertising (Mar. 20, 2019), https://ec.europa.eu/commission/presscorner/detail/en/IP_19_1770 [<https://perma.cc/NFX5-QUHL>]; European Commission Press Release IP/22/7777, Antitrust: Commission Accepts Commitments by Amazon Barring It from Using Marketplace Seller Data, and Ensuring Equal Access to Buy Box and Prime (Dec. 20, 2022), https://ec.europa.eu/commission/presscorner/detail/en/ip_22_7777 [<https://perma.cc/6M7H-Q2BU>].

²⁵³ Tom Gerken & Zoe Kleinman, *Apple, Meta and Google to be Investigated by the EU*, BBC (Mar. 25, 2024), <https://www.bbc.com/news/technology-68655093> [<https://perma.cc/XK7T-YZEB>].

companies. While some have criticized these regulations as burdensome, it is difficult to see how they have held back the technological progress and innovative potential of these companies. Of course, it is possible that these companies would have innovated even more in the absence of the regulatory constraints they faced in the EU. But that does not seem to be a common concern. If anything, the prevailing perception is that the EU has fallen short in effectively reining in the U.S. tech giants.²⁵⁴

If the EU's tech regulation cannot be blamed for the dearth of globally successful European tech companies, the obvious question is what, then, explains the EU's inability to nurture companies such as Google or Apple. This Part offers four reasons that, taken together, likely explain the existing innovation gap between the United States and the EU—or at least significantly contribute to the emergence and persistence of that gap. These four reasons relate to the following features of the EU's tech ecosystem: (1) the absence of a digital single market; (2) the lack of deep and integrated European capital markets; (3) punitive bankruptcy laws and cultural attitudes that deter risk-taking; and (4) the absence of a proactive immigration policy that would allow Europe to harness global talent. These same factors can be identified as inherent strengths of the United States' tech ecosystem. Of course, these four factors are likely not the only reasons that explain the differences in the EU's and United States' tech ecosystems, nor is their relative contribution to tech sector performance easy to measure. However, they should illustrate how any argument equating the United States' tech success to its lax digital regulation—or equating the EU's struggle to generate tech champions to its stringent regulations—remains either too simplistic or plainly inaccurate.

A. *Absence of a Digital Single Market Limits Scaling of Innovations*

One significant impediment faced by European tech companies is that they do not benefit from a fully integrated digital single market (DSM) that would allow them to seamlessly operate across the EU.²⁵⁵ Scaling is key to

²⁵⁴ See Conor Dougherty, *Inside Yelp's Six-Year Grudge Against Google*, N.Y. TIMES (July 1, 2017), <https://www.nytimes.com/2017/07/01/technology/yelp-google-european-union-antitrust.html> [<https://perma.cc/RN8P-6XJA>]; Nitasha Tiku, *Don't Expect Big Changes from Europe's Record Google Fine*, WIRED (July 18, 2018, 3:35 PM), <https://www.wired.com/story/dont-expect-big-changes-from-europes-record-google-fine/> [<https://perma.cc/4L3E-7CPR>]; Murgia & Espinoza, *supra* note 160; EUR. CT. OF AUDITORS, THE COMMISSION'S EU MERGER CONTROL AND ANTITRUST PROCEEDINGS: A NEED TO SCALE UP MARKET OVERSIGHT 40 (2020), <https://op.europa.eu/webpub/eca/special-reports/eu-competition-24-2020/en/> [<https://perma.cc/DE5J-PZAA>].

²⁵⁵ *Single Market Barriers Mean a Huge Loss to the Collective Public Good for Europe*, EESC (July 18, 2022), <https://www.eesc.europa.eu/en/news-media/news/single-market-barriers-mean-huge-loss-collective-public-good-europe> [<https://perma.cc/RA5J-KYF6>].

growth and competitiveness, yet such a growth strategy is harder to pursue when companies are operating across numerous national markets with different languages, cultures, and government regulations. A 2019 study conducted by the McKinsey Global Institute highlighted this challenge, noting that “[f]ragmentation seems to put Europe at a structural disadvantage” when considering the innovation deficit between Europe on one hand and the United States and China on the other.²⁵⁶ In contrast, American and Chinese companies benefit from more homogeneous home markets, which make it relatively easier for their companies to scale domestically. That domestic scaling also paves the way for these companies’ subsequent global expansion. The fragmented DSM is a particular challenge for small- and medium-size enterprises (SME), which presents a challenge for the EU’s tech sector. Around 96% of the over 10,000 potentially high-growth platforms established in the EU are SMEs.²⁵⁷ For them, the costs of fragmentation are often prohibitively high as they cannot draw on economies of scale to grow beyond a certain size.

Several reasons contribute to the fragmentation of the European single market for digital services. The EU is a heterogeneous consumer market that comprises twenty-four official languages. There are notable political and cultural differences across the EU member states, in addition to differences in per capita GDP and levels of technological maturity. All these factors shape consumer demand and create barriers for intra-EU trade. For example, it was naturally easier for Amazon to start as an online bookseller in the United States, where the demand for English-language books was high across the country. In Europe, the publishing market is more fragmented because of linguistic diversity, creating obstacles for scaling across the continent. Video-on-demand (VOD) services have also been difficult to scale in Europe because audience demand varies across member states.²⁵⁸ Spanish viewers are interested in different content than Belgian viewers, whereas the demand for various titles is likely to vary less between audiences in Michigan

²⁵⁶ See JACQUES BUGHIN, ECKART WINDHAGEN, SVEN SMIT, JAN MISCHKE, PAL ERIK SJATIL & BERNHARD GÜRICH, MCKINSEY GLOB. INST., *INNOVATION IN EUROPE: CHANGING THE GAME TO REGAIN A COMPETITIVE EDGE* 14 (2019), <https://www.mckinsey.com/~/media/mckinsey/featured%20insights/innovation/reviving%20innovation%20in%20europe/mgi-innovation-in-europe-discussion-paper-oct2019-vf.ashx> [<https://perma.cc/7K3N-576K>].

²⁵⁷ Eur. Comm’n, *Impact Assessment Accompanying the Document Proposal for a Regulation of the European Parliament and of the Council on a Single Market for Digital Services (Digital Services Act) and amending Directive 2000/31/EC*, para. 73, SWD (2020) 348 final (Dec. 15, 2020).

²⁵⁸ SOPHIE DE VINCK, HERITIANA RANAIVOSON & BEN VAN ROMPUY, EUR. COMM’N, *FRAGMENTATION OF THE SINGLE MARKET FOR ON-LINE VIDEO-ON-DEMAND SERVICES: POINT OF VIEW OF CONTENT PROVIDERS* 33 (2014), <https://digital-strategy.ec.europa.eu/en/library/fragmentation-single-market-line-video-demand-services-point-view-content-providers> [<https://perma.cc/832E-EJ8E>].

and Virginia.²⁵⁹ As a result, providers of VOD services in Europe often must offer wholly different content in different member states, which hinders their ability to market their services at scale.²⁶⁰

There is little that can be done to remove existing linguistic and cultural barriers through EU policymaking. However, there are also legal barriers that undermine digital trade within the EU, and those are a function of policy choices. Today, tech companies must often navigate a diverse set of national laws across Europe, which adds costs, complexity, and uncertainty to their business operations.²⁶¹ For example, France recently adopted onerous requirements on software updates and warranties, adding costs and complexity for any software provider willing to offer products to customers in France.²⁶² When faced with such country-specific legal requirements, tech companies may need to offer different product varieties in different parts of Europe, which adds to their operating costs. Various other laws, including differences in national value-added tax (VAT) systems, add to tech companies' compliance burdens. According to a 2019 survey of European entrepreneurs, over 60% of European businesses find VAT procedures to be a "significant" or "very significant" obstacle to doing business in the single market.²⁶³ While the EU has sought to simplify VAT compliance for companies operating across the EU member states,²⁶⁴ companies still face separate VAT registration requirements in all EU countries where they store inventory.²⁶⁵

Even when regulations are harmonized at the EU level, implementation often differs across the twenty-seven jurisdictions. Such differences in implementation increase operational burdens for companies and lead to the

²⁵⁹ *See id.*

²⁶⁰ *See id.*

²⁶¹ See, for example, France's onerous requirements around software and warranties, which undermine the EU's deregulatory efforts and risk fragmenting the single market. *Single Market Barriers Continue Limiting the EU's Potential for the Twin Transition: Examples in Key Sectors*, DIGIT. EUR. (Mar. 3, 2022) [hereinafter *Single Market Barriers*], <https://www.digitaleurope.org/resources/single-market-barriers-continue-limiting-the-eus-potential-for-the-twin-transition/> [https://perma.cc/X8PG-VZVT].

²⁶² Claude-Étienne Armingaud, Camille J. Scarparo & Louise Bégue, *France: New Requirements Concerning the Sale of Digital Goods*, K&L GATES (July 21, 2022), <https://www.klgates.com/France-New-Requirements-Concerning-the-Sale-of-Digital-Goods-7-21-2022> [https://perma.cc/Z3NM-SRDS].

²⁶³ EUROCHAMBRES, BUSINESS SURVEY—THE STATE OF THE SINGLE MARKET: BARRIERS AND SOLUTIONS 12 (2019), <https://www.eurochambres.eu/wp-content/uploads/2020/08/Business-Survey-The-state-of-the-Single-Market-Barriers-and-Solutions-DECEMBER-2019.pdf> [https://perma.cc/KZ48-M78J].

²⁶⁴ European Commission Press Release IP/21/3098, VAT: New E-Commerce Rules in the EU Will Simplify Life for Traders and Introduce More Transparency for Consumers (June 28, 2021), https://ec.europa.eu/commission/presscorner/detail/en/ip_21_3098 [https://perma.cc/YL8E-3JXW].

²⁶⁵ *Single Market Barriers*, *supra* note 261.

fragmentation of the single market. The Audiovisual Media Services Directive (AVMSD) is a good illustration of this issue. AVMSD was designed to harmonize national legislation on audiovisual media, including television broadcasting and VOD services.²⁶⁶ One of its policy goals is to facilitate the sale of audiovisual goods and services across the EU by only subjecting the provider to the laws of the EU member state where the provider is established.²⁶⁷ However, in practice, several member states have undermined this principle, creating additional regulatory requirements that add costs and can even require tailored products for different markets.²⁶⁸ Member states have also introduced high investment obligations, levies, and different reporting obligations for VOD services, further hindering the cross-border expansion of those services.²⁶⁹ These and other differences have led the European Audiovisual Observatory—a public service organization established under the Council of Europe—to conclude that the current regulatory environment in this industry provides a labyrinth of obstacles to cross-border scaling in Europe.²⁷⁰

The AVMSD is hardly a lone example of legal fragmentation that persists despite the EU-level efforts to pursue harmonization. The EU's 2019 Directive on Copyright in the Digital Single Market has also fallen short of its goal to foster a single market for online copyright.²⁷¹ Member states have been slow and inconsistent in transposing the Directive into national law, deepening regulatory divergence and undermining the cohesion of the DSM.²⁷² In response to these threats to the unity of European standards and the risks to the DSM, the European Commission recently referred eleven EU Member states to the Court of Justice of the European Union for their failure

²⁶⁶ Directive 2010/13, of the European Parliament and of the Council of 10 March 2010 on the Coordination of Certain Provisions Laid Down by Law, Regulation, or Administrative Action in Member States Concerning the Provision of Audiovisual Media Services (Audio Media Services Directive), 2010 O.J. (L 95).

²⁶⁷ *Id.* at 13.

²⁶⁸ See, for example, measures taken by Germany and France. *Single Market Barriers*, *supra* note 261.

²⁶⁹ *Id.*

²⁷⁰ FRANCISCO JAVIER CABRERA BLÁZQUEZ, MAJA CAPPELLO, JULIO TALAVERA MILLA & SOPHIE VALAIS, EUR. AUDIOVISUAL OBSERVATORY, *INVESTING IN EUROPEAN WORKS: THE OBLIGATIONS ON VOD PROVIDERS*, foreword (2022), <https://rm.coe.int/iris-plus-2022en2-financial-obligations-for-vod-services/1680a6889c> [<https://perma.cc/PR9S-W9QM>].

²⁷¹ Mathilde Adjutor, *Copyright Rules: Contradictory National Implementation Threatens the Single Market*, DISRUPTIVE COMPETITION PROJECT (Oct. 28, 2022), <https://project-disco.org/european-union/102822-copyright-rules-contradictory-national-implementation-threatens-the-single-market/> [<https://perma.cc/4EN5-DG2G>].

²⁷² *Id.*

to fully transpose EU copyright rules into national law, illustrating the hurdles that persist in the EU's efforts to complete the DSM.²⁷³

These examples demonstrate how tech companies' ability to grow in Europe is compromised when the EU market is effectively balkanized along member state lines. Whereas American tech companies have benefited from being able to scale much more rapidly across a fully integrated domestic market, European tech founders are constrained by the small size of their local market and the difficulty of expanding to other parts of Europe. Patrick Borre, cofounder of ticketing platform Billetto, noted how "[i]f you're based in Denmark, for example, your entire local market is only half the size of London, so you quickly hit a ceiling."²⁷⁴ He indicated that "achieving initial scale [in Europe] is much more difficult than in the US" because "every European country has its own distinct environment you must learn about and navigate."²⁷⁵ This fragmented home for European startups has forced them to internationalize earlier than their American counterparts, which were able to build scale domestically at first. According to a 2020 study, "about 70 percent of European unicorns had to establish a global or partly global geographical footprint," whereas only "50 percent of US unicorns" had to do the same.²⁷⁶

European lawmakers acknowledge that the fragmented DSM hampers the European technology sector's growth. In many other sectors of the economy, European companies benefit from a single European market as EU laws have harmonized national regulations and thereby facilitated intra-EU trade.²⁷⁷ However, the efforts to create a digital single market remain incomplete as legislation in this sector has not kept up with other EU-wide harmonization efforts. In 2010, the Commission recognized that, as a result of this fragmentation, "[t]oo few of our innovative SMEs grow into large,

²⁷³ European Commission Press Release IP/23/704, *The European Commission Referred 11 Member States to the Court of Justice of the European Union for Failing to Fully Transpose EU Copyright Rules into National Law* (Feb. 15, 2023), <https://digital-strategy.ec.europa.eu/en/news/european-commission-referred-11-member-states-court-justice-european-union-failing-fully-transpose> [http://perma.cc/7QY4-XSSY].

²⁷⁴ Kjartan Rist, *Europe Is Building World-Class Tech Companies—But Can It Close the Gap with the US?*, FORBES (May 27, 2022, 7:00 AM), <https://www.forbes.com/sites/kjartanrist/2022/05/27/europe-is-building-world-class-tech-companies--but-can-it-close-the-gap-with-the-us/?sh=435338701983> [https://perma.cc/7S6E-42JD].

²⁷⁵ *Id.*

²⁷⁶ Kim Baroudy, Jonatan Janmark, Abhi Satyavarapu, Tobias Strålin & Zeno Ziemke, *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> [https://perma.cc/WK2Y-KD3H].

²⁷⁷ Eur. Comm'n, *2023 Annual Single Market Report: Single Market at 30*, at 4, 11–12, SWD (2023) 26 final (Jan. 31, 2023).

globally successful companies.”²⁷⁸ However, most barriers to growth and innovation have remained in place since 2010, despite the EU’s persistent efforts to pursue greater digital integration. In 2015, only 4% of all digital services consumed in the EU were sold cross-border.²⁷⁹ In 2020, European Commission Executive Vice President Margrethe Vestager acknowledged that “[o]ne of the reasons why [the EU does not] have a Facebook and . . . a Tencent is that [the EU] never gave European businesses a full single market where they could scale up.”²⁸⁰ This suggests that EU leadership is aware of the challenge but has struggled to address it effectively to date.

The absence of a DSM holds European tech companies back in many industries, few of which have received particular attention in recent years. One 2021 study documents the difficulties in deploying AI in the healthcare industry, in part because there are no harmonized standards on data quality, health-related cybersecurity protocols, standardized electronic health records, or infrastructures for exchanging health data across Europe.²⁸¹ Health industries also differ across Europe due to varying cultural approaches and risk appetites for new technology, adding to the balkanization. These factors complicate tech companies’ ability to scale AI applications across Europe’s health care sectors.

Another example is the cloud computing and storage industry. In 2016, a study commissioned by the European Parliament estimated the cost of the incomplete DSM for cloud computing at “between €31.5 and €63 billion per year.”²⁸² According to the European Cloud Partnership, one of the reasons

²⁷⁸ European Commission Memorandum MEMO/10/473, Turning Europe into a True Innovation Union (Oct. 6, 2010), https://ec.europa.eu/commission/presscorner/detail/en/MEMO_10_473 [<https://perma.cc/2HZX-KWLF>].

²⁷⁹ See EUR. COMM’N, WHY WE NEED A DIGITAL SINGLE MARKET (May 6, 2015), https://commission.europa.eu/document/download/87a26ac5-2cb5-465c-b04b-dec07dd18fe7_en?file_name=dsm-factsheet_en.pdf [<https://perma.cc/R647-ZBHF>]; PAUL-JASPER DITTRICH, JACQUES DELORS INST., BALANCING AMBITION AND PRAGMATISM FOR THE DIGITAL SINGLE MARKET 3 (Sept. 7, 2017), <https://institutdelors.eu/wp-content/uploads/2020/08/balancingambitionandpragmatismforthedigitalsinglemarket-dittrich-jdib-sept2017-4.pdf> [<https://perma.cc/4R9F-3N5E>].

²⁸⁰ Melissa Heikkilä, *Vestager Touts AI-Powered Vision for Europe’s Tech Future*, POLITICO (Feb. 17, 2020, 12:01 AM), <https://www.politico.eu/article/margrethe-vestager-touts-ai-artificial-intelligence-powered-vision-for-europe-tech-future/> [<https://perma.cc/LV6E-8KZL>].

²⁸¹ PRICEWATERHOUSECOOPERS, STUDY ON EHEALTH, INTEROPERABILITY OF HEALTH DATA AND ARTIFICIAL INTELLIGENCE FOR HEALTH AND CARE IN THE EUROPEAN UNION 23 (2021), <https://op.europa.eu/en/publication-detail/-/publication/fb8d8ec2-55a0-11ed-92ed-01aa75ed71a1> [<https://perma.cc/Y7KQ-9EQG>].

²⁸² MORITZ IMMANUEL GODEL, ANNETTE HARMS, SIÒN JONES & IRIS MANTOVANI, EUR. PARLIAMENT, IP/A/IMCO/2015-06, REDUCING COSTS AND BARRIERS FOR BUSINESSES IN THE SINGLE MARKET 46 (2016), [https://www.europarl.europa.eu/RegData/etudes/STUD/2016/578966/IPOL_STU\(2016\)578966_EN.pdf](https://www.europarl.europa.eu/RegData/etudes/STUD/2016/578966/IPOL_STU(2016)578966_EN.pdf) [<https://perma.cc/523S-GSN9>].

Europe lags behind the United States is the lack of regulatory consistency, which adversely affects both cloud providers and cloud users.²⁸³

The above discussion has shown how the fragmented DSM poses a major impediment for European tech companies' growth as they face multiple barriers to scaling beyond a certain size. But the discussion also casts European-level tech regulations in a new light. The problem for tech companies is not often regulatory *stringency* in Europe as much it is regulatory *complexity* due to the absence of common European rules. The alternative to the GDPR, AI Act, DMA, DSA, and other major European-level digital regulations is not a Europe without digital regulation; the alternative is a Europe with twenty-seven different digital regulations, adding to the complexity that is already hampering tech companies' growth strategies in Europe. As a result, laws such as the GDPR are more likely to facilitate than undermine innovation, by mitigating uncertainty and complexity. After all, an EU with twenty-seven disparate approaches toward data protection would, no doubt, present even greater barriers for data transfers across Europe.

B. Shallow and Fragmented Capital Markets Impede Innovation Funding

The DSM is not the only domain where European integration is falling short and hindering the growth potential of the EU's tech sector. Another major impediment is the absence of deep and integrated capital markets that would allow European companies to fund their innovations in Europe. In contrast to their American counterparts, startups in Europe have historically relied on banks in lieu of venture capital (VC) financing from institutional investors.²⁸⁴ This is a direct result of underdeveloped and fragmented capital markets in Europe. But banks are known for being more risk-averse than VC

²⁸³ EURO. CLOUD P'SHIP STEERING BD., ESTABLISHING A TRUSTED CLOUD EUROPE 8 (2014), <https://op.europa.eu/en/publication-detail/-/publication/b5c80ddb-fa1a-465b-a8f3-3e6c90af4a3b> [<https://perma.cc/YP55-28F2>].

²⁸⁴ Craig S. Smith, *Europe's Venture Capital Scene Is Narrowing the Gap with the US Despite Global Investment Slowdown*, FORBES (Feb. 14, 2023, 12:14 PM), <https://www.forbes.com/sites/craigsmith/2023/02/14/europes-venture-capital-scene-is-narrowing-the-gap-with-the-us-despite-global-investment-slowdown/?sh=712f12a4993b> [<https://perma.cc/6HXX-26DU>]. The European version of financing "chok[es] capital supply and expos[es] the investment process to a host of frictions." Will Gornall & Ilya A. Strebulaev, *The Economic Impact of Venture Capital: Evidence from Public Companies* 21 (June 2021) (unpublished manuscript), <https://ssrn.com/abstract=2681841> [<https://perma.cc/P8B8-K2RL>]; Laura Bottazzi, Marco Da Rin, Jan C. van Ours & Erik Berglöf, *Venture Capital in Europe and the Financing of Innovative Companies*, 17 ECON. POL'Y 229, 240 tbl.2 (2002) (showing how, in the period from 1991 to 2000, institutional investors provided between 56% and 76% of all venture capital in the United States, compared to only 13% to 34% in Europe. Meanwhile, banks provided between 32% and 48% of financing in Europe, while only making up 3% to 23% in the United States over the same period).

investors, calling into question their suitability to invest in high-risk, high-reward startups in the technology space.²⁸⁵

According to a study by the McKinsey Global Institute, the underdevelopment of equity finance in Europe poses a major challenge for startups seeking funding.²⁸⁶ Analyzing European AI startups, this study concluded that financing has a “significantly higher impact” on the density of AI startup networks than other factors such as the ability to build innovative business models. While European companies can often secure seed funding and succeed in early fundraising rounds, they struggle to raise capital in later rounds. The comparison to the United States is stark: When companies enter the later-stage D and E funding rounds, the percentage of total European VC funding as a proportion of U.S. VC funding falls by approximately 50%.²⁸⁷ In the absence of large European VC funds that have the capital to support late-stage rounds, similar U.S. companies in comparable industries tend to raise significantly higher sums than their European rivals.²⁸⁸ The financial analytics firm S&P Global has similarly highlighted how “the lack of finance for equity growth is among the biggest reasons for the dearth of big new innovators in the EU, especially in the digital and technological sectors.”²⁸⁹

Many of today’s leading tech giants, including Apple, Alphabet, and Meta, hail from Silicon Valley, where entrepreneurial talent meets deep pockets of risk capital. Risk-seeking VC investors—pursuing rare but, when successful, astronomical awards—have, no doubt, fueled these and other U.S. tech companies’ innovations.²⁹⁰ These investors have channeled both capital and talented employees into countless tech startups, incubating a fertile tech industry and establishing Silicon Valley’s preeminence in the global digital economy.²⁹¹ The thriving VC market offers a powerful explanation for the success of American tech startups, revealing the benefits that ensue when three key inputs—capital, entrepreneurs, and financial intermediaries—come together in a single region such as Silicon Valley.²⁹²

²⁸⁵ Smith, *supra* note 284.

²⁸⁶ See BUGHIN ET AL., *supra* note 256, at 8.

²⁸⁷ Baroudy et al., *supra* note 276, at 7.

²⁸⁸ See *id.*

²⁸⁹ Sylvain Broyer & David Henry Doyle, *The EU Capital Markets Union: Turning the Tide*, S&P GLOB. (June 1, 2020), <https://www.spglobal.com/en/research-insights/featured/special-editorial/the-eu-capital-markets-union-turning-the-tide> [<https://perma.cc/WTV7-KD7M>].

²⁹⁰ See SEBASTIAN MALLABY, *THE POWER LAW: VENTURE CAPITAL AND THE MAKING OF THE NEW FUTURE 8* (2022).

²⁹¹ *Id.* at 13.

²⁹² Ronald J. Gilson, *Engineering a Venture Capital Market: Lessons from the American Experience*, 55 STAN. L. REV. 1067, 1069 (2003).

In this private ordering that benefits from “agglomeration economics,” the government has played a trivial role.²⁹³ Instead, VC firms are in the driver’s seat as financial intermediaries, contributing not only capital but also invaluable expertise to startups.²⁹⁴

What sets the United States apart from the EU is not only the prominent role of VCs as financial intermediaries funding tech companies but also the type of investors that provide the capital that VC firms deploy. The American VC market has benefited from substantial capital provided by institutional investors such as universities and pension funds that—unlike their European counterparts—have been free to invest their plentiful coffers in risky startups.²⁹⁵ In particular, the massive endowments of American universities have facilitated the continued growth of venture capital and startups in the United States. It is telling, for instance, that universities contributed about half of the capital raised by VC firm Greylock Partners in each of its partnerships from the 1970s onwards.²⁹⁶ VC firms have eagerly welcomed university endowments as universities typically have longer investment horizons and greater ability to endure illiquidity. As a result, universities are less prone to withdraw funds even when stocks are underperforming.²⁹⁷ European universities simply do not have the capital to invest on the same scale as their American counterparts. Most of them do not have any significant endowments—much less ones capable of being deployed to invest heavily in VC.²⁹⁸

Pension funds have similarly fueled VC growth in the United States. According to a 2017 survey of leading VC firms worldwide, public pension funds make up the biggest class of limited partners in VC funds, contributing 27% of committed capital.²⁹⁹ VC markets have been open to pension funds

²⁹³ See Ronald J. Gilson, *The Legal Infrastructure of High Technology Industrial Districts: Silicon Valley, Route 128, and Covenants Not to Compete*, 74 N.Y.U. L. REV. 575, 576 (1999).

²⁹⁴ *Id.* at 1071, 1088.

²⁹⁵ Stephen Lowery, *VC Trends: Europe Versus US*, SILICON VALLEY BANK (Mar. 25, 2019), <https://www.svb.com/blogs/svb-fund-times/vc-trends-europe-versus-us/> [<https://perma.cc/6593-3MDJ>].

²⁹⁶ TOM NICHOLAS, *VC: AN AMERICAN HISTORY* 311 (2019).

²⁹⁷ *Id.*

²⁹⁸ See Alex Usher, *University Endowments in a Global Context*, HIGHER EDUC. STRATEGY ASSOCS. (June 4, 2015), <https://higherstrategy.com/university-endowments-in-a-global-context/> [<https://perma.cc/T7ZU-CPM2>].

²⁹⁹ PREQIN LTD., *PREQIN SPECIAL REPORT: THE VENTURE CAPITAL TOP 100* (May 2017), <https://docs.preqin.com/reports/Preqin-Special-Report-Venture-Capital-Top-100-Report.pdf> [<https://perma.cc/S2CT-9QJA>]. When private sector pension funds are added to that statistic, pension funds, in general, represent 42% of the surveyed VC firms’ committed capital.

since regulatory reforms in the late 1970s.³⁰⁰ Those reforms expanded pension funds' ability to allocate capital to stocks as opposed to only "safe" investments, such as government bonds. By some estimates, these rule changes increased the money entrusted to VC funds by tenfold in the early 1980s as institutional investors—in particular, large pension funds—parked their money in VC.³⁰¹ However, this development has been mostly confined to the United States. In Europe, pension funds are largely restricted from investing in private and illiquid assets.³⁰² Even in the United Kingdom, which has the most developed capital markets in Europe, pension funds are still grappling with regulatory barriers when it comes to investing in tech startups.³⁰³ Therefore, the absence (or near-absence) of a similarly robust and active base of institutional investors in Europe has contributed to the vast difference between the European and American capital markets in general, and the VC markets in particular.

Of course, in principle, EU startups could also grow with the help of foreign capital. Capital is mobile and investors should not care if their portfolios grow with foreign or domestic innovations. However, VC investment tends to favor local companies.³⁰⁴ Many American VC firms, based in or near Silicon Valley, feel more comfortable making risky bets on companies whose funders they know and whose business operations they can closely monitor after making the investment. After all, VC investment is inherently risky, and the potential of any given startup is difficult to assess. Startups based in Silicon Valley benefit from closely-knit professional and social networks where top researchers, entrepreneurs, and investors frequently interact and rely on established relationships. American VCs cannot similarly draw on their local network and informational advantage if they invest in a startup in Berlin, Helsinki, or Lisbon. This local bias explains

³⁰⁰ Gornall & Strebulaev, *supra* note 284, at 4; Max M. Schanzenbach & Robert H. Sitkoff, *Did Reform of Prudent Trust Investment Laws Change Trust Portfolio Allocation?*, 50 J.L. & ECON. 681, 681–82 (2007).

³⁰¹ Gornall & Strebulaev, *supra* note 284, at 20.

³⁰² *Id.* at 21.

³⁰³ See Ulric Musset, *It's Time to Open Up UK Pension Funds to Venture Capital*, CARTA (Oct. 7, 2021), <https://carta.com/uk/en/blog/open-uk-pension-funds-vc/> [<https://perma.cc/HGF2-9K5V>]; *£75bn Startup Pension Boost for UK Tech Companies*, HARPER JAMES (last updated July 21, 2023), <https://harperjames.co.uk/news/pension-funds-will-be-able-to-invest-in-tech/> [<https://perma.cc/756A-ZBLB>].

³⁰⁴ See Sarath Balachandran & Exequiel Hernandez, *Mi Casa Es Tu Casa: Immigrant Entrepreneurs as Pathways to Foreign Venture Capital Investments*, 42 STRATEGIC MGMT. J. 2047, 2051 (2021) (discussing the local bias in VC investment but noting it might be changing by relying on immigrant networks).

why the U.S.-based VC capital has disproportionately benefited tech startups based in Silicon Valley.³⁰⁵

However, in recent years, American VC firms have invested in European startups at a greater rate than before, tripling their funding of European ventures between 2020 and 2021.³⁰⁶ Several prominent U.S.-based investment firms have also opened European offices, which may indicate the arrival of more American capital in the future. For instance, the storied Sequoia Capital—which had \$85 billion in assets under management in 2022³⁰⁷—opened an office in London in early 2021.³⁰⁸ These developments suggest that some Silicon Valley venture capitalists believe that the European tech ecosystem could be on the cusp of exponential growth.³⁰⁹ They also give hope that even if European sources of capital remain limited for the continent’s startups, American and other foreign capital may be able to offset some of those deficiencies. However, these hopes have dimmed somewhat since 2022 as American VCs have scaled back their investments in Europe post-pandemic as part of a global funding downturn.³¹⁰

Even if U.S.-based VC funding was available for some promising European startups, few question the benefits that would ensue from more integrated and robust European capital markets. Historical differences in securities laws, investor protections, enforcement mechanisms, and market structures have resulted in a fragmented capital market across the EU that “has hampered market attractiveness, depth, and liquidity, which is driving up funding costs.”³¹¹ EU institutions have recognized the problem and have

³⁰⁵ See Douglas J. Cumming & Na Dai, *Local Bias in Venture Capital Investments*, 17 J. EMPIRICAL FIN. 362, 362 (2010).

³⁰⁶ See *How Sturdy Are Europe’s Tech Unicorns?*, ECONOMIST (July 4, 2022), <https://www.economist.com/business/2022/07/04/how-sturdy-are-europes-tech-unicorns> [<https://perma.cc/FM75-V7VS>].

³⁰⁷ See Natalie Sachmechi, *Sequoia Capital Opening Its First New York Office*, CRAIN’S N.Y. BUS. (July 28, 2022, 11:44 AM), <https://www.crainsnewyork.com/real-estate/sequoia-capital-opening-its-first-new-york-office> [<https://perma.cc/74K4-A6U5>].

³⁰⁸ See Sam Shead, *Prestigious Silicon Valley VC Firm Looks to Europe for Start-Up Success Stories*, CNBC (last updated Dec. 1, 2020, 11:05 AM), <https://www.cnbc.com/2020/11/26/sequoia-capital-vc-firm-looks-to-europe-for-start-up-success-stories.html> [<https://perma.cc/2GPG-Q4VZ>].

³⁰⁹ See Sebastian Mallaby, *Venture Capital’s New Race for Europe*, FIN. TIMES (Feb. 4, 2022), <https://www.ft.com/content/6fc9455a-75fc-4952-a4ff-203e5579aefa> [<https://perma.cc/KYD4-RW4Q>].

³¹⁰ Kjartan Rist, *As VC Funding Slows to a Crawl, Where Now for Europe’s Startups?*, FORBES (May 15, 2023, 6:50 AM), <https://www.forbes.com/sites/kjartanrist/2023/05/15/as-vc-funding-slows-to-a-crawl-where-now-for-europes-startups/?sh=72ecc36034b8> [<https://perma.cc/W39P-H6BX>]; Lomas, *supra* note 168.

³¹¹ LIEVE MOSTREY, APOSTOLOS THOMADAKIS, KAREL LANNOO & NIAMH MOLONEY, EUR. CAP. MKTS. INST., TIME TO RE-ENERGIZE THE EU’S CAPITAL MARKETS 3 (2022), https://www.ecmi.eu/sites/default/files/for_publication_time_to_re-energise_the_eus_capital_markets.pdf [<https://perma.cc/4UJN-YAE9>].

undertaken several initiatives aimed at improving the funding available for European startups and scale-ups. One landmark initiative is the Capital Markets Union (CMU), established in 2015.³¹² The CMU's goal is to reduce fragmentation in financial markets by creating a single market for capital in the EU. Deep and integrated European capital markets would help diversify financing sources, facilitate cross-border capital flows, and improve businesses' access to finance. The Commission has stated that the completion of the CMU will strengthen the EU's global competitiveness. Key leadership from the European Central Bank has similarly called for deeply integrated European capital markets. According to these individuals, progress toward the CMU would "support growth and innovation" as capital markets are "better at financing innovation and new sources of growth."³¹³ However, the implementation of the CMU has been slow.³¹⁴ In practice, European capital markets remain far from integrated, hampering European tech companies' ability to access the amount of funding available to their American counterparts.

The EU is not just trailing the United States in terms of private funding. The U.S. government has also played a more productive role than the EU in funding domestic tech innovations. While the private VC market provides the foundation for funding tech companies, governments can also contribute to a country's tech ecosystem by providing critical seed capital or otherwise facilitating technological innovations. The U.S. government has taken on a pivotal role in fostering many of the most foundational innovations that underpin today's digital economy.³¹⁵ The state-backed innovation strategy is often tied to national-security-related tech development, which the U.S. government has always had a strong incentive to support. Some of this investment can be traced back to the Cold War, when the U.S. government invested heavily in its arms race and space race against the Soviets. It also has roots in the United States' efforts to prevail in the economic competition

³¹² See *What Is the Capital Markets Union?*, EUR. COMM'N, https://ec.europa.eu/info/business-economy-euro/growth-and-investment/capital-markets-union/what-capital-markets-union_en#overview [<https://perma.cc/VG6C-YPAS>].

³¹³ See Luis de Guindos, Fabio Panetta & Isabel Schnabel, *Europe Needs a Fully Fledged Capital Markets Union – Now More Than Ever*, ECB BLOG (Sept. 2, 2020), <https://www.ecb.europa.eu/press/blog/date/2020/html/ecb.blog200902~c168038cbc.en.html> [<https://perma.cc/LE68-NQD5>].

³¹⁴ See generally EUR. CT. OF AUDITORS, CAPITAL MARKETS UNION – SLOW START TOWARDS AN AMBITIOUS GOAL (2020), https://www.eca.europa.eu/Lists/ECADocuments/SR20_25/SR_CMU_EN.pdf [<https://perma.cc/XE4M-X5ZT>].

³¹⁵ See generally MARGARET O'MARA, *THE CODE: SILICON VALLEY AND THE REMAKING OF AMERICA* (2019) (exploring the history of Silicon Valley and Big Tech in America); MARIANA MAZZUCATO, *THE ENTREPRENEURIAL STATE: DEBUNKING PUBLIC VS. PRIVATE SECTOR MYTHS* (2013) (arguing that the United States' economic success is a result of publicly funded investments in innovation and technology (rather than a result of the small-state, free market doctrine that often receives credit)).

against Japan in the 1980s. These battles called for massive state investments in technology, leading the United States to disburse large research grants to universities and offer lucrative military contracts to private tech companies. Governmental interests thus often called for public investment in private innovation.

Several path-breaking technologies have their origins in a U.S. government agency called Defense Advanced Research Project Agency (DARPA), which operates under the U.S. Department of Defense.³¹⁶ For example, DARPA financed the ARPANET, which was the predecessor of the internet.³¹⁷ E-mail was similarly developed as a result of DARPA-funded research projects at the Massachusetts Institute of Technology and Stanford University.³¹⁸ Even the Apple iPhone is not a poster child of pure private entrepreneurship but rather a beneficiary of DARPA funding.³¹⁹ The iPhone's personal assistant "Siri," which relies on voice-recognition technology, was developed as a spinoff from a DARPA-backed artificial intelligence project.³²⁰ In contrast, the EU does not have any joint defense fund that would be able to back European innovations at the same scale as DARPA, adding to the existing innovation gap.³²¹ Now that EU member states are bolstering their defense capabilities in the wake of Russia's invasion of Ukraine, there is an opening for a renewed conversation about common European defense capabilities, including joint investment in military technologies. As the U.S. example shows, a European equivalent of the American DARPA could yield substantial benefits for the broader innovation ecosystem in the EU. But comparing the American and European tech ecosystems as they stand right now, the relative dearth of both public and private funding in the EU offers a powerful reason for why today's tech companies emanate from the United States and not from the EU.

³¹⁶ *Defense Advanced Research Projects Agency (DARPA)*, USA.GOV, <https://www.usa.gov/agencies/defense-advanced-research-projects-agency> [<https://perma.cc/LHE3-RXKB>].

³¹⁷ *Paving the Way to the Modern Internet*, DEF. ADVANCED RSCH. PROJECTS AGENCY, <https://www.darpa.mil/about-us/timeline/modern-internet> [<https://perma.cc/TS2H-DNK4>].

³¹⁸ Amy Lynne Bomse, *The Dependence of Cyberspace*, 50 DUKE L.J. 1717, 1721 (2001).

³¹⁹ Mariana Mazzucato, *Taxpayers Helped Apple, but Apple Won't Help Them*, HARV. BUS. REV. (Mar. 8, 2013), <https://hbr.org/2013/03/taxpayers-helped-apple-but-app> [<https://perma.cc/XF87-CKPH>].

³²⁰ *Id.*

³²¹ *Stronger European Defence*, EUR. COMM'N, https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/europe-fit-digital-age/stronger-european-defence_en [<https://perma.cc/EF4V-6BPE>].

*C. Punitive Bankruptcy Laws and the Culture of Risk-Aversion
Discourage Entrepreneurship*

Another potential reason for the absence of European tech giants is Europe’s legal and cultural barriers to risk-taking and entrepreneurship. Punitive bankruptcy laws across the EU have made failure so costly that European entrepreneurs often shy away from the kind of risk-taking required for ambitious technological ventures. In a report studying insolvency regimes across countries, the Organisation for Economic Cooperation and Development (OECD) described how “insolvency regimes that do not unduly penalise entrepreneurial failure can spur firm creation, draw more talented individuals into entrepreneurship and incentivize radical innovation over conservative business strategies.”³²² Several studies suggest that lenient bankruptcy laws—often seen as those that protect the rights of debtors at the expense of creditors—have a positive effect on entrepreneurship and innovation,³²³ even though other studies have identified instances in which debtor-friendly bankruptcy regimes may also have a negative effect on entrepreneurship.³²⁴

The United States and Europe differ in their approach to business failure, which is reflected in their respective bankruptcy laws. Across several dimensions, U.S. personal insolvency regimes are less punitive for the entrepreneur in case of failure, lowering barriers to entrepreneurship and risk-taking.³²⁵ In its report, the OECD found that the personal costs of entrepreneurship, which were primarily measured by the time to discharge—that is, the number of years until bankrupt entrepreneurs are discharged from their debts—and the number of exemptions given to entrepreneurs—that is, the debtors’ assets that are carved out from insolvency—were the lowest in

³²² Müge Adalet McGowan & Dan Andrews, *Design of Insolvency Regimes Across Countries* 10 (OECD Econ. Dep’t Working Papers, Paper No. 1504, 2018), <https://doi.org/10.1787/d44dc56f-en> [<https://perma.cc/MF9P-4BJB>].

³²³ Viral V. Acharya & Krishnamurthy Subramanian, *Bankruptcy Codes and Innovation*, 22 REV. FIN. STUD. 4949, 4950, 4951, 4953 (2009). See generally Seung-Hyun Lee, Yasuhiro Yamakawa, Mike W. Peng & Jay B. Barney, *How Do Bankruptcy Laws Affect Entrepreneurship Development Around the World?*, 26 J. BUS. VENTURING 505 (2011) (amassing a cross-country database of twenty-nine countries, finding that lenient, entrepreneur-friendly bankruptcy laws are significantly correlated with the level of entrepreneurship development as measured by the rate of new-firm entry); Błażej Prusak, Sylwia Morawska, Michał Łukowski & Przemysław Banasik, *The Impact of Bankruptcy Regimes on Entrepreneurship and Innovation. Is There Any Relationship?*, 18 INT’L ENTREPRENEURSHIP & MGMT. 473 (2022) (finding that countries with both an efficient legal system and debtor-friendly bankruptcy laws saw a higher level of risk acceptance among entrepreneurs).

³²⁴ See Geraldo Cerqueiro & Maria Fabiana Penas, *How Does Personal Bankruptcy Law Affect Start-Ups?*, 30 REV. FIN. STUD. 2523, 2538–52 (2016); David M. Primo & Wm Scott Green, *Bankruptcy Law and Entrepreneurship*, 1 ENTREPRENEURSHIP RSCH. J. 1, 3 (2011) (“[T]ighter bankruptcy laws may not have the significant (negative) impact on innovative entrepreneurship feared by many.”).

³²⁵ See McGowan & Andrews, *supra* note 322, at 16 fig.2, 17 tbl.1.

the United States, Canada, and Turkey, and the highest in the Czech Republic, Sweden, Portugal, and several other European countries.³²⁶

Personal insolvency law is relevant in that it impacts individuals' incentives to engage in entrepreneurship in the first place, while also affecting their ability to return to the marketplace after a business failure. Entrepreneurs are typically only able to turn to VC when their innovation is at a more advanced stage. Until then, the entrepreneur often needs to rely on her own funds, personal credit, or investment from family and friends, potentially overextending her personal finances. If fundraising efforts subsequently fail, the entrepreneur may face personal insolvency.³²⁷ John Armour has shown that a harsher personal bankruptcy regime has both an ex ante and ex post adverse effect on entrepreneurship and thus dampens the aggregate demand for VC finance.³²⁸ His cross-national study involving the United States and ten European jurisdictions shows that personal insolvency laws are generally more severe in Europe and that those punitive insolvency regimes discourage individuals from engaging in risky entrepreneurship in the first place.³²⁹ In addition, such laws make it more difficult for failed entrepreneurs to return to the marketplace after insolvency.³³⁰ More recent studies confirm these findings, suggesting that lenient personal bankruptcy laws, indeed, foster entrepreneurship.³³¹

Like personal insolvency law, corporate insolvency law can also influence incentives for entrepreneurship. One way to measure if the corporate bankruptcy regime is creditor- or debtor-friendly is whether it facilitates restructuring of the firm in case of a bankruptcy. On this score, U.S. bankruptcy laws are generally considered more debtor-friendly in that they are designed to facilitate reorganization, which can salvage the failed company and allow the business to operate while it seeks to restructure its debts.³³² These features of the U.S. regime encourage entrepreneurship and

³²⁶ *Id.* at 19 fig.3.

³²⁷ John Armour, *Personal Insolvency Law and the Demand for Venture Capital*, 5 EUR. BUS. ORG. L. REV. 87, 96 (2004).

³²⁸ *Id.* at 95–97.

³²⁹ *Id.* at 103–05.

³³⁰ See John Armour & Douglas J. Cumming, *The Legislative Road to Silicon Valley*, 58 OXFORD ECON. PAPERS 596, 602 (2006).

³³¹ See, e.g., Prusak et al., *supra* note 323, at 479; see also Douglas Cumming, Randall Morck, Zhao Rong & Minjie Zhang, *Personal Bankruptcy Law and Innovation Around the World* (Nat'l Bureau of Econ. Rsch., Working Paper No. 32826, 2024), <https://www.nber.org/papers/w32826> [<https://perma.cc/FNC9-ZGWX>]. However, some studies focusing on individual countries have found no relationship. See, e.g., Ali Sadeghi & Ewald Kibler, *Do Bankruptcy Laws Matter for Entrepreneurship? A Synthetic Control Method Analysis of a Bankruptcy Reform in Finland*, J. BUS. VENTURING INSIGHTS, Oct. 21, 2022, at 1 (analyzing Finland).

³³² See, e.g., 11 U.S.C. § 362.

risk-taking at the outset.³³³ In contrast, the reorganization of a failed business is generally more difficult in Europe, although differences do exist across member states.³³⁴ Without an agreed-upon reorganization plan, the debtor is doomed to liquidation, adding to the risks faced by European tech startups and other entrepreneurs. This explains, in part, why the various European insolvency regimes contribute to lower entrepreneurial activity in the EU as compared to the United States.

There are several reasons why the United States has chosen a more lenient bankruptcy regime, some of which stem from historical developments. The growth of the U.S. railroad industry in the nineteenth century, when American society spread westward across the continent, required immense amounts of credit.³³⁵ If a railroad company went bankrupt, it would have been inefficient for creditors to force the railroad owner to strip up its steel tracks and sell them to repay debts. As such, bankruptcy law was forced to become debtor-friendly to ensure the train lines—the arteries of American industry at the time—remained in place. Even today, U.S. insolvency laws reflect the view that debtor-friendly bankruptcy laws are positively correlated with greater rates of innovation and economic growth.³³⁶ Without the opportunity to receive a “fresh start,” entrepreneurs would not innovate.³³⁷

Europeans do not share the American view on credit, risk-taking, and business failure.³³⁸ However, EU leaders are increasingly aware that their approach toward insolvency can deter risk-taking, and thereby

³³³ Sadeghi & Kibler, *supra* note 331, at 2.

³³⁴ See Francesco Guarascio, *EU Proposes U.S.-Style Rules to Give Failing Firms Second Chance*, REUTERS (Nov. 22, 2016, 10:01 AM), <https://www.reuters.com/article/uk-eu-business-bankruptcy-idUKKBN13H1SW> [<https://perma.cc/8XTP-G6NZ>]; José Garrido, Chanda DeLong, Amira Rasekh & Anjum Rosha, *Restructuring and Insolvency in Europe: Policy Options in the Implementation of the EU Directive 34* (Int’l Monetary Fund, Working Paper No. 21/152, 2021), <https://www.imf.org/en/Publications/WP/Issues/2021/05/27/Restructuring-and-Insolvency-in-Europe-Policy-Options-in-the-Implementation-of-the-EU-50235> [<https://perma.cc/2BT7-QSRY>].

³³⁵ Todd J. Zywicki, *The Past, Present, and Future of Bankruptcy Law in America*, 101 MICH. L. REV. 2016, 2017–20 (2003).

³³⁶ Armour, *supra* note 327, at 10 (noting how debtor-friendly laws have positively contributed to U.S. VC entrepreneurship).

³³⁷ Florian Ederer & Gustavo Manso, *Incentives for Innovation: Bankruptcy, Corporate Governance, and Compensation Systems*, in HANDBOOK ON LAW, INNOVATION AND GROWTH 8 (Robert E. Litan ed., 2011).

³³⁸ Thomas Fuller, *The Workplace: Risk-Takers Are a Rare Breed in EU*, N.Y. TIMES (Jan. 19, 2005), <https://www.nytimes.com/2005/01/19/business/worldbusiness/the-workplace-risktakers-are-a-rare-breed-in-eu.html> [<https://perma.cc/U9FP-9BYN>]; Isabel Grilo & Jesus-Maria Irigoyen, *Entrepreneurship in the EU: To Wish and Not to Be*, 26 SMALL BUS. ECON. 305, 310 (2006).

entrepreneurship.³³⁹ Without a possibility for a fresh start, Europeans cannot afford to take the risk of default and are less likely to start a business in the first place. To alleviate this problem, EU institutions have sought to pursue greater harmonization of national insolvency laws across member states, stressing that insolvency from “entrepreneurship does not necessarily have to turn into a ‘life sentence.’”³⁴⁰ In 2016, the European Commission proposed a Directive aimed at reducing the costs of failure for entrepreneurs, endorsing the “principle of second chance.”³⁴¹ The Directive, which bears similarities to Chapter 11 of the U.S. Bankruptcy Code, was formally adopted in 2019.³⁴² This, and other legislative efforts to date, have nevertheless been slow to harmonize and modernize EU bankruptcy laws across member states, prolonging the problem faced by European tech entrepreneurs.³⁴³

Yet unforgiving bankruptcy laws are only part of the story behind European entrepreneurs’ risk-aversion. Cultural factors also play a role. Business failure carries a greater stigma in Europe, hampering risk-taking and consequently holding back innovation.³⁴⁴ In Europe, “failure is regarded as a personal tragedy,” whereas in Silicon Valley failure is seen as a badge of honor or rite of passage, leading to the mantra of “[f]ail fast, fail often.”³⁴⁵ This more forgiving American approach towards failure includes giving a second chance to individuals whose prior ventures have failed, recognizing that failure and success are often intertwined in the innovative startup ecosystem.³⁴⁶

³³⁹ Katrina Bishop, *EU Needs Risk-Takers to Compete with US: EU’s Kroes*, CNBC (Oct. 20, 2014, 10:16 AM), <https://www.cnbc.com/2014/10/20/eu-needs-risk-takers-to-compete-with-us-eus-kroes.html> [<https://perma.cc/4TGQ-TTN7>].

³⁴⁰ See CARLA STAMEGNA, EUR. PARLIAMENTARY RSCH. SERV., PE 623.548, NEW EU INSOLVENCY RULES GIVE TROUBLED BUSINESSES A CHANCE TO START ANEW (June 2018) [hereinafter STAMEGNA, NEW EU INSOLVENCY RULES], [https://www.europarl.europa.eu/RegData/etudes/BRIE/2018/623548/EPRS_BRI\(2018\)623548_EN.pdf](https://www.europarl.europa.eu/RegData/etudes/BRIE/2018/623548/EPRS_BRI(2018)623548_EN.pdf) [<https://perma.cc/PY4N-JD5U>].

³⁴¹ See Council of the EU Press Release 369/19, Giving Entrepreneurs a Second Chance: New Rules on Business Insolvency Adopted (June 6, 2019), <https://www.consilium.europa.eu/en/press/press-releases/2019/06/06/giving-entrepreneurs-a-second-chance-new-rules-on-business-insolvency-adopted/> [<https://perma.cc/WP2N-YT9H>].

³⁴² See *id.*; STAMEGNA, NEW EU INSOLVENCY RULES, *supra* note 340.

³⁴³ See Emilie Ghio, Gert-Jan Boon, David Ehmke, Jennifer Gant, Line Langkjaer, & Eugenio Vaccari, *Harmonizing Insolvency Law in the EU: New Thoughts on Old Ideas in the Wake of the COVID-19 Pandemic*, 30 INT’L INSOLVENCY REV. 427, 431–33 (2021); Council Regulation 2015/848, 2015 O.J. (L 141); *Commission Proposal for a Directive of the European Parliament and of the Council Harmonising Certain Aspects of Insolvency Law*, COM (2022) 702 final (July 12, 2022).

³⁴⁴ Armour, *supra* note 327, at 100–01.

³⁴⁵ James B. Stewart, *A Fearless Culture Fuels U.S. Tech Giants*, N.Y. TIMES (June 18, 2015), <https://www.nytimes.com/2015/06/19/business/the-american-way-of-tech-and-europes.html> [<https://perma.cc/9LN2-LU5X>] (internal quotation marks omitted); see Baroudy et al., *supra* note 276.

³⁴⁶ Elizabeth Pollman, *Startup Governance*, 168 U. PENN. L. REV. 155, 161 (2019).

Some stories of spectacular business failures in the United States, followed by even more spectacular successes, have contributed to the mindset that a failure is not fatal and can offer lessons and even breed new success. It is remarkable that one of the most successful U.S. tech entrepreneurs, Steve Jobs, was fired from Apple in 1985—the company he founded in 1976.³⁴⁷ In retrospect, Jobs described his firing from Apple as “the best thing that could have ever happened to me,” explaining how “[t]he heaviness of being successful was replaced by the lightness of being a beginner again, less sure about everything. It freed me to enter one of the most creative periods of my life.”³⁴⁸ After being let go by the Apple Board, Jobs went on to create NeXT and became chairman of Pixar before returning to Apple in 1997—this time to save the company from the verge of bankruptcy and to lead Apple to tremendous success.³⁴⁹

In contrast, Europeans do not share the American approach towards failure. They tend to be more risk-averse, dampening the continent’s entrepreneurial spirit and holding back European companies’ innovativeness.³⁵⁰ Instead of celebrating—or even merely accepting—failure, Europeans value stability, which cultivates a mentality that is antithetical to disruptive innovation.³⁵¹ Several studies point to this conclusion. For example, one study by EOS Gallup Europe shows that 49% of Europeans, compared to 37% of Americans, believe a business should not be set up if there is a risk of failure.³⁵² Europeans are also less drawn to entrepreneurship more broadly. An analysis of media coverage of entrepreneurship shows that only 17% of press coverage in Germany portrays entrepreneurship in a positive light, while 39% of media coverage in the United States presents entrepreneurship positively.³⁵³

³⁴⁷ Walter Isaacson, *The Real Leadership Lessons of Steve Jobs*, HARV. BUS. REV. (Apr. 2012), <https://hbr.org/2012/04/the-real-leadership-lessons-of-steve-jobs> [<https://perma.cc/37WU-64FQ>].

³⁴⁸ *Steve Jobs: Apple Founder’s Moving Speech on Why Being Fired from Tech Giant Was the Best Thing to Happen*, INDEPENDENT (Feb. 24, 2016, 3:37 PM), <https://www.independent.co.uk/news/people/steve-jobs-apple-founder-s-moving-speech-on-why-being-fired-from-tech-giant-was-the-best-thing-to-happen-a6893196.html> [<https://perma.cc/ARC5-GRSU>].

³⁴⁹ See Matt Weinberger, *Steve Jobs Would Have Been 65 on Monday: Here’s How the Late Apple CEO Saved the Company from Disaster and Set It on the Path to a \$1 Trillion Valuation*, (AAPL), BUS. INSIDER (Feb. 24, 2020, 6:30 PM), <https://www.businessinsider.com/steve-jobs-apple-photos-2017-1> [<https://perma.cc/3UD7-KU3T>].

³⁵⁰ Stewart, *supra* note 345; see PETER ESTER, ACCELERATORS IN SILICON VALLEY: BUILDING SUCCESSFUL STARTUPS 142 (2017).

³⁵¹ See ESTER, *supra* note 350, at 142; Stewart, *supra* note 345.

³⁵² *Europeans More Reluctant than Americans to Take Risks in Business Creation, Says Report*, EUR. COMM’N (July 12, 2002), <https://cordis.europa.eu/article/id/18673-europeans-more-reluctant-than-americans-to-take-risks-in-business-creation-says-report>.

³⁵³ Baroudy et al., *supra* note 276.

Europeans' risk aversion is similarly evident in their investment patterns. One study measuring attitudes towards financial risk across fifteen countries found that people living in Austria, Germany, and the Netherlands are the most risk-averse, while those living in the United States are the least risk-averse.³⁵⁴ This leads to differential investment patterns, with most European retail investors believing that investments in shares, mutual funds, and bonds are very risky, while comparable American investors perceived significantly less risk in the same investments.³⁵⁵ Similarly, a study sponsored by the European Central Bank found that the ownership and relative magnitude of risky assets in the United States is far higher than in Europe.³⁵⁶ This European culture of risk-aversion may also explain the more limited availability of later-stage VC funding for European startups.³⁵⁷ Europeans are often too risk-averse to start a tech company—but possibly also too risk-averse to fund that tech company.

D. Inability to Harness Global Talent Contributes to Skills Deficit

Finally, the innovation deficit in Europe can be partly attributed to the EU's inability to attract the world's best innovative talent through a proactive migration policy. In comparison, the U.S. technology sector relies heavily on its ability to attract immigrants. A look at the founders of the most successful U.S. tech companies reveals a powerful story of the role of immigration behind these tech companies. Steve Jobs of Apple was the son of a Syrian immigrant; Jeff Bezos of Amazon is a second-generation Cuban immigrant; Eduardo Saverin, the co-founder of Facebook, is Brazilian; Sergey Brin, the co-founder of Google, was born in Russia; and Elon Musk of Tesla was born in South Africa.³⁵⁸ These individuals are not rare exceptions: A 2018 study by the National Foundation for American Policy reveals that 55% of America's billion-dollar companies have an immigrant

³⁵⁴ Maria Ferreira, *Cross-Country Differences in Risk Attitudes Towards Financial Investment*, VOXEU (Sept. 21, 2018), <https://voxeu.org/article/cross-country-differences-risk-attitudes-towards-financial-investment> [https://perma.cc/H8ZF-T45N].

³⁵⁵ *Id.*

³⁵⁶ Karim Bekhtiar, Pirmin Fessler & Peter Lindner, *Risky Assets in Europe and the US: Risk Vulnerability, Risk Aversion and Economic Environment* 16 (Eur. Cent. Bank Working Paper Series, Paper No. 2270, 2019), <https://www.ecb.europa.eu/pub/pdf/sepwps/ecb.wp2270~9c72a27c18.en.pdf> [https://perma.cc/R5EC-6EDQ].

³⁵⁷ See Baroudy et al., *supra* note 276.

³⁵⁸ *Immigrant Founders of the 2017 Fortune 500*, CTR. FOR AM. ENTREPRENEURSHIP (Dec. 2017), <https://startupsusa.org/fortune500/> [https://perma.cc/DX9Q-LKNE].

founder, and, if the children of immigrants are included, the statistic rises to 64%.³⁵⁹

Overall, studies have documented that immigrants are more entrepreneurial than the general U.S. population. A recent study focusing on immigration and entrepreneurship across industries found that immigrants are 80% more likely to found a firm compared to U.S.-born citizens.³⁶⁰ Another study by the Center for American Entrepreneurship revealed that 43% of the 2017 Fortune 500 companies were founded by an immigrant or the child of an immigrant.³⁶¹ Among the top thirty-five firms, that share rises to 57%.³⁶² These are high numbers considering that immigrants made up only 14% of the U.S. population as of December 2022.³⁶³ The impact of foreign talent has also been strong in the technology sector, particularly among companies that trace their roots to Silicon Valley. One study found that 25% of engineering and technology companies established between 1995 and 2005 nationwide had at least one immigrant founder.³⁶⁴ In comparison, during the same period, 52% of startups founded in Silicon Valley had at least one immigrant founder.³⁶⁵ Immigrant talent also disproportionately fuels many tech companies focusing on emerging technologies, including AI. For example, *Forbes*' annual list of the fifty most promising North American AI startups features a large number of AI companies founded by immigrants; the inaugural 2019 list estimated that 66% of those companies have at least one first-generation immigrant founder.³⁶⁶

³⁵⁹ See STUART ANDERSON, NAT'L FOUND. FOR AM. POL'Y, IMMIGRANTS AND BILLION-DOLLAR COMPANIES 1 (Oct. 2018), <https://www.immigrationresearch.org/system/files/2018-billion-dollar-startups.nfap-Policy-Brief.2018.pdf> [<https://perma.cc/J6QJ-5C7P>].

³⁶⁰ Pierre Azoulay, Benjamin F. Jones, Daniel Kim & Javier Miranda, *Immigration and Entrepreneurship in the United States*, 4 AM. ECON. REV. 71, 81 (2022).

³⁶¹ *Immigrant Founders of the 2017 Fortune 500*, *supra* note 358.

³⁶² *Id.*

³⁶³ Miriam Jordan & Robert Gebeloff, *Amid Slowdown, Immigration Is Driving U.S. Population Growth*, N.Y. TIMES (Feb. 5, 2022), <https://www.nytimes.com/2022/02/05/us/immigration-census-population.html> [<https://perma.cc/4YG5-J35V>].

³⁶⁴ VIVEK WADHWA, ANNALEE SAXENIAN, BEN RISSING & GARY GEREFFI, DUKE UNIV. & UNIV. OF CAL. BERKELEY, AMERICA'S NEW IMMIGRANT ENTREPRENEURS 4 (Jan. 4, 2007), https://people.ischool.berkeley.edu/~anno/Papers/Americas_new_immigrant_entrepreneurs_I.pdf [<https://perma.cc/GZD5-XTNH>]. This particular study classified various industries under the umbrella of "engineering and technology": bioscience, computers/communications, defense/aerospace, environmental, innovation/manufacturing-related services, semiconductors, and software.

³⁶⁵ *Id.* at 5.

³⁶⁶ TINA HUANG, ZACHARY ARNOLD & REMCO ZWETSLOOT, MOST OF AMERICA'S "MOST PROMISING" AI STARTUPS HAVE IMMIGRANT FOUNDERS 4 (Oct. 2020), <https://cset.georgetown.edu/publication/most-of-americas-most-promising-ai-startups-have-immigrant-founders/> [<https://perma.cc/GFL4-JHS5>].

These statistics would be difficult to replicate in Europe, given both its current immigration policies and a culture in which diversity and immigration have not been interwoven into the fabric of society. There are, of course, some examples of immigrant founders of prominent European tech startups—including Nikolay Storonsky and Vlad Yatsenko of Revolut³⁶⁷ and Adrian Durham of FNZ, both in the fintech sector.³⁶⁸ At the same time, it is difficult to obtain directly comparable data on the prevalence of immigrant founders in European tech companies. Some studies, however, do contain information on ethnic background among tech entrepreneurs. While ethnicity is an imperfect proxy for immigrant identity, these studies directionally suggest that the EU is faring considerably worse than the United States in leveraging immigrant talent to fuel tech innovation. For example, one study found that fewer than 13% of European unicorns have at least one founder who is from a minority ethnic background.³⁶⁹

Given the absence of extensive data on the immigration status of European tech founders, another way to measure foreign talent and innovation is to focus on inventors and patents, with the caveat that studies typically focus on a few EU member states and not the entire EU. One study suggests that around 11% of inventors aged 25–64 filing patent applications in Sweden were foreign-born.³⁷⁰ In Germany, 11% of total patents from 1994 to 2018 could be traced to inventors with a migrant background.³⁷¹ In comparison, another study found that almost 30% of leading inventors in the United States are foreign-born.³⁷² The United States also boasts a far higher share of “resident inventors” compared to the EU. A study by the World Intellectual Property Organization found that while 7% of resident U.S. inventors from 1991 to 2010 were foreign nationals, less than 2.9% of resident inventors were foreign nationals in each of the twelve European

³⁶⁷ See John Hyatt, *Russian-Born Billionaire Behind Revolut Fintech App Publishes Anti-War Letter*, FORBES (Mar. 4, 2022, 6:26 PM), <https://www.forbes.com/sites/johnhyatt/2022/03/01/revoluts-russian-anti-war-billionaire-founder-promises-to-match-donations-to-red-cross-ukraine/?sh=2b3eae4078e4> [<https://perma.cc/8CXH-PPDQ>]; Vlad Yatsenko, FORBES (Apr. 4, 2022), <https://www.forbes.com/profile/vlad-yatsenko/?sh=70c448235b86> [<https://perma.cc/GDJ9-G9BK>].

³⁶⁸ Rob Stock, *FNZ Was Founded by Kiwi Adrian Durham in 2003. Now It's Worth \$3.35 Billion*, STUFF (Oct. 9, 2018, 3:57 PM), <https://www.stuff.co.nz/business/money/107727511/fnz-was-founded-by-kiwi-adrian-durham-in-2003-now-its-worth-335-billion> [<https://perma.cc/A64V-8NYV>].

³⁶⁹ *State of DEI*, STATE OF EUR. TECH, <https://stateofeuropeantech.com/reading-tracks/state-of-diversity> [<https://perma.cc/E77L-BMBG>].

³⁷⁰ Yannu Zheng & Olof Ejermo, *How Do the Foreign-Born Perform in Inventive Activity? Evidence from Sweden*, 28 J. POPULATION ECON. 659, 670 (2015).

³⁷¹ Oliver Koppel & Enno Kohlisch, *Migration and Innovation*, SOC. EUR. (Jun. 1, 2021), <https://socialeurope.eu/migration-and-innovation> [<https://perma.cc/HZS3-4PF3>].

³⁷² Yeonji No & John P. Walsh, *The Importance of Foreign-Born Talent for U.S. Innovation*, 28 NATURE BIOTECHNOLOGY 289, 290 (2010).

countries assessed.³⁷³ This same study concluded that the United States is successful in attracting highly productive inventors from countries, and that skilled immigrants prefer the United States.³⁷⁴

Immigration contributes to a country's innovation base in various ways. For one, it adds greater diversity to the talent pool, which is widely accepted as a powerful driver of innovation.³⁷⁵ Europe tends to be less diverse than the United States, a limitation which remains true among corporations, including tech startups.³⁷⁶ Immigration also increases the number of skilled workers available for the local economy. These highly skilled workers serve as major catalysts for expanding knowledge, business ventures, and other innovative initiatives.³⁷⁷ European companies draw on a smaller skilled-labor workforce, in part because of the presence of fewer skilled immigrants in Europe. According to a 2019 study, only 25% of immigrants to Europe are highly educated, compared to 36% of immigrants who migrate to other OECD countries.³⁷⁸ These numbers track closely to the difference between the entry of new immigrants into strongly growing occupations in the United States and the EU, including in the STEM field.³⁷⁹

The EU is not only struggling to attract migrants to its tech sector but is also losing European talent to the United States. There are numerous examples of European tech entrepreneurs relocating to the United States to

³⁷³ Stefano Breschi, Francesco Lissoni & Gianluca Tarasconi, *Inventor Data for Research on Migration and Innovation: A Survey and a Pilot 23* tbl.3 (World Intell. Prop. Org., Econ. Rsch. Working Paper No. 17, 2014), https://www.wipo.int/edocs/pubdocs/en/wipo_pub_econstat_wp_17.pdf [<https://perma.cc/25QJ-MV5D>].

³⁷⁴ *Id.* at 26.

³⁷⁵ See, e.g., Sylvia Ann Hewlett, Melinda Marshall & Laura Sherbin, *How Diversity Can Drive Innovation*, HARV. BUS. REV. (Dec. 2013), <https://hbr.org/2013/12/how-diversity-can-drive-innovation> [<https://perma.cc/893G-YQE3>]; Stuart R. Levine, *Diversity Confirmed to Boost Innovation and Financial Results*, FORBES (Apr. 14, 2022, 7:03 AM), <https://www.forbes.com/sites/forbesinsights/2020/01/15/diversity-confirmed-to-boost-innovation-and-financial-results/?sh=24477ec9c4a6> [<http://perma.cc/C3F2-9FK2>]; Beth Stackpole, *Location Matters as Companies Get Their Innovation Mojo Back*, MIT MGMT. SLOAN SCH. (Sept. 14, 2021), <https://mitsloan.mit.edu/ideas-made-to-matter/location-matters-companies-get-their-innovation-mojo-back> [<https://perma.cc/TW46-8LWT>].

³⁷⁶ See ATOMICO & SLUSH, *THE STATE OF EUROPEAN TECH 2021*, at 151–52 (2021).

³⁷⁷ Martin Kahance & Klaus F. Zimmermann, *Migration in an Enlarged EU: A Challenging Solution?* 25 (Eur. Comm'n, Econ. Paper No. 363, 2009) (citing Etienne Wasmer, Peter Fredriksson, Ana Lamo, Julián Messina & Giovanni Peri, *The Macroeconomics of Education*, in EDUCATION AND TRAINING IN EUROPE (Giorgio Brunello, Pietro Garibaldi & Etienne Wasmer eds., 2007)), https://ec.europa.eu/economy_finance/publications/pages/publication14287_en.pdf [<https://perma.cc/98PP-CJZJ>].

³⁷⁸ BUGHIN ET AL., *supra* note 256, at 21.

³⁷⁹ See OECD, *IS MIGRATION GOOD FOR THE ECONOMY?* 2 (May 2014), https://www.gfmd.org/files/gfmd/tmzbd11801/files/documents/gfmd_turkey2014-2015_tm2_contribution_oecd2.pdf [<https://perma.cc/P3H8-RYDC>] (detailing how immigrants comprise just 15% of entries into strongly growing occupations compared to 22% within the United States).

start a business or to grow it there, contributing to a significant brain drain that deepens the U.S.–EU technology gap. Some examples of talent migration away from the EU to the United States include payment platform Stripe (valued at \$95 billion) whose founders John and Patrick Collison grew up in Ireland but left their home country to attend college in the United States before founding Stripe in San Francisco in 2010.³⁸⁰ Daniel Dines and Marius Tîrcă, the founders of business automation platform UiPath (valued at \$7.6 billion), founded their company in Bucharest, Romania in 2005 before moving its headquarters to New York in 2017.³⁸¹ The cofounder and CEO Ali Ghodsi of Databricks—a data analytics and AI platform (valued at \$28 billion)—left Sweden in 2009 to attend UC Berkeley as a visiting scholar.³⁸² Ghodsi’s plan was to stay in the United States for a year, but he ended up cofounding Databricks in San Francisco in 2013 and never returned to Sweden.³⁸³

There are various ways to measure the extent of the brain drain from the EU to the United States beyond these individual anecdotes. One recent study shows that while top-tier AI researchers overwhelmingly work in U.S. institutions—42% of the talent pool in 2022 was U.S.-based while 12% was Europe-based—this U.S.-based talent is only partially homegrown.³⁸⁴ Over half of the top-tier AI researchers in the United States are immigrants or foreign nationals, and includes researchers who earned their undergraduate degree in Europe. This suggests that the world’s top AI researchers, including top European AI researchers, are migrating to the United States and rarely the other way around.

These and other studies confirm that the EU is losing talent to the United States, limiting the pool from which tech companies can hire in the EU while further increasing the talent pool available for U.S. tech

³⁸⁰ Alex Konrad, *The Collison Brothers Built Stripe into a \$95 Billion Unicorn with Eye-Popping Financials. Inside Their Plan to Stay on Top*, FORBES (May 26, 2022, 6:30 AM), <https://www.forbes.com/sites/alexkonrad/2022/05/26/stripe-exclusive-interview-collison-brothers-95-billion-plan-to-stay-on-top/?sh=7909f9d95a1b> [https://perma.cc/89M8-SYES].

³⁸¹ Elena Vrabie, *UiPath Writes European History with the Third Biggest New York Software IPO*, RECURSIVE (Apr. 23, 2021), <https://therecursive.com/uipath-writes-european-history-with-the-third-biggest-new-york-software-ipo/> [https://perma.cc/P9LZ-L958].

³⁸² *Getting Around “Moore’s Wall”: Databricks CEO Ali Ghodsi Strives to Make AI More Accessible to the Fortune 2000*, DATABRICKS (Aug. 22, 2017), <https://www.databricks.com/blog/2017/08/22/getting-around-moores-wall-databricks-ceo-ali-ghodsi-strives-to-make-ai-more-accessible-to-the-fortune-2000.html> [https://perma.cc/J3D3-2VUQ].

³⁸³ *Id.*; Kenrick Cai, *Accidental Billionaires: How Seven Academics Who Didn’t Want to Make a Cent Are Now Worth Billions*, FORBES (May 27, 2021, 6:30 AM), <https://www.forbes.com/sites/kenrickcai/2021/05/26/accidental-billionaires-databricks-ceo-ali-ghodsi-seven-berkeley-academics/?sh=7677be377008> [https://perma.cc/6JJF-8SWX].

³⁸⁴ *See The Global AI Talent Tracker 2.0*, MACROPOLO, <https://macropolo.org/digital-projects/the-global-ai-talent-tracker/> [https://perma.cc/VH9H-6EAL].

companies.³⁸⁵ There are several reasons why researchers and tech entrepreneurs often prefer the United States to the EU. One reason is the attractiveness of U.S. universities that can act as a gateway to the U.S. labor market.³⁸⁶ The United States' world-class universities are a major draw for foreign talent. According to the 2021 Times Higher Education World University Rankings, only six universities in the EU are listed among the top fifty universities in the world, with the highest ranked number thirty-two. In contrast, the same list features twenty-three U.S. universities.³⁸⁷ Strikingly, in the 2016–2017 school year, 54% of master's degrees and 44% of doctorate degrees in STEM fields issued by U.S. universities were earned by foreign students.³⁸⁸ Many foreign students stay in the United States after graduating, subsequently contributing to the U.S. talent base in the labor market. A 2018 report by the National Science Foundation revealed that 70% of foreign-born, noncitizen science and engineering doctoral students in the United States remain in the country after graduating.³⁸⁹ The *Forbes* list of the fifty most promising North American AI startups similarly points to U.S. universities as an important entryway for highly skilled immigrants. Of those highly successful first-generation immigrant AI startup founders, 72% came to the United States to pursue higher education.³⁹⁰

European universities also have weaker links to startup ecosystems compared to those in the United States, making them less attractive destinations for aspiring tech entrepreneurs. Academic entrepreneurship is culturally discouraged in Europe.³⁹¹ It is also less financially rewarding to

³⁸⁵ See generally Jawaria Khan, *European Academic Brain Drain: A Meta-Synthesis*, 56 EUR. J. EDUC. 265 (2021) (discussing the broader brain drain issue in Europe).

³⁸⁶ See INST. OF INT'L EDUC., A QUICK LOOK AT GLOBAL MOBILITY TRENDS (2020), <https://iie.widen.net/s/g2bqxkwqy/project-atlas-infographics-2020> [<https://perma.cc/C54X-9483>] (showing high numbers of study-abroad students in the United States).

³⁸⁷ *World University Rankings 2022*, TIMES HIGHER EDUC., http://www.timeshighereducation.com/world-university-rankings/2022/world-ranking#!/page/0/length/25/sort_by/rank/sort_order/asc/cols/stats [<https://perma.cc/7H6K-GH7V>].

³⁸⁸ BORIS GRANOVSKIY & JILL H. WILSON, CONG. RSCH. SERV., IF11347, FOREIGN STEM STUDENTS IN THE UNITED STATES (Nov. 1, 2019), <https://crsreports.congress.gov/product/pdf/IF/IF11347> [<https://perma.cc/92WV-NDFX>].

³⁸⁹ See MICHAEL G. FINN & LEIGH ANN PENNINGTON, STAY RATES OF FOREIGN DOCTORATE RECIPIENTS FROM U.S. UNIVERSITIES, 2013, at 3, 4 tbl.4 (Jan. 2018), <https://orise.orau.gov/stem/reports/stay-rates-foreign-doctorate-recipient-2013.pdf> [<https://perma.cc/7S45-R4X5>].

³⁹⁰ HUANG ET AL., *supra* note 366, at 4.

³⁹¹ Nathan Benaich, *Universities in the UK and Europe Have a Start-Up Problem*, FIN. TIMES (May 10, 2021), <https://www.ft.com/content/fd038300-f09a-4afc-9f7d-c0e3d6965243> [<https://perma.cc/376L-UR96>]. However, some suggest that this attitude may be changing. See *Tech Investors Can't Get Enough of Europe's Fizzing Startup Scene*, ECONOMIST (Nov. 22, 2021), <https://www.economist.com/business/tech-investors-cant-get-enough-of-europes-fizzing-startup-scene/21806435> [<https://perma.cc/F7DB-3QAG>].

launch a business on a European university campus. European universities frequently demand an equity share of 25% upon the founding of a company; some institutions asking for as much as 50%. In comparison, the technology transfer offices at American institutions such as MIT or Stanford rarely demand more than 10%. The European universities also often engage in highly bureaucratic negotiations over intellectual property rights with founders.³⁹² These reasons, in part, explain the scarcity of tech companies emanating from university campuses in the EU. According to one study, only 4 of the 116 VC-backed European unicorns are university spinouts.³⁹³ This closer collaboration between universities and the private sector in the United States also explains, in part, why the United States has excelled in translating scientific research into commercial applications.³⁹⁴

In addition to the United States' renowned and entrepreneurship-friendly universities, foreign talent prefers the United States because of the robust financial rewards available. A 2017 study by European VC firm Index Ventures found that most of the studied EU countries' stock-option rules lagged behind those in the United States.³⁹⁵ The same study reveals that startup employees in the United States receive up to 20% of stock options available at a firm, which is double the amount of employee stock options available at EU startups.³⁹⁶ There are several reasons for this U.S.–EU compensation gap, one being fragmented tax legislation governing stock options across EU member states. Many EU countries have laws that discourage the awarding and holding of stock options. These include German tax laws that impose a tax liability from the moment that the stock options are granted.³⁹⁷ European tech startups are aware of this limitation. In 2019, over 700 chief executives from European startups, joined by European VC investors, signed an open letter to European policymakers, urging them to overhaul regulations governing employee stock options so that EU tech firms can more effectively attract talent and thereby better compete with Silicon Valley.³⁹⁸ There is also some evidence that European companies are now

³⁹² Benaich, *supra* note 391.

³⁹³ *Id.*

³⁹⁴ See O'MARA, *supra* note 315.

³⁹⁵ See *Rewarding Talent: The Founder's Guide to Stock Options*, INDEX VENTURES: REWARDING TALENT, <https://www.indexventures.com/rewardingtalent/handbook> [<https://perma.cc/T98D-KNU4>].

³⁹⁶ Katia Moskvitch, *Europe's Stock Options Muddle Is Handing America a Big Advantage*, WIRED (Nov. 28, 2018, 1:00 AM), <https://www.wired.co.uk/article/europe-startups-open-letter-governments> [<https://perma.cc/CBK9-NP6G>].

³⁹⁷ Iain Martin, *European Startups Start to Close the Gap with Silicon Valley on Staff Equity*, FORBES (Dec. 2, 2021, 1:46 AM), <https://www.forbes.com/sites/iainmartin/2021/12/02/european-startups-start-to-close-the-gap-with-silicon-valley-on-staff-equity/?sh=1755994c14d3> [<http://perma.cc/43YA-VH38>].

³⁹⁸ See *Not Optional—Europe Must Attract More Talent to Startups*, NOT OPTIONAL, <https://www.notoptional.eu/en/letter> [<https://perma.cc/DLC4-AQWY>].

moving toward adopting more generous stock options policies to attract and retain talent, but it is unclear how much any such shift will contribute toward closing the U.S.–EU innovation gap.³⁹⁹

European leaders are also aware that the EU has attracted less foreign talent than the United States and some other countries, such as Australia and Canada. Those countries have put in place immigration policies that are “consciously tailored to attract and retain international talent.”⁴⁰⁰ At the same time, many EU countries have strict immigration laws that make it difficult to attract talent to Europe.⁴⁰¹ These laws reflect, in part, the political influence of populist movements that maintain hostile attitudes toward migrants in general.⁴⁰² Despite these headwinds, the EU has sought to create a path for highly skilled migrants to enter the European labor market. However, there is no unified visa scheme for non-EU nationals that allows an individual to enter the EU and move freely across the twenty-seven member states. The EU has its rival to the American H-1B visa—known as the Blue Card—designed to bring highly skilled workers to Europe and vest them with the right to move freely in the Schengen area. However, the Blue Card system has suffered from high salary thresholds and fragmentation across member states in interpreting the rules underlying the system.⁴⁰³ In 2021, the EU sought to revamp the Blue Card program to better attract highly skilled workers by adjusting salary thresholds, qualification requirements, and offering more generous family reunification policies.⁴⁰⁴ However, there is much more the EU needs to do to attract and retain the best minds and thereby ensure that its tech sector has access to the human capital that, in the end, is at the foundation for every successful tech company.

* * *

The above discussion has identified variables other than tech regulation that go a long way in explaining why today’s tech giants hail from the United States and not from the EU. The U.S. tech companies have benefited from a large and integrated home market that has allowed them to scale better than

³⁹⁹ Martin, *supra* note 397. According to a recent study, European startups are now handing 15–17% of equity to employees, up from roughly 10% around 2017.

⁴⁰⁰ Khan, *supra* note 385, at 274–75.

⁴⁰¹ *Id.*

⁴⁰² Joanna Plucinska & Saim Saeed, *Europe Struggles to Attract Tech Talent Even as US Closes Doors*, POLITICO (July 14, 2017, 10:00 AM), <https://www.politico.eu/article/why-europe-still-lacks-silicon-valleys-sex-appeal/> [<https://perma.cc/292N-7TYN>].

⁴⁰³ *Id.*

⁴⁰⁴ European Commission Press Release IP/21/2522, EU Blue Card: Commission Welcomes Political Agreement on New Rules for Highly Skilled Migrant Workers (May 17, 2021), https://ec.europa.eu/commission/presscorner/detail/es/ip_21_2522 [<https://perma.cc/7RC2-WLDV>].

their European counterparts. They have had access to a deeper pool of risk capital that has funded their innovations. U.S. firms have also been more willing to take risks and pursue more disruptive innovations without the burdens imposed by punitive bankruptcy laws and a culture that does not tolerate business failure. Finally, U.S. tech firms have unparalleled access to global talent, which has allowed them to draw on a diverse and large pool of human capital that contributes to greater dynamism and innovation.

It also seems that, contrary to tech regulations such as antitrust and data privacy, the four variables outlined above all have a more straightforward relationship to innovation. It is hard to argue that a fragmented single market is anything but an impediment to the scaling of tech companies. In the same way, access to deep pools of capital tends to support innovation, as does entrepreneurship-friendly bankruptcy laws that encourage risk-taking and give tech entrepreneurs a second chance if they fail. Diversity and access to talent from around the world is also a boon to tech companies that depend on human capital.

Of course, some arguments can be advanced to the contrary. For example, some studies have suggested that the more constraining fundraising environment in Europe results in the EU's startups having a lower "burn rate," which may serve them well during periods when funding is less readily available.⁴⁰⁵ Similarly, American bankruptcy laws can, of course, be criticized as encouraging reckless risk-taking, which—coupled with a risk-seeking VC industry—can lead to spectacular failures as shown by the sudden fall from grace of companies such as the healthcare company Theranos or the cryptocurrency exchange FTX Trading.⁴⁰⁶ However, in general, the factors identified above do not cut both ways; rather, they can clearly be seen as hindering innovation in Europe due to their absence and nurturing innovation in the United States thanks to their presence.

These factors are not presented as a comprehensive explanation of the U.S.–EU technology gap, and there are likely other reasons that play a part as well. These include more flexible labor markets in the United States compared to the EU, which helps reallocate and reskill labor in the face of economic downturn or technological disruption.⁴⁰⁷ For example, in the wake of the advances in generative AI, U.S. tech firms moved quickly to reallocate resources toward AI development, abandoning existing projects and laying

⁴⁰⁵ *Are EU Startups Built to Last?*, INT'L FIN. (Apr. 20, 2023), <https://internationalfinance.com/are-eu-startups-built-to-last/> [https://perma.cc/G9V4-XH7T].

⁴⁰⁶ Robert Burgess & Chris Hughes, *FTX Benefited from Venture Capitalists' Suspension of Disbelief*, BLOOMBERG (Dec. 5, 2022, 6:00 AM), <https://www.bloomberg.com/opinion/articles/2022-12-05/venture-capital-was-complicit-in-the-collapse-of-ftx> [https://perma.cc/MT5J-94Y8].

⁴⁰⁷ SMIT ET AL., *supra* note 14, at 97.

off thousands of workers in the process.⁴⁰⁸ Inflexible labor laws in Europe make it more difficult for tech companies to reduce employee costs and pursue necessary restructuring, making them less agile compared to their American counterparts.⁴⁰⁹ The hurdles in terminating employment contracts are likely to make EU startups more cautious in offering their employees generous salaries and stock options, which accentuates existing talent acquisition problems.⁴¹⁰ Talent also moves without restrictions in Silicon Valley as California does not enforce noncompete clauses,⁴¹¹ which facilitates knowledge spillovers across tech firms and sustains the culture of dynamic innovation.⁴¹² In contrast, several EU member states recognize noncompete clauses, which hinder labor mobility in Europe.⁴¹³ Compared to their European counterparts, U.S. startups also typically grow as part of a more established tech ecosystem—such as Silicon Valley—where the clustering of research, talent, and capital leads to knowledge spillovers and other benefits.⁴¹⁴ However, all of these other variables point to the same conclusion: the perceived causal relationship between stringent tech regulation and the weak performance of a tech industry is just that—a perception, not a reality.

Of course, identifying these alternative explanations does not support an argument that *all* European tech regulation would enhance welfare and that digital regulations could never adversely affect innovation and slow down technological progress, as was shown in Part II. But it does challenge any simplistic and categorical argument that lays the blame of the EU's relative struggles in the global tech race on tech regulation alone. It similarly cautions against a blunt narrative that suggests that any tech regulation,

⁴⁰⁸ Yann Coatanlem, *Why Europe Is a Laggard in Tech*, FIN. TIMES (Feb. 26, 2024), <https://www.ft.com/content/d4fda2ec-91cd-4a13-a058-e6718ec38dd1?shareType=nongift> [<https://perma.cc/P6NN-GC4J>].

⁴⁰⁹ Murat Tasci & Mary Zenker, *Labor Market Rigidity, Unemployment, and the Great Recession*, FED. RESV. BANK CLEVELAND (June 29, 2011), <https://www.clevelandfed.org/publications/economic-commentary/2011/ec-201111-labor-market-rigidity-unemployment-and-the-great-recession> [<https://perma.cc/8MJR-RMGU>].

⁴¹⁰ Mark Minevich, *Can Europe Dominate in Innovation Despite US Big Tech Lead?*, FORBES (Dec. 3, 2021, 11:41 AM), <https://www.forbes.com/sites/markminevich/2021/12/03/can-europe-dominate-in-innovation-despite-us-big-tech-lead/?sh=7db749211d75> [<https://perma.cc/4EYB-NMQD>].

⁴¹¹ See CAL. BUS. & PROF. CODE § 16600(a) (West 2024) (“[E]very contract by which anyone is restrained from engaging in a lawful profession, trade, or business of any kind is to that extent void.”).

⁴¹² See generally Gilson, *supra* note 293, at 602–13 (discussing how the nonenforcement of noncompete clauses in California promotes employee mobility and knowledge transfer, contributing to Silicon Valley’s innovative environment).

⁴¹³ Nuna Zekić, *Non-Compete Clauses and Worker Mobility in the EU*, GLOB. WORKPLACE L. & POL’Y (Nov. 30, 2022), <https://global-workplace-law-and-policy.kluwerlawonline.com/2022/11/30/non-compete-clauses-and-worker-mobility-in-the-eu> [<https://perma.cc/DC8E-53EQ>].

⁴¹⁴ William R. Kerr & Frederic Robert-Nicoud, *Tech Clusters*, 34 J. ECON. PERSP. 50, 51 (2020).

enacted by the United States or another jurisdiction, would inevitably compromise technological and economic progress. This realization should clear the way for a more productive discussion of what optimal tech regulation looks like and what kinds of innovation such regulation ought to promote.

CONCLUSION

This Article has sought to dispel the common view that digital regulation is inherently detrimental to innovation and technological progress. It has argued that governments do not face an inevitable trade-off between protecting digital rights and pursuing economic growth. In doing so, this Article has challenged the simplistic argument that American tech companies are successful because they do not face burdensome digital regulations at home, whereas European tech companies are unsuccessful because they are burdened by costly European digital regulations. Instead, the discussion has shown that regulations affect tech companies' incentives to innovate in intricate ways, creating both costs and benefits for these companies.

Any conversation about technological innovations must correctly identify the causes that cultivate or impede those innovations. Digital regulation is not immaterial, but technological innovation is ultimately a product of fundamental forces such as long-term investments in education, carefully designed industrial policy, and incentives for investment and entrepreneurship. That Google was founded in the United States as opposed to Europe owes only so much to the fact that the United States has not extensively regulated data privacy or that it has maintained a liability shield on content moderation. Today's tech giants emerged in the United States predominantly because of factors such as thriving American capital markets and an entrepreneurial culture that is amenable to risk-taking. They have also benefited from access to diverse talent—which sustains the American culture of disruptive innovation—and taken advantage of a large home market, which is not fragmented by different laws, languages, cultures, consumer preferences, or different channels for marketing and distribution.⁴¹⁵ It is therefore one-dimensional to argue that digital regulation (or its absence) determines the fortunes of a country's tech industry. U.S. tech success owes more to a combination of factors that would remain untouched and unharmed even if the government adopted a federal privacy law or set limitations on online hate speech.

⁴¹⁵ SMIT ET AL., *supra* note 14, v.

The primary objective of this Article is to redirect the scholarly inquiry toward a broad set of economic, legal, and cultural attributes that make up the digital economy. But the discussion also provides important lessons for governments, including for the EU and the United States. In dispelling the notion that tech regulation inevitably curtails technological innovation, the Article offers an implicit defense of the EU's ambitious digital regulatory agenda. At the same time, it urges the EU to rethink a variety of other laws and policies that have, to date, thwarted European technological progress. To close the technology gap between the EU and the United States, the EU does not need to repeal the GDPR or refrain from implementing the recently enacted AI regulation. Instead, the EU should channel its policy ambition toward completing the digital single market, creating a genuine capital markets union, harmonizing member states' bankruptcy regimes, and viewing immigration as an opportunity for Europe's technological progress and economic growth. There is no doubt that the EU has much ground to cover in catching up to the United States' technology sectors, but abandoning digital regulation is not what will get the EU there.

Of course, not all digital regulation is beneficial, but neither is all innovation. While many techno-optimists herald the revolutionary nature of digital technologies, others question whether today's leading tech companies are producing truly welfare-enhancing innovations that are leading to meaningful technological progress and economic growth or enhancing the human experience.⁴¹⁶ A growing number of technologists, investors, journalists, and politicians are criticizing tech companies' business models that rely on the exploitation of internet users' data, asking whether those digital services ought to be considered "innovations" that are worth shielding from regulation.⁴¹⁷ In reassessing tech regulation, the EU should therefore

⁴¹⁶ See generally ROBERT J. GORDON, *THE RISE AND FALL OF AMERICAN GROWTH* (2016) (challenging the overly optimistic arguments about the benefits of digitalization to productivity growth and arguing that historical economic growth is not repeatable in light of modern societal and human barriers); Greg Ip, *As Big Tech's Growth and Innovation Slow, Its Market Dominance Endures*, WALL ST. J. (Feb. 8, 2023, 2:27 PM), <https://www.wsj.com/articles/as-big-techs-growth-and-innovation-slow-its-market-dominance-endures-11675871487> [<https://perma.cc/Y6G4-7W3U>]; LEE VINSEL & ANDREW L. RUSSELL, *THE INNOVATION DELUSION: HOW OUR OBSESSION WITH THE NEW HAS DISRUPTED THE WORK THAT MATTERS MOST* (2020) (arguing that modern innovations' negative impact on societal welfare and safety has actually hindered economic growth).

⁴¹⁷ Pascal-Emmanuel Gobry, *Facebook Investor Wants Flying Cars, Not 140 Characters*, BUS. INSIDER (July 30, 2011, 9:38 AM), <https://www.businessinsider.com/founders-fund-the-future-2011-7> [<https://perma.cc/X6V6-UPUP>] ("We wanted flying cars, instead we got 140 characters."); *2020 Letter*, DAN WANG (Jan. 1, 2021), <https://danwang.co/> [<https://perma.cc/TTY2-CJVC>] ("I've never stopped lamenting the marketing trick that California pulled off to situate consumer internet as the highest form of technology, as if Tencent and Facebook are the surest signs that we live a technologically-accelerating civilization."); Josh Hawley, *Opinion, Big Tech's 'Innovations' that Aren't*, WALL ST. J.

think more carefully about innovation, including what kind of innovation its tech regulation ought to advance. This includes the EU asking whether it even wants to nurture a “European Google” if doing so embraces a business model that is based on extracting user data in ways that contradict the EU’s steadfast commitment to protect European citizens from such exploitation.

This Article offers lessons for the United States or any other government considering greater government oversight of its tech industry. If the policymakers and various stakeholders in the United States understand that the country’s technological progress and culture of innovation are not tied to its lax regulatory approach, they are likely to feel more comfortable pursuing regulatory reforms that the American people have increasingly come to support. This Article has argued that any adjustment in the United States toward the European regulatory regime—or the widespread emulation of that regime across the world more generally—would not, as a rule, set the United States back in terms of innovation. Protecting internet users’ data privacy, regulating tech giants’ anticompetitive behavior, calling for more platform accountability over harmful online content, or insisting on ethical AI development would not dismantle the dynamic capital markets in the United States, repeal its entrepreneurship-friendly bankruptcy laws, or discourage global tech talent from migrating to the country.

In addition to seeking to guide the regulatory choices in the EU and the United States, this Article provides a roadmap for other governments that frequently emulate leading economies in designing their regulatory regimes. A closer examination of the American and European legal regimes and tech ecosystems suggests that when it comes to regulating the digital economy, these countries may be well served by adopting some of the rights-protective regulatory policies promoted by the EU. However, when it comes to capital markets, insolvency laws, the entrepreneurial culture of risk-taking, and attracting global innovative talent, these countries should rather turn to the United States. These two regulatory regimes should not be viewed as

(Aug. 28, 2019, 7:01 PM), <https://www.wsj.com/articles/big-techs-innovations-that-arent-11567033288> [<https://perma.cc/2QG6-UHR8>] (pointing out the distance between the American innovations of the past era—such as sending a man to the moon fifty years ago—and today’s innovations, which, according to Hawley, consist of exploitation of people rather than innovating new and better products); Press Release, Elizabeth Warren, Sen., U.S. Senate, Warren Delivers Remarks at Freedom from Facebook and Google: Break Up Big Tech (May 27, 2021), <https://www.warren.senate.gov/newsroom/press-releases/warren-delivers-remarks-at-freedom-from-facebook-and-google-break-up-big-tech> [<https://perma.cc/HM2L-C9QG>] (“Today’s Big Tech companies have grown so giant and so powerful that they threaten our economy, our society, and our very democracy. They have bulldozed competition, used private information for profit, and tilted the playing field against everyone else.”); Ip, *supra* note 416 (describing how U.S. tech companies used to be “big, fast-growing, and ferociously innovative” but how today, “they are mostly just big”).

alternatives, but instead as complementary digital ecosystems whose best features foreign governments can emulate and pursue in tandem. There is no need for governments to set up a false choice between tech regulation and tech innovation when it is possible for them to have both.

