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Believing in Unicorns: How to Value Unicorn Companies and Intellectual Property While Encouraging Continued Innovations and Public Disclosure

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— Note —

BELIEVING IN UNICORNS:
 HOW TO VALUE UNICORN
 COMPANIES AND INTELLECTUAL
 PROPERTY WHILE ENCOURAGING
 CONTINUED INNOVATIONS AND
 PUBLIC DISCLOSURE

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INTRODUCTION

It is notoriously difficult to place a value on “unicorn” companies, which are privately held companies valued at over \$1 billion.¹ The difficulty lies in the fact that these companies do not legally need to disclose much information and are often highly innovative, meaning it is difficult to compare them to existing companies. Venture capitalists use various methods to try to value unicorns, but no one method is precise or universally accepted.² In fact, existing values are so imprecise that some studies suggest the world’s leading unicorns are overvalued by more than 25%.³

One tool venture capitalists use for determining the value of a privately held company is to evaluate a company’s intellectual property (“IP”) assets, particularly the potential value of the company’s patent holdings.⁴ However, this is not currently a major way through which experts value unicorns, in large part because the average unicorn does not maintain a robust patent portfolio.⁵ This Note proposes that venture capitalists and other experts should rely more heavily on the known value of IP assets when determining the value of an emerging unicorn. While patent valuation is a far-from-perfect science, it could add a degree of certainty to the current ambiguity surrounding unicorn values.

However, unicorn companies to date have had notoriously low patent holdings.⁶ Thus, this Note also explores why unicorns typically have meager IP portfolios and considers how to encourage unicorn companies to patent their innovations. This is a worthwhile goal for two main reasons. First, if unicorns patent their allegedly valuable technology, then venture capitalists would be able to value the companies with more certainty, which would benefit lenders, from large financiers to individual investors. Second, these companies tend to be industry innovators, and the public and other inventors would benefit from unicorns disclosing their inventions and working within the framework of our country’s patent system.

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1. See *Unicorn*, CORP. FIN. INST., <https://corporatefinanceinstitute.com/resources/knowledge/finance/unicorn/> [https://perma.cc/L3B3-ALQS] (last visited Sept. 30, 2021).
 2. See, e.g., Aner Ravon, *The Top Unicorns Are Overvalued*, TECHCRUNCH (Feb. 1, 2017, 3:00 PM), <https://techcrunch.com/2017/02/01/the-top-unicorns-are-overvalued/> [https://perma.cc/P85Q-DPHT].
 3. *Id.* (reporting that under the author’s new formula, “the top 20 unicorns are already overvalued by an average of 27 percent”).
 4. See *infra* Part II.
 5. See *infra* Part III.
 6. See *infra* notes 163–66 and accompanying text.

This Note looks at two imperfect sciences—valuing unicorns and valuing patents—and explores how they could positively affect each other. It begins with an overview of unicorns and their valuations, then turns to a similar analysis of current tools of IP and patent valuation. Next, it looks at how unicorn and patent values may inform or affect each other. Therefore, this Note looks at an old problem through a new lens: the uncertainty, inconsistency, slow pace, and policies of the patent system have always had critics, but exploring why unicorn companies—truly creatures of the 21st century—are not participating in the patent system may provide insight into how the U.S. patent system needs to adjust to provide robust protection and encourage public disclosure moving forward. This Note ends with proposing two possible types of change to the U.S. patent system—increasing privacy of patent filings or lowering upfront costs—so that patent laws can continue to serve their primary purposes of disseminating information and encouraging innovation.⁷

I. DEFINING AND VALUING UNICORNS

This part serves as a primer on unicorn companies and looks at the difficulties in valuing a unicorn company. It explores the public policies behind the need for reliable values and provides an overview of existing evaluation techniques.

A. Defining Unicorn Companies

A unicorn company is a privately held startup company valued at over \$1 billion.⁸ Venture capitalist Aileen Lee coined the term “unicorn” in 2013 when there were thirty-nine such companies in the world.⁹ Since then, a number of new unicorns have emerged, and there are over 800 unicorns the world over, as of September 2021.¹⁰ In 2017 there were 102 new unicorns; in 2018 there were 158 new unicorns, and in 2019 there

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7. Craig Allen Nard, *Patent Law’s Purposeful Ambiguity*, 87 TENN. L. REV. 187, 201–02, 209–10 (2019). For more general information on the policies and incentives driving the patent system, see generally *id.*
 8. *See Unicorn*, *supra* note 1.
 9. *See* Farhad Manjoo, *Unicorn: A Fitting Label for Its Time and Place*, N.Y. TIMES: BITS (July 5, 2015, 9:00 AM), <https://bits.blogs.nytimes.com/2015/07/05/unicorns-a-fitting-word-for-its-time-and-place/> [https://perma.cc/3F2M-XS2P] (discussing Aileen Lee, *Welcome to the Unicorn Club: Learning from Billion-Dollar Startups*, TECHCRUNCH (Nov. 2, 2013, 2:00 PM), <https://techcrunch.com/2013/11/02/welcome-to-the-unicorn-club/> [https://perma.cc/PMP8-CHGH]).
 10. *The Complete List of Unicorn Companies*, CB INSIGHTS, <https://www.cbinsights.com/research-unicorn-companies> [https://perma.cc/A87J-RQ4Y] (last visited Sept. 30, 2021).

were 142 new unicorns.¹¹ While there were fewer new unicorns globally in 2019, the United States actually saw an increase in new unicorns within its borders, from 67 new U.S. unicorns in 2018 to 78 in 2019.¹² In July of 2021, there were over 900 unicorns worldwide, collectively valued at \$3 trillion.¹³ Notable current U.S.-based unicorns include Instacart, JUUL Labs, and SpaceX.¹⁴

When a company goes public, it is by definition no longer a unicorn. Therefore, 800 *current* unicorns means many more companies than that have been, at some point, unicorns. The numbers are growing even as former unicorns have initial public offerings (“IPOs”) or other “exits,” such as a merger, acquisition, sale, or liquidation.¹⁵ After most exits, a company becomes public and thus ineligible for the “unicorn” denomination.¹⁶ Notable *former* U.S.-based unicorns include Uber, Facebook,

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11. Gené Teare, *The New Unicorns of 2019*, CRUNCHBASE (Dec. 27, 2019), <https://news.crunchbase.com/news/the-new-unicorns-of-2019/> [<https://perma.cc/WJ7U-YYZ3>].
 12. *Id.*
 13. Gené Teare, *The World’s Unicorns Are Now Valued at \$3T — Up by a Trillion in the Past Year. Who Invested?*, CRUNCHBASE (July 19, 2021), <https://news.crunchbase.com/news/unicorn-startup-investors-2021-tiger-global/> [<https://perma.cc/SCR4-USQ2>]. Just a few months earlier, the same author had reported that in the beginning of 2021 there were 700 global unicorns valued at \$2.3 trillion. Gené Teare, *February Monthly Recap: VCs Invest Near-Record \$35B in Startups, Minting 22 New Unicorns*, CRUNCHBASE (Mar. 9, 2021), <https://news.crunchbase.com/news/february-2021-vc-funding-recap/> [<https://perma.cc/FVR3-8WBE>].
 14. *The Complete List of Unicorn Companies*, *supra* note 10.
 15. *See Exit Strategies*, CORP. FIN. INST., <https://corporatefinanceinstitute.com/resources/knowledge/strategy/exit-strategies-plans/> [<https://perma.cc/EF78-VXHA>] (last visited Sept. 30, 2021) (“Exit strategies are plans executed by business owners, investors, traders, or venture capitalists to liquidate their position in a financial asset upon meeting certain criteria. An exit plan is how an investor plans to get out of an investment.”); Alyson Clabaugh & Rob Peters, *The Unicorn IPO Report*, HARV. L. SCH.: F. ON CORP. GOVERNANCE (Mar. 20, 2019), <https://corpgov.law.harvard.edu/2019/03/20/the-unicorn-ipo-report/> [<https://perma.cc/MV7S-W3Q7>].
 16. Amy Scott, *With So Many Startups Growing into Unicorns, Can They Still Be Magical?*, NPR (Aug 12, 2019, 5:00 AM), <https://www.npr.org/2019/08/12/736643714/with-so-many-startups-growing-into-unicorns-can-they-still-be-magical> [<https://perma.cc/U6BG-73LC>].

Pinterest, Dropbox, Groupon, Airbnb, DoorDash, and Slack.¹⁷ Former unicorns that went public in 2021 include Bumble¹⁸ and Roblox.¹⁹

Unicorn companies have captured the public's attention and have certainly captured investors' money.²⁰ Technically, there is not much difference between a company worth \$999 million and one worth \$1 billion. So, valuing unicorns is not much different from valuing another startup company of high potential value. However, this Note focuses on unicorns since they are few in number, unique, and modern. They are also a new phenomenon and signify growth and innovation to the public.²¹ Because of these factors, the public and venture capitalists are particularly interested in unicorns, which necessitates proper valuations.²² Further, this interest creates high expectations around these companies, which may or may not be warranted based on how they actually perform.²³

B. Unicorn Valuations: The Need for Reliable Numbers

The lack of precise valuations of these massive, privately held companies is problematic for a few reasons. When unicorns are overvalued— as they often are²⁴—several ripple effects follow. First, a falsely high

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17. Profile Comparison, CRUNCHBASE, <https://www.crunchbase.com/compare/organization/facebook/uber,groupon,airbnb> [<https://perma.cc/X7AW-H2SE>] (last visited Oct. 24, 2021); Profile Comparison, CRUNCHBASE, <https://www.crunchbase.com/compare/organization/pinterest/dropbox,doordash,roblox> [<https://perma.cc/37ZG-Q2P2>] (last visited Oct. 24, 2021).
 18. Joanna Glasner, *Here Are the New 2021 Unicorn Startups Founded by Women*, CRUNCHBASE (Aug. 18, 2021), <https://news.crunchbase.com/news/here-are-the-new-2021-unicorn-startups-founded-by-women/> [<https://perma.cc/PS8N-D65D>].
 19. See Brian Deagon, *Roblox Stock Continues to Climb as Market Value Tops \$39 Billion*, INV'S. BUS. DAILY (Mar. 11, 2021, 4:07 PM), <https://www.investors.com/news/technology/roblox-ipo-trading-begins-online-gaming-value-29-billion-rblx/> [<https://perma.cc/645G-WW6E>].
 20. See, e.g., Tom Taulli, *7 Unicorn Startups to Watch into 2021*, INVESTORPLACE (Nov. 4, 2020, 11:52 AM), <https://investorplace.com/2020/11/7-unicorn-startups-to-watch-into-2021-invest-in-startups/> [<https://perma.cc/6RUM-T5WE>] (advising which unicorns “look interesting now” to investors).
 21. *Unicorn*, *supra* note 1.
 22. Samantha Murphy Kelly, *Reality Show ‘Unicorn Hunters’ Is Looking for the Next \$1 Billion Company*, CNN, <https://www.cnn.com/2021/05/12/tech/unicorn-hunters-show/index.html> [<https://perma.cc/F6QY-R7F2>] (May 12, 2021, 7:23 PM).
 23. Stephanie Stamm, *A Decade of ‘Unicorns’ Ends with a Little Less Magic*, WALL ST. J. (Dec. 17, 2019, 8:00 PM), <https://www.wsj.com/articles/a-decade-of-unicorns-ends-with-a-little-less-magic-11576630801> [<https://perma.cc/JUS9-5R82>].
 24. See *supra* text accompanying note 3.

valuation may cost investors, employees, and other players both time and money. Second, a false valuation makes stock options used to attract desirable employees much less valuable than they are held out to be. Third, systematically inflating the value of unicorns could eventually lead to a dotcom-like bubble burst.²⁵

1. Loss of Time and Money

The first problem with a mistakenly high valuation is that it can lead to losses in money and time. While these company valuations first affect investors and venture capitalists, an attractive valuation also draws in “[j]ob hunters, investors, journalists, and others” who use the company’s purported worth to make decisions about their own lives, most notably employment.²⁶ To see how problematic this can be, one need only look at failed unicorns, such as WeWork or Theranos.

WeWork, a company that rents out flexible, work-from-home style work arrangements, was valued at about \$47 billion when its leaders planned to take the company public through an IPO in October of 2019.²⁷ After the company filed mandatory Securities and Exchange Commission documents, investors and employees raised questions about the company’s business model and true value.²⁸ The IPO fell through, and another company purchased a controlling interest in WeWork. The purchase price set the new value of WeWork at only \$8 billion.²⁹ While that value allows WeWork to retain its unicorn status, it means that investors did not get the return they anticipated. It also means that WeWork’s employees chose to work for what they thought was a massive company with huge potential, but which turned out to be a less-formidable company.

Some former unicorns fail even more dramatically, leaving investors and employees with little to show for the time and money they poured into the companies. For instance, Theranos, purportedly a blood-testing company founded by young entrepreneur Elizabeth Holmes, was valued

25. See Keith Wright, *Silicon Valley Tech Bubble Is Larger Than It Was in 2000, and the End Is Coming*, CNBC, <https://www.cnbc.com/2018/05/22/tech-bubble-is-larger-than-in-2000-and-the-end-is-coming.html> [<https://perma.cc/HZ5C-8VTM>] (May 22, 2018, 10:21 AM).

26. Katia Savchuk, *How Much Is Your Slice of That Unicorn Really Worth?*, STAN. BUS.: INSIGHTS BY STAN. BUS. (May 5, 2020), <https://www.gsb.stanford.edu/insights/how-much-your-slice-unicorn-really-worth> [<https://perma.cc/VSY7-6LLK>].

27. Efrat Kasznik, *IP Lessons Learned from WeWork: A Unicorn in Pursuit of Technology*, IPWATCHDOG (Nov. 11, 2019), <https://www.ipwatchdog.com/2019/11/11/ip-lessons-learned-from-wework-a-unicorn-in-pursuit-of-technology/id=115683/> [<https://perma.cc/3FG7-TNK9>].

28. *Id.*

29. *Id.*

at about \$10 billion at its peak.³⁰ After a 2015 newspaper article revealed that the company's technology could not do what its founder said it could,³¹ Theranos began to spiral downward. By 2018, the SEC had sued Holmes, and Theranos folded completely.³² The company owed at least \$60 million to creditors at that time.³³

From these two examples, it is clear that a better valuation system, based on more than just hype and promises from charismatic entrepreneurs, is necessary. In the cases of WeWork, Theranos, and other unicorns that do not live up to their hype,³⁴ employees lose time they put into seemingly promising companies, and employees and investors lose money when the companies fold. Employees may lose their jobs, and they may have difficulty seeking employment at another large, competitive company, since the failed unicorn may not be the resume boost that they had reasonably anticipated.³⁵

2. Company Value May Attract Employees

Relatedly, the second policy reason supporting better unicorn valuations is that employees' salaries and benefits are often tied up in the

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30. John Carreyrou, *Blood-Testing Firm Theranos Gets \$100 Million Lifeline from Fortress*, WALL ST. J. (Dec. 24, 2017, 8:23 AM), <https://www.wsj.com/articles/blood-testing-firm-theranos-gets-100-million-lifeline-from-fortress-1514057523> [https://perma.cc/S7BQ-LWMF].
 31. John Carreyrou, *Hot Startup Theranos Has Struggled with Its Blood-Test Technology*, WALL ST. J. (Oct. 16, 2015, 3:20 PM), <https://www.wsj.com/articles/theranos-has-struggled-with-blood-tests-1444881901?inline-read-more> [https://perma.cc/3V2W-93GR].
 32. Avery Hartmans, Paige Leskin, & Sarah Jackson, *The Rise and Fall of Elizabeth Holmes, the Theranos Founder Who Is Now on Trial for Fraud*, BUS. INSIDER, <https://www.businessinsider.com/theranos-founder-ceo-elizabeth-holmes-life-story-bio-2018-4> [https://perma.cc/PH95-WAJF] (Aug. 31, 2021, 1:55 PM).
 33. Mike Snider, *Blood-Testing Company Theranos Will Dissolve, Pay Creditors*, USA TODAY, <https://www.usatoday.com/story/money/business/2018/09/05/theranos-blood-testing-company-dissolve/1199850002/> [https://perma.cc/7HAD-CCWB] (Sept. 6, 2018, 8:00 PM).
 34. *210 of the Biggest, Costliest Startup Failures of All Time*, CB INSIGHTS: RSCH. BRIEFS (June 21, 2021), <https://www.cbinsights.com/research/biggest-startup-failures> [https://perma.cc/5LRG-WCWS]. For a comprehensive list of failed high-value companies, including a Chinese unicorn called Aiwujiwu that ran an online real estate platform, see *id.*; see also Erin Griffith, *A Unicorn Lost in the Valley, Evernote Blows Up the 'Fail Fast' Gospel*, N.Y. TIMES (June 28, 2019), <https://www.nytimes.com/2019/06/28/business/evernote-what-happened.html> [https://perma.cc/34CF-62TL] (providing an example of another unicorn, Evernote, that failed to live up to its hype).
 35. Seth Feigerman & Sara Ashley O'Brien, *Theranos Employees Struggle to Put Scandal Behind Them*, CNN BUS., <https://www.cnn.com/2019/03/14/tech/theranos-employees/index.html> [https://perma.cc/WT4E-UK73] (Mar. 14, 2019, 9:45 AM).

value of their employer, especially in startup companies.³⁶ The promise of owning a piece of a unicorn can attract otherwise hard-to-get employees with technical know-how and experience.³⁷ Offering stock options as part of a compensation deal is also a way for companies to supplement employees' salaries despite a lack of liquid cash, which is a typical problem for startup companies.³⁸ However, if a unicorn company never goes public, or does not go public while the employee retains those options, or goes public for much less money than the employee was anticipating, the stock options the employee holds are "practically worthless."³⁹

Thus, it is in every employee's best interest to have a reasonable valuation of the company for which they work. Stock options are always a risk to some extent, but if a company is touting a value three or four times what is realistic, then the employee is essentially being misled into accepting an offer.⁴⁰

3. Avoiding a Potential Bubble Burst

Third and finally, overvaluing unicorn companies may lead to an eventual outcome equivalent to the dotcom bubble bursting.⁴¹ It may be that an "irrational exuberance not unlike the late 90s" caused the

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36. Anat Alon-Beck, *Unicorn Stock Options—Golden Goose or Trojan Horse?*, 2019 COLUM. BUS. L. REV. 107, 121, 136 (2019). Employers may choose to compensate employees with stock options for various reasons, not least of which that it can "reduce moral hazard" if employees are "given certain percentages in the company in the form of stock options, as part of their compensation package." *Id.* at 138. In this way, employees have a reason to hope the company does well: if the company does well, their stocks do well. *See, e.g.*, Jeff Rose, *Is It Worth Taking a Salary Cut to Get Stock Options at a Hot Startup?*, BUS. INSIDER (Oct. 23, 2016, 11:00 AM), <https://www.businessinsider.com/salary-cut-vs-stock-options-join-startup-2016-10> [<https://perma.cc/7DSA-9VW4>].
37. Alon-Beck, *supra* note 36, at 126, 136, 187. For a discussion of the "war for talent" in competitive tech startups, see *id.* at 115 & n.15 (citing Scott Keller, *Attracting and Retaining the Right Talent*, MCKINSEY & CO. (Nov. 24, 2017), <https://www.mckinsey.com/business-functions/organization/our-insights/attracting-and-retaining-the-right-talent> [<https://perma.cc/GXG9-6K9Q>]).
38. Rose, *supra* note 36.
39. Alon-Beck, *supra* note 36, at 160.
40. *Id. passim.*
41. Wright, *supra* note 25. For a comparison of the dotcom bubble bursting in the 1990s and investing practices today, see Janet Brown, *The Secret to Investing in 2021? Look to the 2000 Dot-Com Bubble*, FORBES (Feb. 11, 2021, 3:43 PM), <https://www.forbes.com/sites/investor/2021/02/11/the-secret-to-investing-in-2021-look-to-the-2000-dot-com-bubble/?sh=6451567a4c93> [<https://perma.cc/HY8N-8555>].

high valuations of unicorn companies, with the excitement and potential profits leading to overvaluations.⁴² Some analysts argue the high valuations of so many companies constitute problematic “froth in markets.”⁴³ While it is possible that the increase in high-value companies is simply a positive side effect of innovation,⁴⁴ some scholars believe the overvaluation of unicorns means the technology bubble will burst, and the age of successful unicorns will be short-lived.⁴⁵ With realistic valuations, however, a bubble is less likely to form and therefore there is no opportunity for a burst. To avoid bubble formation, forecasting must be more reliable, and investors must not pour money into underserving companies.⁴⁶

Thus, there is a need for proper valuations of unicorn companies. Without realistic numbers, investors, employees, and the markets will suffer. If venture capitalists believe the tech bubble has or will burst, they will be less likely to invest in these large, private companies. Without investments, these innovative companies will not make it to an IPO, and thus their technologies and improvements will not be readily available to the public.

C. Unicorn Valuations: Current Practices

There is no universally accepted method of placing a value on a unicorn company, as there is no universally accepted method of placing a value on any startup company.⁴⁷ This part will first focus on general theories of valuing startup companies, then touch on the specific challenges of valuing unicorn companies, and finally, examine the shortcomings of the current evaluation practices.

1. Evaluating Startup Companies

Venture capitalists, investors, and other lenders use various methodologies for approximating the value of a startup company. In fact,

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42. Abraham J.B. Cable, *Fool's Gold? Equity Compensation & the Mature Startup*, 11 VA. L. & BUS. REV. 613, 635 (2017).
43. James Chen, *Unicorn*, INVESTOPEDIA, <https://www.investopedia.com/terms/u/unicorn.asp> [<https://perma.cc/2F2H-W4NJ>] (Mar. 29, 2021).
44. *Id.*
45. Wright, *supra* note 25; Ruyu Han, *Analysis on Risks and Countermeasures of Unicorn Enterprises Based on “Diamond Model”*, OPEN ACCESS LIBR. J., Sept. 7, 2018, at 1, 2; Jennifer S. Fan, *Regulating Unicorns: Disclosure and the New Private Economy*, 57 B.C. L. REV. 583, 589 (2016).
46. *See* Wright, *supra* note 25 (indicating that overvaluing is a reason for an anticipated bubble burst).
47. *See generally* Damiano Montani, Daniele Gervasio & Andrea Pulcini, *Startup Company Valuation: The State of Art and Future Trends*, 13 INT’L BUS. RSCH. 31 (2020).

“[s]tartup valuation is often said to be more art than science.”⁴⁸ There are many reasons that various theories exist, not least of which being the competing interests of the various parties. For instance, skeptical investors and enthusiastic entrepreneurs often have different opinions of the value of a company, based on what they know or believe to be true, and what their interests are. It is typical for investors to essentially be pitted against the creators of a startup, such that “the valuation of a new venture is often a combative point of negotiation between venture capitalists and entrepreneurs.”⁴⁹ Though this tension can be problematic, it also points to the need for a fair value: parties must be on the same page financially in order to make sound decisions. An agreed-upon valuation is imperative for the growth of the company and the benefit of investors, yet a valuation may be difficult to come by.

There are a few major schools of thought on valuing startups, but since “no single method is useful every time,” most investors use a combination of these methods to reach a valuation on which to base their investments.⁵⁰

One of the basic models for placing a value on startup companies is the Venture Capital Method, which focuses on the expected rate of return on investment at the time of an IPO or other exit.⁵¹ Another is the Berkus Method, which assigns a dollar amount to the progress startup companies have already made toward commercializing their goods or services.⁵² Another is the Scorecard Valuation Method, which considers the average value of startup deals in the surrounding geographical area and in the surrounding industry, based on a full seven “characteristics” of the startup.⁵³ Another is the Risk Factor Summation Method, which looks at twelve “characteristics” of the planned startup and compares them to “fundable” companies.⁵⁴ Investing experts and academics also propose novel, theoretical approaches.⁵⁵

48. *Id.* at 40.

49. Monika Dhochak & Prince Doliya, *Valuation of a Startup: Moving Towards Strategic Approaches*, 27 J. MULTI-CRITERIA DECISION ANALYSIS 39, 39 (2020).

50. Marianne Hudson, *The Art of Valuing a Startup*, FORBES (Mar. 6, 2015, 1:37 PM), <https://www.forbes.com/sites/mariannehudson/2015/03/06/the-art-of-valuing-a-startup/?sh=2171c7341d73> [<https://perma.cc/R26N-SPLN>].

51. *Id.*

52. *Id.*

53. *Id.*

54. *Id.*

55. *See, e.g.*, Dhochak & Doliya, *supra* note 49, at 47 (proposing an “integrative multicriteria fuzzy decision-making approach”). The full extent of these proposed valuation methods is outside the scope of this Note, as they have received less traction in the business and legal worlds and delve into high-level calculations beyond the legal landscape.

Regardless of the valuation theory, the consistent difficulty in evaluating a startup company is the lack of information. As evidenced by the similarities in the traditional valuation approaches, it is clear that what investors really need are additional data points.⁵⁶ But those are not easy to come by. New ventures, unlike established companies, lack history, profits, past returns on investment, and other factors investors would typically consider.⁵⁷ Specific model aside, what investors look at broadly is surrounding information to try to establish a reasonable valuation of a startup company in context. One author likens this to real estate valuations: approximate startup valuations will rise and fall “depending on market forces” as well as the company’s surroundings.⁵⁸ This means that market booms raise valuations and recessions lower valuations, and that competition will generally increase value.⁵⁹ In addition to these market indicators, a few other key factors play into most startup valuations. Elements present in almost all valuations include external factors, like location, industry, and market, as well as internal factors, like makeup, skill, and experience of the startup’s management team.⁶⁰

Again, the biggest difficulty in any startup valuation is the lack of information. Adding heightened investor interest, unique technologies, and massive amounts of funding can make evaluating unicorns to determine their worth even more challenging than evaluating the average startup company.

2. Valuing Unicorn Companies

Given that even small-scale startup companies require a multi-factor analysis to attempt to accurately value them, it is perhaps no surprise that unicorn valuations can present even greater challenges. While evaluating any quickly growing company can be difficult, the “extreme complexity” of most unicorns’ financial structures, combined with their “valuation implications” (meaning all the excitement and next steps that follow the announcement of a massive valuation) complicate the process of putting a value on unicorns.⁶¹ Thus, even

56. Hudson, *supra* note 50.

57. *Id.*

58. *Id.*

59. *Id.*

60. *Id.*; see also *How to Do a Startup Valuation Using 8 Different Methods*, BREX (July 7, 2021), <https://www.brex.com/blog/startup-valuation/> [<https://perma.cc/5Z4N-U2QL>].

61. Will Gornall & Ilya A. Strebulaev, *Squaring Venture Capital Valuations with Reality*, 135 J. FIN. ECON. 120, 121 (2020). The reason unicorns’ financial structures are more complex than public companies that raise capital is that unicorns “typically create a new class of equity every 12–24 months.” *Id.* In this study of 135 unicorns, the average unicorn had

experts and venture capitalists are likely to miss the mark when valuing one of these huge, unique companies.

Furthermore, dealing with larger amounts of possible investments and income can make the valuations even less certain. Anecdotal evidence of this exists in the form of unicorn companies that have failed before ever turning a profit.⁶² It is true that nine of ten startup companies of any size fail, so it is perhaps unsurprising that some unicorns would also fail.⁶³ However, as the sums of capital that unicorns try to raise are so much higher, one would expect added motivation from experts to precisely value unicorn companies. The multiple cash revenues and secrecy of unicorn companies' dealings make valuations more challenging. Lenders big and small would benefit from certainty in estimates of a unicorn's actual and potential worth. While demand is present, a perfect system for valuing unicorn companies is not.

A final factor that makes evaluating unicorns more challenging than evaluating typical startup companies is that unicorns are often pioneers. Startups, in general, are of course innovative. Unicorns, though, often occupy wholly new spaces and involve newly imagined technologies, emerging industries, and unprecedented business models.⁶⁴ When this is the case, a unicorn will have no competitors from which venture capitalists can begin to formulate a value.⁶⁵ When a company is “a first

eight different class shares, which included shares specifically for venture capitalists, or for founders, or for employees, and more—and not all shares truly have the same value. *Id.* at 121–22.

62. *See supra* notes 30–33 and accompanying text (discussing Theranos). In 2014, Theranos CEO Elizabeth Holmes and President Ramesh Balwani told investors that the company was on track to generate more than \$100 million in revenue in 2014 and a staggering \$1 billion by 2015. In reality, Theranos brought in only \$100,000 in profits in 2014. While Theranos is an extreme case involving fraud, it demonstrates that the secrecy and excitement of unicorn companies can lead even money experts to accept or generate valuations that are far off base, without much proof. *See* Chloe Aiello, *Theranos President Exaggerated the Company's Revenue by 1,000 Times to Investors, Says SEC*, CNBC, <https://www.cnbc.com/2018/03/14/theranos-president-exaggerated-revenue-by-1000x-says-sec.html> [https://perma.cc/A7XW-8TPE] (Mar. 14, 2018, 4:34 PM).
63. *See, e.g.*, Neil Patel, *90% of Startups Fail: Here's What You Need to Know About the 10%*, FORBES (Jan. 16, 2015, 10:00 AM), <https://www.forbes.com/sites/neilpatel/2015/01/16/90-of-startups-will-fail-heres-what-you-need-to-know-about-the-10/?sh=1ce58e926679> [https://perma.cc/6R84-2GBH].
64. *See generally supra* Part IA; Juan Campos, *What's a Unicorn Startup Company?*, EUR. INNOVATION ACAD. (Sept. 4, 2019), <https://www.inacademy.eu/blog/whats-a-unicorn-startup-company/> [https://perma.cc/G3DB-Q3G6].
65. Chen, *supra* note 43.

of its kind,” and there is therefore no benchmarking data, valuation is more difficult than ever.⁶⁶

So when it comes to placing a value on unicorns, the process is imperfect, but venture capitalists have developed some strategies. Some authors suggest valuing unicorns by comparing simple numbers like total revenue and gross profits.⁶⁷ While this is certainly useful for investors considering buying stock in a company, it is not likely to be a reliable solution to placing an initial valuation on a unicorn company, since (1) they are often unprofitable,⁶⁸ and (2) they are private companies and need not release such numbers, even if they have them.⁶⁹

Realistically, investors and venture capitalists use methods that amount to “longer-term forecasting,” in which they attempt to guess what kind of profit a unicorn may be capable of generating down the line.⁷⁰ To make as strong a case as possible, investors typically look at *potential* for growth to try to place a value on a unicorn, since there is often a disconnect between the financial track record of a unicorn and its valuation: instead of turning profits, unicorns often lose millions of dollars annually despite their billion-dollar valuations.⁷¹ Thus, a good amount of speculation is necessary.

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66. *Id.* For a discussion on the difficulties of having access to benchmarking for accurate valuations of innovative IP, see *infra* notes 150–55 and accompanying text. This is certainly one of many factors that went into the false valuations of Theranos surviving for as long as they did. See *supra* note 62.
67. Andreas A. Aigner & Walter Schrabmair, *Startup & Unicorn Growth Valuation 2*, (Working Paper No. 2011.05117, 2020) <https://arxiv.org/ftp/arxiv/papers/2011/2011.05117.pdf> [<https://perma.cc/828A-XLRV>].
68. See Kate Clark, *Unicorns Aren't Profitable, and Wall Street Doesn't Care*, TECHCRUNCH (Mar. 26, 2019, 4:25 PM) <https://techcrunch.com/2019/03/26/unicorns-arent-profitable-wall-street-doesnt-care/> [<https://perma.cc/PFD8-2KXP>].
69. See Jennifer S. Fan, *Regulating Unicorns: Disclosure and the New Private Economy*, 57 B.C. L. REV. 583, 586, 606 (2016).
70. Chen, *supra* note 43.
71. See, e.g., James Gallagher, *Demystifying Unicorns: How Startup Valuations Really Work*, AM. INST. CPAs (July 13, 2019), <https://blog.aicpa.org/2019/07/demystifying-unicorns-how-startup-valuations-really-work.html#sthash.zsUyeLPs.izjPURKE.dpbs> [<https://perma.cc/TJ72-YZQG>] (explaining that, despite unicorns’ massive valuations, “many of these companies have yet to produce positive net income, with some reporting growing quarterly losses in the millions of dollars”). This is not unique to unicorn companies. Many startup companies operate at losses early on, but it is perhaps more surprising since unicorns raise massive amounts of capital in these early stages. See, e.g., Tim Mullaney, *Be a Boss Like Bezos and Musk: 5 Reasons Losing Money Can Lead to Billionaire Success*, CNBC, <https://www.cnbc.com/2017/08/01/be-like-bezos-musk-5-reasons-losing-money-can-lead-to-success.html> [<https://perma.cc/5XF4-WC64>] (Aug. 1, 2017, 4:10 PM).

Most of this guesswork comes down to intangible assets such as the unicorn's employees, customer lists, and goodwill in a particular industry.⁷² Importantly, this also includes patents, copyrights, and other forms of intellectual property.⁷³ As discussed below, however, these assets present their own valuation problems.

It is clear that unicorns present unique valuation problems, in an already challenging field of startup company valuations. It is also clear that there is a need for reliable numbers. As the next part shows, the current methods of unicorn valuation are not sufficient.

3. The Shortcomings of Current Unicorn Valuation Methods

Assessing startups of any size is difficult for the above reasons, namely the lack of relevant numbers and company history. The issue of valuing unicorns is complicated by their huge economic potential and the lack of benchmarking data.⁷⁴ Current valuation methods are frequently inadequate. As previously discussed, an improper valuation has multiple possible negative effects, including misleading employees and squandering investor money. Most experts agree that pinpointing a unicorn's value is difficult and recognize the need for a proper valuation. Nonetheless, the current state of the art is at best unreliable and at worst misleading.

Some analysts argue that there is an industrywide problem where venture capitalists so inflate or overstate a unicorn's value as to be misleading. Will Gornall and Ilya A. Strebulaev's recent empirical study of 135 U.S. unicorn companies found that they were, on average, overvalued by 48%.⁷⁵ The driving force that led to different valuations by these authors compared to widely reported values was that Gornall and Strebulaev differentiated between classes of shares, whereas "[r]eported valuations assume that all shares are as valuable as the most recently issued preferred shares."⁷⁶ The authors recognized that later investors often got incentives like a promise of an IPO, various return guarantees, or additional rights, like veto power—all of which make these "preferred" shares more valuable than common stock, even

72. Gallagher, *supra* note 71.

73. *Id.*

74. For a general discussion of the pitfalls of benchmarking and innovative companies, see Peter Bendor-Samuel, *Why Benchmarking is of Limited Use*, FORBES (Aug. 17, 2020, 10:22 AM), <https://www.forbes.com/sites/peterbendorsamuel/2020/08/17/why-benchmarking-is-of-limited-use/?sh=207dc88d34a7> [https://perma.cc/Y4QY-7TUL].

75. Gornall & Strebulaev, *supra* note 61 at 135. For some companies, the authors calculated inflation to be much higher. For instance, they reported that Zoom Video's valuation overstated its fair value by 107%, and mobile point-of-service company Square's reported value was 165% higher than its fair value. *Id.* at 137–38.

76. *Id.* at 120, 122.

though common stock makes up a lot of early investing.⁷⁷ So when venture capitalists calculate the value of a unicorn company assuming all issued shares are as valuable as the last-issued shares, they inflate the value of the company.⁷⁸

As a result, according to these authors and other like-minded critics,⁷⁹ unicorns are publicly overvalued. This has many implications, including detrimental effects to employees and investors who relied on those valuations. A lesser implication is that many companies would lose their coveted unicorn status if their valuations were calculated differently. For instance, Gornall and Strebulaev found that 23andMe, despite its \$1.1 billion valuation, had a fair value of just \$800 million, which is not enough to qualify as a unicorn.⁸⁰ This is not a large policy concern, but it may affect the public's positive perception of the company, and lose the company favorable press coverage and industry clout.

4. The Unicorn Valuation Landscape

Overall, an analysis of unicorns and their valuations lead to few intermediary conclusions. First, public policy supports properly valuing unicorns, so that investors, potential employees, and purchasers can

77. *Id.* at 121, 127. The authors provide a deep analysis of their formulae and methodology, an exact analysis of which is beyond the scope of this Note. For more information on their calculations and how they developed their approach, see *id.* at 124–30.

78. *Id.* at 135, 142. For instance, if 100 early investors buy in at \$5/share, and 100 later investors buy in at \$20/share, a venture capitalist would see there are 200 issued shares, now worth \$20 each. If those were all the issued shares of the company, the venture capitalists would reach a very basic valuation of \$4,000, even though the company only raised \$2,500. While venture capitalists may assume that the value of the company has increased, thus driving the increase in stock price, in reality the later purchasers may have been willing to pay a premium not because the company has become more profitable, but because the later purchasers' stock is bolstered by structural safeguards like stronger voting powers and other forces extrinsic to the perceived profitability of the company's product or service. See *id.* at 127–28.

79. See, e.g., Nuno Fernandes, *Dead Unicorns on the Horizon*, IMD (Jan. 2016), <https://www.imd.org/research-knowledge/articles/dead-unicorns-on-the-horizon/> [<https://perma.cc/JP3V-6E3E>] (“High valuations are only sustainable to those with reasonable business models.”); Bloomberg, *Many of Those Billion-Dollar Startups You Hear So Much About Are Ridiculously Overvalued*, FORTUNE (Aug. 2, 2017, 1:07 PM), <https://fortune.com/2017/08/02/unicorn-startups-overvalued-stock/> [<https://perma.cc/KYA6-MQ47>] (explaining that “[t]he chasm between public and private valuations is a topic of increasing prominence following several disappointing listings,” including Blue Apron's disappointing IPO).

80. Gornall & Strebulaev, *supra* note 61, at 136–37. Other companies that lose their unicorn status under the authors' valuation methodology include Eventbrite, JustFab, and LinkedIn. *Id.*

make choices based on accurate information. Second, while valuing any startup company is challenging, valuing a unicorn company can be especially difficult based on the lack of benchmarking data and the large amounts of money in play. Third, this difficulty has resulted in inflated values of unicorns. This value inflation, as the first intermediary conclusion regarding public policy suggests, is problematic.

The next part of this Note explores the parallel topic of the difficulty in valuing intangible assets, particularly patents. After that, this Note considers the possibility of using these two murky valuation practices—one for unicorns and one for patents—to inform each other to produce clearer and more reliable valuations of these large startups.

II. PATENTS AS TOOLS OF VALUATION

This part switches focus to a disparate category of difficult valuations: intellectual property assets and, more specifically, patents. As a preliminary matter, two items merit clarification.

First, IP assets—such as patents, trademarks, copyrights, and trade secrets—are a type of intangible asset.⁸¹ It is, expectedly, more difficult to put a value on an intangible asset than a tangible one, such as a factory, a product, or machinery.⁸² Unicorn companies, and most other modern companies, deal with all sorts of intangible and IP assets.

Second, while companies tend to deal in all types of IP assets, this part will start broadly but eventually narrow its focus to a single type of IP assets: patents. There are a few reasons for the patent-centric analysis. For one, comprehensive information on patents, unlike copyrights or other IP assets, is readily available.⁸³ This is because a federal agency, the U.S. Patent & Trademark Office, issues patents and maintains a public, searchable database.⁸⁴ Thus, it is relatively easy for interested parties to search patent records, as compared to something like copyrights, which can be issued at the state or federal level, and are even protected to some extent by common law.⁸⁵ Additionally, large,

81. While all IP assets are intangible assets, not all intangible assets are IP. See WESTON ANSON, FUNDAMENTALS OF INTELLECTUAL PROPERTY VALUATION: A PRIMER FOR IDENTIFYING AND DETERMINING VALUE 3 (Weston Anson & Donna Suchy eds., 2005) [hereinafter ANSON, FUNDAMENTALS].

82. *Id.*

83. Unlike patents, some forms of IP can be established through use instead of registration, see *infra* note 85, making it difficult to create and examine an exhaustive list of a company's non-patent IP holdings.

84. See *Search for Patents*, U.S. PAT. & TRADEMARK OFF., <https://www.uspto.gov/patents/search> [<https://perma.cc/X5L2-N5LX>] (last visited Sept. 22, 2021).

85. For instance, many states recognize copyrights established simply through use, not registration. See, e.g., OHIO REV. CODE § 1329.67, <https://codes>.

successful companies of past decades have built up massive patent portfolios, and analysts therefore expect high-value companies to have large patent portfolios.⁸⁶ So, it is a natural starting point for IP and venture-capital researchers to dig into a growing company's patent holdings. This also contributes to the plethora of information regarding patent holdings, whereas other forms of IP have garnered less scholarly attention. Finally, because of patent law's disclosure policies, it may be that IP analysts, competitors, and the public have a natural interest in a highly valued company's patents, more so than their copyrights, which do not contribute to scientific advancement in the same way.⁸⁷

This part looks at the backdrop of intangible asset valuation, including the reasons to attempt to value intangible assets, the difficulties with valuing any type of intangible asset, and the special difficulties that IP assets present, before turning to a brief overview of current practices.

A. The Backdrop of Intangible Asset Valuation

Intellectual property and investing experts have an array of techniques for valuing IP holdings,⁸⁸ which are a form of intangible asset.⁸⁹ In addition to the traditional approaches, more experimental

ohio.gov/ohio-revised-code/section-1329.67 [https://perma.cc/5M7K-D5J9] (last visited Feb. 6, 2022) (recognizing "service marks acquired in good faith at common law"); *Flo & Eddie, Inc. v. Sirius XM Radio, Inc.*, 28 N.Y.3d 583, 594–603 (N.Y. 2016) (describing the parameters of New York's common-law copyright doctrine).

86. See, e.g., Bruce Berman, *Former Unicorns Lag Techcos When It Comes to Patent Grants, Less When It Comes to Market Cap*, IP CLOSEUP (Sept. 24, 2019), <https://ipcloseup.com/2019/09/24/former-unicorns-lag-techcos-when-it-comes-to-patent-grants-less-so-when-it-comes-to-market-cap/> [https://perma.cc/WD5C-RSLN] (comparing the massive patent holdings of companies like Google, Microsoft, and Facebook to the smaller holdings of relative newcomers like Uber and Snapchat).
87. For a discussion of the disclosure policy of patent law, see *infra* text accompanying notes 196–98. In a very simplified sense, where patents protect inventions and scientific advancements, trademarks protect words or designs, and copyrights protect artistic and literary works. See, e.g., *Trademark, Patent, or Copyright*, U.S. PAT. & TRADEMARK OFF., <https://www.uspto.gov/trademarks/basics/trademark-patent-copyright> [https://perma.cc/7TDJ-63X8] (last visited Sept. 27, 2021).
88. The main techniques are the cost approach, the market approach, the income approach, the relief from royalty approach, and the technology factor approach. See WESTON ANSON, *THE INTANGIBLE ASSETS HANDBOOK: MAXIMIZING VALUE FROM INTANGIBLE ASSETS* 64–70 (Weston Anson et al. eds., 2007) [hereinafter ANSON, *THE INTANGIBLE ASSETS HANDBOOK*].
89. See ANSON, *FUNDAMENTALS*, *supra* note 81 (explaining that IP assets are intangible assets, but "an intangible asset is not necessarily a piece of intellectual property").

authors suggest alternative approaches.⁹⁰ There is no exact consensus as to the best way to value a patent; valuing intangible assets is not a perfect “science.” However, for as long as there have been patents, there has been patent licensing, litigation, and deal-making.⁹¹ Thus, some approximate value is eventually reached via compromise, if nothing else: to make a deal, there has to be a mutual understanding of the asset’s value. The licensing, litigation, and deal-making form both the reasons for and basis of intangible asset valuation. That is, at different points in an IP asset’s lifespan, deal-making is the motivation to appraise a piece of IP, and later the basis of that asset’s approximate value.⁹² As with unicorns, a number of factors typically go into a valuation, and many of those factors are context-dependent.⁹³ Also, as

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90. A deep analysis of more fringe models of valuation is not necessary for the thrust of this Note, but many are fascinating, and some are gaining traction. For more information on new-wave valuation methods, see, e.g., Andrew W. Torrance & Jevin D. West, *All Patents Great and Small: A Big Data Network Approach to Valuation*, 20 VA. J. L. & TECH. 466, 469 (2017) (describing “eigenvector centrality and hierarchical clustering methods to evaluate the patent citation network of all U.S. patents from 1976 to 2014”); Maayan Perel, *An Ex Ante Theory of Patent Valuation: Transforming Patent Quality into Patent Value*, 14 J. HIGH TECH L. 148, 148 (2014) (putting forth a two-part method to evaluate patents: “first, determining the quality of a given patent according to the proposed quality indicators, and then, assigning *flexible price limitations that correlate with the patent’s quality*”); J. Gregory Sidak & Jeremy O. Skog, *Citation Weighting, Patent Raking, and Apportionment of Value for Standard-Essential Patents*, 3 CRITERION J. ON INNOVATION 201, 212–13 (2018) (using, in part, citation chaining to check how frequently a patent is cross-referenced within other patent documents to calculate the patent’s value).
91. See Adama Mossoff, *The History of Patent Licensing and Secondary Markets in Patents: An Antidote to False Rhetoric*, GEO. MASON U.: CTR. FOR INTELL. PROP. X INNOVATION POL’Y (Dec. 9, 2013), <https://cip2.gmu.edu/2013/12/09/the-history-of-patent-licensing-and-secondary-markets-in-patents-an-antidote-to-false-rhetoric/> [<https://perma.cc/4JMC-JAFE>] (discussing the history of patent licensing, litigation, and deals in secondary markets starting in the 19th century).
92. See *Valuing Intellectual Property Assets*, WORLD INTELL. PROP. ORG., https://www.wipo.int/sme/en/value_ip_assets/ [<https://perma.cc/69CY-ZUFF>] (last visited Sept. 28, 2021) (describing the value of an IP can be derived from different types of deals that occur in the business market, like licensing to third parties); PAUL FLIGNOR & DAVID OROZCO, INTANGIBLE ASSET & INTELLECTUAL PROPERTY VALUATION: A MULTIDISCIPLINARY PERSPECTIVE 5 & n.3 (2006), https://www.wipo.int/export/sites/www/sme/en/documents/pdf/ip_valuation.pdf [<https://perma.cc/3PLC-9EHJ>] (noting that the value of an IP is partly determined by its “business profile” which means the longer the IP is on the market, the more its value is dependent on deals in the business environment).
93. See *supra* notes 61–80 and accompanying text.

with unicorns, the most innovative patents lack benchmarking data to inform a valuation.⁹⁴

There are parallels between patent-valuation techniques and venture-capital valuations. The reality that valuations of both intangible assets and unicorns depend on unreliable factors and produce inconsistent numbers demonstrates that both processes would benefit from more information. After the discussion of patent and intangible asset valuations in this part, the next part weaves the two valuation problems together, suggesting that patent valuations—though not perfectly reliable—are another factor that could feed into a better unicorn valuation.

This part will serve as a non-exhaustive primer for patent valuation. It begins with a discussion of the need to assess a patent’s monetary worth, then moves on to why valuing patents has been historically challenging. Finally, this part provides a high-level overview of the major theories experts use to evaluate IP assets.

1. Reasons to Put a Dollar Value on Intellectual Property Assets

While experts value unicorn companies mostly to inform potential investors, intellectual property assets are valued for a number of reasons.⁹⁵ A key reason is that patent holdings, unlike unicorn status or company value, are government-issued property rights.⁹⁶ With these rights, companies can initiate or defend litigation.⁹⁷ With an understanding of an IP asset’s approximate value, a company can monetize it, namely through licensing agreements.⁹⁸ Licensing can be hugely profitable,⁹⁹ but depends on an understanding of the value of an intellectual property asset. If a piece of intellectual property is particularly valuable, a company not only needs to find congruent businesses to which it can license the asset, but also needs to be on the defensive, looking to stop potential infringers from pirating its IP for a

94. See *infra* notes 150–55 and accompanying text (discussing the difficulty of innovative IP valuation because of a lack of benchmarking data from comparable technology in the industry).

95. Ted Hagelin, *Valuation of Patent Licenses*, 12 TEX. INTELL. PROP. L.J. 423, 424 (2004) (“The valuation of patents is important in many contexts, including mergers and acquisitions, research and development, corporate taxation, and infringement litigation.”).

96. WESTON ANSON, IP VALUATION FOR THE FUTURE: TRENDS, TECHNIQUES AND CASE STUDIES 77 (2018) [hereinafter ANSON, IP VALUATION].

97. See *id.* at 10–16 (discussing situations in which IP holders need to protect themselves by describing recent influential IP litigation cases).

98. *Id.* For an interesting discussion of the system of royalty rates dating back to when Middle Age popes and British royal ladies lent their names to makeup brands for a fee, see *id.* at 61.

99. Hagelin, *supra* note 95, at 424 (“[N]owhere is the valuation of patents more important, or more challenging, than in licensing transactions.”).

profit.¹⁰⁰ Furthermore, a company that knows the value of its IP has options beyond licensing, namely selling and trading its assets. Sales of IP holdings have recently become “a market in their own right,” as companies divest unnecessary holdings and seek technologies to bolster their portfolios to protect products or services they sell.¹⁰¹ This may mean buying intellectual property assets without the thought of ever affirmatively using the innovation the asset describes.¹⁰²

Other reasons to evaluate patents and other forms of intellectual property are for more general company operation purposes. Intellectual property valuations are relevant “[o]n the business side,” as they come into play in “mergers, acquisitions, spin-offs,” and other corporate events.¹⁰³ Another reason to know the dollar value of a patent or other piece of intellectual property is the possibility of bankruptcy. Though patents, trademarks, copyrights, and other intellectual property holdings are intangible, they carry value: a company that goes under can

100. ANSON, IP VALUATION, *supra* note 96, at 10.

101. Masoud Vakili, *Patent Portfolio Valuations — Importance of IP and Patents*, IP WATCHDOG (July 12, 2017), <https://www.ipwatchdog.com/2017/07/12/patent-portfolio-valuations/id=85409/> [<https://perma.cc/PBN3-HPZ7>].

102. Litigation based on a piece of intellectual property that the plaintiff does not actually use is a hotly contested issue. Many commenters label companies that do this as “trolls,” meaning companies that “assert patents against numerous potential infringers, relying on the high cost of threatened litigation to extract quick settlements.” Paul R. Gugliuzza, *Patent Trolls and Preemption*, 101 VA. L. REV. 1579, 1581 (2015). For examples of some particularly egregious and deceptive troll behavior, including a troll threatening to sue construction companies for using a fan, see *id.* at 1580–82. However, not all litigation of this type is necessarily dishonest or even illegal. For instance, “non-practicing entities” are companies that purchase intellectual property rights without the intent of utilizing them but will license out their assets to practitioners for a fee. See, e.g., Jeanne C. Fromer, *Should the Law Care Why Intellectual Property Rights Have Been Asserted?*, 53 HOUS. L. REV. 549, 571–72 (2015). Such companies are not much more popular than trolls. For example, Fromer points out that a non-practicing company largely fails to contribute to society or scientific advancements, but still “seeks to extract rents for itself, progress be damned.” *Id.* at 572.

Nonetheless, non-practicing entities are working within the framework of the intellectual property system. Perhaps more importantly, a company can easily perform multiple roles, using some of its IP assets to practice, and others for defensive or aggressive litigation. For a detailed discussion of bundling IP assets to increase overall value, see ANSON, FUNDAMENTALS, *supra* note 81, at 18–25.

103. ANSON, FUNDAMENTALS, *supra* note 81, at 77.

sell off its IP holdings to alleviate its debts.¹⁰⁴ While this is not an optimistic reason for evaluating patents, it is a practical one.¹⁰⁵

There are a number of additional motivations for companies and their law firms to know the dollar value of their intellectual property holdings. It is important to know if the assets a company is built around are strong or relatively weak. Having “[a] strong patent portfolio provides confidence and relative freedom to operate (FTO) for mid-range and large companies. For smaller companies and startups eyeing an exit scenario, an FTO analysis based on their patent portfolio is usually a big factor in the total company valuation.”¹⁰⁶ If the company knows other companies covet its assets, it can act accordingly, by setting high licensing prices or adopting an aggressive litigation strategy.¹⁰⁷ On the flipside, if the company knows that its IP holdings are relatively weak or narrow, it can also act accordingly, by saving money by not starting futile litigation, or by strategizing to bolster its portfolio before bringing a product to market.¹⁰⁸

The desire to attempt to put a dollar value on patents and related assets is not new. Regardless, the methods of doing so remain imperfect due to uncertainty and the importance of specific context, which the remaining portions of this part discuss.

2. Difficulties Inherent in Valuations of Any Asset

A few factors that affect any form of asset valuation play a large role in complicating intellectual property asset valuations.

104. Peter S. Menell, *Bankruptcy Treatment of Intellectual Property Assets: An Economic Analysis*, 22 BERKELEY TECH. L.J. 733, 735, 768–69 (2007). For more on the value of intellectual property during bankruptcy, see ANSON, IP VALUATION, *supra* note 96, at 53–54.

105. ANSON, FUNDAMENTALS, *supra* note 81, at 169. As a company faces outright bankruptcy or reorganization to avoid complete bankruptcy, intellectual property assets can be helpful to the company. For instance, “orderly disposal of assets, liquidation of assets, securitization of those Intellectual Property assets for continuing funds, or partial sell-off of the assets” can offset debts. *Id.* This, too, requires an understanding of the value of the asset, in order to maximize profits. *Id.* As with all valuations, though, this is context specific. For instance, when Eastman Kodak Company was attempting to avoid bankruptcy in 2012, it sold off a large portfolio of its digital imaging patents, “but instead of bringing as much as \$2.6 billion as Kodak once predicted, the selling price was far short of that amount, at about \$525 million.” Andrew Martin, *Kodak to Sell Digital Imaging Patents for \$525 Million*, N.Y. TIMES (Dec. 19, 2012), <https://www.nytimes.com/2012/12/20/business/kodak-to-sell-patents-for-525-million.html> [<https://perma.cc/46QU-GAUG>].

106. Vakili, *supra* note 101.

107. See John R. Allison, Mark A. Lemley, Kimberly A. Moore & R. Derek Trunkey, *Valuable Patents*, 92 GEO. L. J. 435, 437, 452–53 (2004).

108. *Id.*

First is the issue of not being able to find relevant equivalent technologies against which to compare.¹⁰⁹ In general, when trying to place a dollar value on something, the logical first place to look is at similar items. This basic first step is called benchmarking, and when there are highly relevant comparable assets, a benchmark can be illuminating or even dispositive.¹¹⁰ While the need for benchmarks is not unique to IP valuations,¹¹¹ it certainly makes patent valuations, for instance, particularly challenging. Patents are, by definition, novel,¹¹² and that can make finding a comparable technology extremely difficult. The lack of relevant benchmarks can make it extraordinarily challenging to value any asset, and this general valuation challenge is particularly relevant in IP.¹¹³ Oftentimes the only available benchmarking is from past deals, the details of which are typically kept secret.

109. See, e.g., Saul Levmore, *Component Valuation in Law and in Marketing*, 4 CRITERION J. ON INNOVATION 381, 381 (2019).

110. See, e.g., *IP Benchmarking*, DENNEMEYER, <https://www.dennemeyer.com/services/benchmarking/> [<https://perma.cc/X7T7-Y9TZ>] (last visited Oct. 3, 2021). This company markets its IP benchmarking services as “a perfect groundwork to define future measures and directions for your IP management.” *Id.* Available benchmarks can streamline the valuation process, especially under the market approach, discussed *infra* Part II(B). When benchmarking data is available, “for example with respect to shares publicly traded on the stock market, the market approach can provide solid valuation outcomes since the monetary figure for which two parties are willing to exchange an object is a proper materialisation of the utility the asset brings about for either side and therefore of its value.” Eva Riemann, *Contextual Brand Valuation: From Fundamental Issues and Analysis of the State of the Art to a Systematic Integrated Approach to Brand and Intellectual Property (E)Valuation*, in 15 MIPLC STUDIES 1, 133 (Christoph Ann et al. eds., 2012).

However, direct comparisons are not often feasible, and having to adjust and contextualize the data that is available to make a reasonable comparison means that benchmarking as a tool “for valuing intellectual assets, especially patents, is at risk of being limited.” Heinz Goddar & Ulrich Moser, *Traditional Valuation Methods: Cost, Market and Income Approach*, in THE ECONOMIC VALUATION OF PATENTS: METHODS AND APPLICATIONS 109, 112 (Frederico Munari & Raffaele Oriani eds., 2011).

111. See, e.g., Levmore, *supra* note 109 (analogizing patent valuation and home valuation).

112. 35 U.S.C. § 102(a) (defining the novelty requirement for a patent to issue).

113. The problem of lack of benchmarking is especially exacerbated by the secrecy of intellectual property licensing deals. See Ian D. McClure, *From a Patent Market for Lemons to a Marketplace for Patents: Benchmarking IP in Its Evolution to Asset Class Status*, 18 CHAP. L. REV. 759, 783 (2015). Licensing is a key source of benchmarking data for IP values, but in the typical IP license, multiple factors such as aggressiveness of the parties and the overall strength of the parties’ whole IP portfolios affect the final price of the deal, even though these factors have little to nothing

If a company can find the details of a past relevant deal, it still must consider the effects of a number of outside contextual factors that may have influenced the deal, making the benchmark less reliable than it may first appear.¹¹⁴

A second issue relevant to many types of asset valuations, including IP valuations, is “conjoint analysis.” The conjoint analysis problem suggests that even though one component *piece* of a whole is valuable, there is nothing to say that the remaining pieces, or even the whole itself, is as valuable as a deal may suggest.¹¹⁵ This is certainly a factor in intellectual property valuations. A deal may be built around an entire “portfolio,” which comprises some combination of valuable, less valuable, and invaluable parts. It may be next to impossible for a third party to benchmark its asset against an individual technology contained within the portfolio.¹¹⁶

Other valuation problems are more specific to the IP field, though certainly not exclusive to it. One is the “component valuation problem,” which is related to the conjoint analysis problem, but involves multiple pieces of a single technology, and is thus highly relevant in IP contexts.¹¹⁷ Component valuation is an issue when a technology only truly functions with many parts working together.¹¹⁸ This makes it nearly impossible to place a value on a single component piece. In the

to do with the value of the individual IP asset. *See id.* at 783–85. Though slightly beyond the scope of this Note, this lack of transparency and reliable benchmarking data makes the patent market a hugely inefficient one, even compared to other large markets. *Id.* This inefficient IP market allows larger, predatory companies to profit, and gives little information to earnest parties attempting to make reasonable deals and calculate benchmarks. *Id.*

114. *See* ANSON, FUNDAMENTALS, *supra* note 81, at 115. For instance, in the context of a software licensing deal, the authors recommend considering the industry, the nature of the IP licensed in the deal, what type of rights were transferred or retained, and other outside information like litigation settlements at play. *Id.* If a deal is spurred by the threat of litigation from a large company, it may not be an appropriate benchmark to determine the exact value of the technology at issue. The authors recommend that companies develop their own index of benchmarking material. *Id.* This method may be effective for larger companies, but is not likely to be practical for startup companies, or even for unicorns with large budgets, if there is not a bevy of comparable companies from which to attempt to obtain information.

115. Levmore, *supra* note 109, at 381.

116. *See, e.g.,* Jessica Silbey, *Patent Variation: Discerning Diversity Among Patent Functions*, 45 LOY. U. CHI. L.J. 441, 457 (2013). One in-house lawyer described his frustration with patents and intellectual property deals since “time and money feel wasted by the deliberate collection of patents in a portfolio.” *Id.*

117. *See* Levmore, *supra* note 109, at 381.

118. *See id.* at 383.

IP field, this most specifically leads to licensing problems.¹¹⁹ For example, imagine a machine made up of parts A, B, and C. The technology behind part A was disclosed in an earlier but lapsed patent, so part A cannot get patent protection; part B is useful but obvious, so it too is ineligible for patent protection.¹²⁰ Part C is patentable, but useless if not used in conjunction with parts A and B. The machine is a commercial success. What is the licensing value of the patent that protects C, the only protectable part, which cannot be used on its own, but is necessary for the machine to function? Is it worth the whole market value of the machine? Or one third of it? More? Less? Separating one component from a whole is a challenge that could arise in any valuation, but is practically unavoidable in IP valuations.¹²¹

Another issue for assessing intellectual property assets is that the valuation is particularly context-specific. The importance of context “mean[s] that different characteristics for the intangible assets and how they are used will result in different values.”¹²² For example, a patent can change in value seemingly overnight, and the context in which a patent is issued can greatly affect the patent’s value.¹²³ An unused IP asset may be of little value, but when it is used in a commercially successful product, that same asset may be valued very highly by competitors who want to license the technology to include a similar feature in their competing products.¹²⁴ Similarly, an intellectual prop-

119. *See id.*

120. 35 U.S.C. § 103 (defining the non-obviousness requirement for patents).

121. *See* ANSON, FUNDAMENTALS, *supra* note 81, at 18, 21. Even in the IP context, this issue is not specific to patents. It can be difficult, for instance, to parse the value of an individual trademark out of the entirety of a brand’s identity, since the brand’s identity includes both protectable IP assets like trademarks and copyrights as well as non-protectable factors like corporate goodwill. Though goodwill is not a protectable property right, it is part and parcel of the brand identity’s value, which can make assigning a dollar value to another component part of the identity quite difficult. For a general discussion of goodwill and attempts to value it, see *id.* at 55–59.

122. ANSON, THE INTANGIBLE ASSETS HANDBOOK, *supra* note 88, at 14.

123. For example, Cryptotoken company Holo saw a 40% increase in the value of its stock the day it received a patent for its network design, which Holo announced it had pursued specifically for defensive litigation purposes. *See* Vivian Medithi, *Holo (HOT) Price Predictions: Where Will HOT Go After Holochain Patent News?*, NASDAQ (Mar. 30, 2021, 4:06 PM), <https://www.nasdaq.com/articles/holo-hot-price-predictions%3A-where-will-hot-go-after-holochain-patent-news-2021-03-30> [<https://perma.cc/X75Z-FHK2>].

124. *See, e.g.*, ANSON, IP VALUATION, *supra* note 96, at 61–63 (explaining how valuable assets demand premium royalty rates in licensing deals, and how these royalty rates form part of the value of the IP asset as a whole). In a licensing deal, it is what the licensee is willing to pay that ultimately

erty asset's value can change drastically as a result of surviving litigation.¹²⁵ The last major way context comes into play for intellectual property assets is in bankruptcy or similar corporate reorganization.¹²⁶ A company that is dissolving and trying to sell off its assets to satisfy its creditors may not seek high prices for valuable patents, since time decreases the value of the assets¹²⁷ and the dissolving company has little bargaining power.¹²⁸

determines the value of the asset, not the licensor's idea of the value of its asset. *Id.* at 63. This again points to the importance of context.

125. John R. Allison, Mark A. Lemley & Joshua Walker, *Extreme Value or Trolls on Top? The Characteristics of the Most-Litigated Patents*, 158 U. PA. L. REV. 1, 3 & n.3 (2009). After an empirical analysis, the authors conclude “the most-litigated patents are the most valuable ones.” *Id.* at 3. Importantly, only about 1.5% of U.S. patents make it to court, and so “litigated patents are almost by definition extreme outliers.” *Id.* at 4. *See also* Allison, *supra* note 107, at 436–37, 454–55 (2004) (reporting that “[s]ome patents are intrinsically more valuable than others,” and are therefore frequently infringed upon or proactively licensed). Nevertheless, even non-litigated patents can increase in value if other companies reference them in their patent applications. A patent application requires the inventor to disclose the “prior art,” meaning other relevant technologies already patented, and this part includes citations to earlier patents. One empirical study found that each new citation a patent receives in a later application boosts its market value by 3%. Bronwyn H. Hall, Adam Jaffe & Manuel Trajtenberg, *Market Value and Patent Citations*, 36 RAND J. ECON. 16, 29, 34 (2005).
126. *See* ANSON, FUNDAMENTALS, *supra* note 81, at 169.
127. *Id.* (“In no other situation is time as critical as it is in a bankruptcy or reorganization—and no other context is as fluid, fraught with potential change, and with such a depressive effect on the value of intellectual property.”).
128. *See, e.g.*, Scott Weingust, *Intellectual Property Valuation*, in ABA ROUNDTABLE: IP IN BANKRUPTCY 5 (Sept. 16, 2015), <https://hbfiles.blob.core.windows.net/files/f51baf8d-0d1d-4f0f-87e1-c068f83a79e4.pdf> [<https://perma.cc/J23H-U6W8>]. In fact, bankruptcy creates such time constraints and imbalanced bargaining positions that bankruptcy-induced deals are sometimes called “fire sales.” *Id.* Forced sales may decrease the value of IP by as much as 90%. *Id.*; *see also* ANSON, FUNDAMENTALS, *supra* note 81, at 169 (claiming that “[o]n average, liquidation value runs less than 15% of going-concern value”). For a larger discussion of IP in the bankruptcy context, see generally Menell, *supra* note 104.

However, further complicating the issue and underscoring the importance of context, in rare instances bankruptcy sales have driven *up* IP asset prices. The most prominent example is Nortel, a telecommunications manufacturer that filed for bankruptcy in 2009 and was not expected to be able to pay its debts. *See* Peg Brickley, *Nortel \$4.5-Billion Patent Sale to Apple, Microsoft, Others Approved*, WALL ST. J. (July 11, 2011, 3:14 PM), <https://www.wsj.com/articles/SB10001424052702303812104576440161959082234> [<https://perma.cc/V323-FDXR>].

The value of an asset changes with changes in technologies, consumer preferences, the economic health of the asset owner, and the interests of the asset owner's competitors.

3. The Role of the Government in IP Values

A final issue that makes IP assets particularly difficult to value is the fact that it is the government that creates, issues, and sets the framework for defending the various forms of IP.¹²⁹ There are many ways this government involvement can affect the value of an IP asset, including defining the scope of IP laws, providing the forum to litigate IP laws and rights, and creating new forms of IP rights.

First, Congress can and has changed the scope and strength of various IP laws.¹³⁰ Copyright terms provide the clearest illustration, as Congress has made multiple changes to the length of protection a copyright offers.¹³¹ The Constitution specifically created copyright law, but it is up to Congress to define those rights.¹³² The first Congress set

A conglomerate of six companies, including Apple and Microsoft, purchased Nortel's IP portfolio for a staggering \$4.5 billion, five times Nortel's initial asking price of \$900 million. *See* Alastair Sharp & Sinead Carew, *Apple/RIM Group Top Google in \$4.5 Billion Nortel Sale*, REUTERS (June 30, 2011, 11:58 PM), <https://www.reuters.com/article/us-nortel/apple-rim-group-top-google-in-4-5-billion-nortel-sale-idUSTRE7600PF20110701> [<https://perma.cc/8V9X-7M9W>]. The key to this sale was who was bidding on the other side: Google. Because Apple and its cohort wanted leverage against Google in future deals, the value of Nortel's portfolio far exceeded initial estimations. *Id.* Context matters hugely.

129. *See generally* ANSON, IP VALUATION, *supra* note 96, at 1–3. While state governments can and do issue trademark and copyright rights, this Note and most of its sources largely contemplate federal law. For a discussion of state copyright laws, see generally Marketa Trimble, *U.S. State Copyright Laws: Challenge and Potential*, 20 STAN. TECH. L. REV. 66 (2017).
130. *See* ANSON, IP VALUATION, *supra* note 96, at 2. Such statutory changes to IP regimes include: (1) the passage of the Uniform Trade Secrets Act, which “provides reinforcement to the value of trade secrets at the federal level;” (2) the creation of the *inter partes* review, which allows third-party challengers to seek review of a new patent, without suing or being sued; and (3) the passage of the Leahy-Smith America Invents Act (“AIA”) in 2013. *Id.* The AIA completely changed the American patent system from a first-to-invent to a first-to-file system, which in some instances will have drastic effects on the ability of an inventor to enforce his or her property rights against potential infringers. *See* CRAIG ALLEN NARD, THE LAW OF PATENTS 27 (5th ed. 2020); Leahy-Smith America Invents Act, Pub. L. No. 112-29, § 3, 125 Stat. 284, 285 (2011) (amending 35 U.S.C. § 100).
131. *See* Maria A. Pallante, *The Next Great Copyright Act*, 36 COLUM. J.L. & ARTS 315, 315–19 (2013) (tracing changes to copyright law under each “Register of Copyrights,” which is the position at the helm U.S. Copyright Office).
132. U.S. CONST. art. I, § 8, cl. 8.

the term of a copyright at just 14 years.¹³³ Congress has changed that term many times since, most recently in 1998, when Congress extended the term to the life of the work's author plus 70 years.¹³⁴ One can imagine the resulting change in asset value that would follow an increase or decrease in the amount of time an owner can exclude others from use unless those users pay royalties.

Second, courts, as the forum where these government-issued rights are enforced, have a huge effect on IP asset values. Courts assign damages and royalty rates in IP infringement cases, and practitioners use these numbers to extrapolate values for both the assets of the parties to the suit and related third-party assets.¹³⁵ Beyond damage calculations, courts play a large role in IP valuation since they interpret the scope of both IP laws and individual documents such as issued patents.¹³⁶ Due to the tradition of *stare decisis*, these adjudications let IP holders know what standards they will be up against if they litigate an IP asset.¹³⁷

Third, the government can create entirely new forms of statutorily protected IP assets or expand the understanding of existing ones.¹³⁸ In terms of a potential new right, there is much speculation about whether Congress will ever comprehensively protect federal “rights of publicity,” which are essentially the right of a famous person to determine who can and cannot use his or her likeness.¹³⁹ These rights are currently protected by a “patchwork” of state statutes, state common law,¹⁴⁰ and federal laws,¹⁴¹ but it is possible that in the future a federal law will

133. *See Copyright Timeline: A History of Copyright in the United States*, ASS'N OF RSCH. LIBRS., <https://www.arl.org/copyright-timeline/> [<https://perma.cc/D37R-4NDS>] (last visited Mar. 27, 2021) (discussing Copyright Act of 1790, ch. 15, § 1, 1 Stat. 124, 124).

134. *Id.* (discussing Sonny Bono Copyright Term Extension Act, Pub. L. No. 105-298, § 102(b), 112 Stat. 2827, 2827 (1998) (amending 17 U.S.C. § 302)).

135. *See* ANSON, IP VALUATION, *supra* note 96, at 2.

136. *See id.*

137. *See id.*

138. *Id.* at 1–3.

139. *See* Kevin L. Vick & Jean-Paul Jassy, *Why a Federal Right of Publicity Statute Is Necessary*, COMM'NS LAW., August 2011, at 14, 17; R. George Wright, *Rights of Publicity as Remarkably Insignificant*, 67 CLEV. ST. L. REV. 173, 175 (2019). A huge industry where this type of suit is particularly prevalent is sports. *See generally* Frank Ryan & Matt Ganas, *Rights of Publicity in Sports-Media*, 67 SYRACUSE L. REV. 421 (2017).

140. ANSON, IP VALUATION, *supra* note 96, at 152.

141. *See, e.g.*, Ryan & Ganas, *supra* note 139, at 422 (explaining these cases typically hinge on two sources of federal law: the First Amendment and the Copyright Act).

protect these rights.¹⁴² In terms of expanding existing rights, trademarks provide an example. Whereas trademarks are traditionally thought of as two-dimensional symbols or slogans used to identify a brand, trademark law has expanded to include holographic symbols, 3-D marks, and even marks that use smells and sounds.¹⁴³

Whether or not an IP asset qualifies for protection obviously plays a part in its value. Without protection, even a really good idea may not be profitable such that its owner truly considers it an IP asset. The government's creation, interpretation, and expansion of IP rights thus plays a unique role in valuing this form of asset.

B. The Major IP Asset Valuation Theories

As the preceding subparts suggest, evaluating IP assets is fraught with challenges, particularly because the values are highly context-specific and government-dependent. With those caveats in hand, this part briefly explores the three leading methods of patent valuation—the cost, market, and income approaches—which often lead to different results.

First is the cost approach, which essentially asks what dollar value it would cost a company to “replace or reproduce the asset.”¹⁴⁴ For instance, if Company A is considering licensing patented technology from Company B, and A is trying to value B's patent, A could calculate how much A would have to spend on research and development, an inventor's salary, lab equipment, etc., to create a competing technology. In theory, if it would cost more for A to make its own technology than to pay B's licensing fee, then the companies will reach a licensing deal. In the real world, of course, the calculation is a bit more complicated. When putting together a cost-based valuation, an analyst must consider a number of factors including material and design costs, time, administrative expenses, legal costs such as registration and fees, and production costs.¹⁴⁵ This approach is most helpful for nascent technologies, when it is feasible to imagine a competitor creating a similar device in a commercially reasonable timespan.¹⁴⁶ The downfall of this approach is that it does not contemplate marketplace income.¹⁴⁷ That is, since the approach considers only cost to replace, it does not consider how much money the existing asset is generating through, for example, licensing deals. The value of an asset can easily exceed the cost to

142. ANSON, IP VALUATION, *supra* note 96, at 149 (describing rights of publicity as “a stepchild in the family of IP,” but also reporting the rapid rise in rights of publicity licenses and endorsements in the last decade).

143. *Id.* at 3.

144. *Id.* at 39.

145. *Id.* at 40.

146. *Id.* at 41.

147. *Id.*

replicate it.¹⁴⁸ Some experts anticipate this approach will fall to the wayside as the IP market “matures,” but at present it is one of the preferred tools for mergers and acquisitions deals.¹⁴⁹

Second is the market approach, which places a value on an asset by comparing it “to publicly available transactions that involve similar assets with similar uses.”¹⁵⁰ This is similar to the approach used to value real estate, in that it looks at the going rate of comparable assets to value another asset.¹⁵¹ The strength of this approach—the reliance on actual data and similar transactions—is also its weakness, since deals involving comparable assets are often hard to come by for intellectual property assets.¹⁵² Further, fluctuations in consumer interest, competition, and markets make seemingly similar deals irrelevant over time.¹⁵³ If, however, reliable benchmarking data is available, this approach is usually considered the most “direct and systematic method for accurately valuing” such assets.¹⁵⁴ This approach is more reliable for large IP portfolios than for individual assets; as the number of assets in a portfolio increases, the likelihood that the bulk of the assets within it are invalid or invaluable decreases.¹⁵⁵

Third is the income approach, which relies on “forecasted financial results based on factors such as historical financials, industry trends, and the competitive environment.”¹⁵⁶ The underlying assumption to this approach is that an IP asset’s value is based on its ability to generate a profit.¹⁵⁷ In this valuation method, “income” encompasses many profit-generating schemes, including licensing, litigation, purchase and

148. See Vakili, *supra* note 101 (explaining the cost-based approach, but noting that “[i]n reality, however, we know the value of a patent, regardless of costs, could be anywhere from zero to millions of dollars”).

149. *Id.*

150. ANSON, IP VALUATION, *supra* note 96, at 41.

151. *Id.*

152. *Id.* at 42.

153. See *id.* (pointing to the importance of context, including geography and technology, and cautioning that “careful analysis is required to ensure that similar IP, in similar environments, used in similar contexts, is included in the set of comparable transactions”).

154. *Id.* at 43.

155. Vakili, *supra* note 101 (explaining that “[t]he risks of invalidity and lack of infringement decrease rapidly with the number of patents in a portfolio”).

156. ANSON, IP VALUATION, *supra* note 96, at 43. Anson divides this approach into a number of sub-categories, but the distinction between them is too granular for this discussion. *Id.* (arguing that “most methods can be grouped into four areas: [d]irect cash flow models, [i]ndirect earnings or savings models, [p]rice premium and excess earning models, and [r]elief-from-royalty analyses.”).

157. *Id.*

resale of another company's assets, and deals that combine sale and licensing of assets.¹⁵⁸ As with all IP asset valuations, context is key. When calculating the likely earnings from an IP asset, it is necessary to consider the technology, related patent claims (including outstanding patents, meaning those submitted but not yet issued), and what other assets work in tandem with the asset to be valued.¹⁵⁹ This approach has gained a lot of traction recently due to its perceived reliability, and has become the most used approach.¹⁶⁰

As with many valuation systems, no valuation method can address every situation. For IP assets, the "level of uncertainty increases" when compared to valuing any other type of asset.¹⁶¹ In reality, an expert must look at the "different valuation methodologies in light of the information available and the specific circumstances" to conclude which methodology is most appropriate when assessing an IP asset.¹⁶² The methodologies are not perfect, but with reliable benchmarks and an understanding of comparable licensing deals, analysts can reach a workable estimation.

III. INTELLECTUAL PROPERTY HOLDINGS OF UNICORNS

For some similar and some distinct reasons, it is challenging to evaluate both unicorn companies and IP assets. One commonality is the lack of information. Perhaps, then, more information about the patent holdings of unicorns could inform the value of those unicorn companies. While exact patent values are difficult to pinpoint, they provide another data point that could lead to more reliable unicorn valuations. Thus, it is necessary to delve into the IP portfolios of unicorn companies.

A. Unicorns' Typical IP Portfolios

Unicorn companies often have few identifiable intangible assets. Part of this is due to the secrecy of any private company, which makes it difficult to identify these nonphysical assets.¹⁶³ In addition, industry analysts have noted that unicorns tend to hold far fewer IP assets than their non-unicorn competitors. This part will first look at unicorns' patent holdings, then explore their other forms of IP.

158. Vakili, *supra* note 101.

159. *Id.*

160. *Id.*

161. ANSON, IP VALUATION, *supra* note 96, at 35.

162. *Id.* at 38.

163. *18 Differences Between Valuing Public and Private Businesses*, MORGAN & WESTFIELD: M&A ENCYCLOPEDIA, <https://morganandwestfield.com/knowledge/18-differences-between-valuing-public-and-private-businesses/> [<https://perma.cc/Z7TG-S6LA>] (last visited Oct. 3, 2021).

1. Patents

Unicorns tend to have extremely limited patent holdings. Many studies of unicorns' IP look specifically at their patent holdings, likely due to the relative ease of obtaining patent filing information, and industry norms.¹⁶⁴ The results of studying unicorns' patent holdings have been surprising to veteran IP analysts.

For instance, a 2015 study found that 30% of unicorns had no patents at all, and 62% of unicorns had ten patents or fewer.¹⁶⁵ That is an incredibly low number of patents. Other admittedly more established billion-dollar companies generate thousands of patents in a single year and hold tens of thousands of active patents.¹⁶⁶ Meanwhile, these unicorn companies—estimated to be worth at least a billion dollars—often do not have a single patent. The authors of the 2015 study identified what they called an “IP Gap”: the value of unicorns is not at all correlated with the distribution of their intellectual property holdings.¹⁶⁷ More patents do not mean more value, and fewer patents do not mean less value.¹⁶⁸ While this is perhaps not an immediate problem, it has potential long-term effects—unicorns without patents may not be able to perform competitively in the market or successfully seek an IPO or other exit.¹⁶⁹ While a unicorn may be able to raise money and bring a new product or service to market, the company may not last long if it is aggressively sued by companies with huge portfolios, like Apple¹⁷⁰ or

164. *See supra* text accompanying notes 86–87.

165. Efrat Kasznik & Lynn Dudinsky, *The Naked Truth: 30% of US Unicorns Have No Patents*, IP WATCHDOG (Nov. 3, 2015), <https://www.ipwatchdog.com/2015/11/03/the-naked-truth-30-of-us-unicorns-have-no-patents/id=62842/> [<https://perma.cc/5SSV-CTVH>].

166. *See, e.g.*, Prableen Bajpai, *Top Patent Holders of 2020*, NASDAQ (Jan. 29, 2021, 10:45 AM), <https://www.nasdaq.com/articles/top-patent-holders-of-2020-2021-01-29> [<https://perma.cc/W4Q8-EEUB>]. In 2020, IBM was again the world leader in new patents—for the 28th year in a row—with over 9,000 new patents. In terms of total active patents, “Samsung is the world leader with 80,577 active patent families.” *Id.*

167. Kasznik & Dudinsky, *supra* note 165.

168. Non-unicorns' values, by contrast, are typically tethered to their IP portfolios' values. *See* DANIEL NITIUTOMO, PHILIP CREUTZMANN & LUCAS VON REUSS, O'SHAUGHNESSY ASSET MANAGEMENT & QUANT IP, *MISPRICED INNOVATION—PATENTS AS A LEADING INDICATOR FOR EARNINGS GROWTH 22* (2019), <https://osam.com/pdfs/research/Mispriced-Innovation%E2%80%93Patents-as-a-Leading-Indicator-for-Earnings-Growth.pdf> [<https://perma.cc/4RW7-WZ49>].

169. *Id.*

170. In 2021, Apple held 20,491 patents. *2021 Global 250: The World's Largest Patent Holders*, IFI CLAIMS, <https://www.ificlaims.com/rankings-global-assets-2021.htm> [<https://perma.cc/M7VW-VVRR>] (last visited Mar. 20, 2022).

Microsoft.¹⁷¹ In fact, the authors found these data particularly surprising since successful unicorns are often companies that “disrupt” established markets.¹⁷² Attempts to break into an established market typically require extensive IP protection, especially in the form of patents, since established competitors will have had time to build out their portfolios to attack newcomers.¹⁷³

Another study showed that the two unicorns that held the most patents were based in China.¹⁷⁴ Within the U.S., this may skew perceptions of how many patents each unicorn holds, since many studies of unicorns take a worldwide average number of patents, to account for the fact that many startups operate—and patent—globally.¹⁷⁵ In other words, U.S. unicorns may hold even fewer patents than some estimates suggest.

Since unicorns are privately held startups, they are often compared to other privately held startups of smaller stature. In addition to this vertical comparison, it is also worth comparing unicorns horizontally—that is, to older, more established companies operating in similar fields and with valuations on par with unicorns. Current and even former

171. In 2021, Microsoft held 32,173 patents. *Id.*

172. Kasnik & Dudinsky, *supra* note 165. For example, think of Uber disrupting the taxi market and Airbnb disrupting the hotel market. These are not companies that created wholly new products, but rather companies that came up with a clever way to stand out in an existing industry. *Id.*

173. For a discussion on just how vulnerable unicorns are to patent trolls, see Jeff Toler & Robert Paladino, *Troll Patent Litigation Against Unicorns: The Numbers*, MONDAQ (Apr. 7, 2016), <https://www.mondaq.com/unitedstates/patent/476576/troll-patent-litigation-against-unicorns-the-numbers> [<https://perma.cc/E5WR-H7AX>]. Almost a third of unicorns “have been sued for patent infringement by patent trolls and operating companies (e.g., a competitor).” In about 100 lawsuits in which unicorns have been named defendants, over seventy were started by trolls. *Id.* (citing Marcus Malek, *Billion Dollar Start-Ups: Do Unicorns Like Patents?*, IAM MEDIA (Sept. 2, 2015), <https://www.iam-media.com/patents/billion-dollar-start-ups-do-unicorns-patents> [<https://perma.cc/XN3T-YKCA>]).

174. Malek, *supra* note 173.

175. See generally Gene Quinn, *PCT Basics: Obtaining Patent Rights Around the World*, IP WATCHDOG (Feb. 3, 2021), <https://www.ipwatchdog.com/2021/02/03/pct-basics-obtaining-patent-rights-around-world-2/id=129617/> [<https://perma.cc/5NMZ-6F56>]; see also Bridget Diakun, *Why Start-Ups Should Get Serious About Patent Protection*, IAM MEDIA (Aug. 30, 2019) <https://www.iam-media.com/patents/why-start-ups-should-get-serious-about-patent-protection> [<https://perma.cc/L4QT-A8SC>]. Patents in multiple jurisdictions are often necessary to protect a technology globally. *Id.* (explaining that, “[f]or better or for worse, there is no such thing as a worldwide patent,” and advising how to obtain patent protection throughout the world). Thus, the number of patents a unicorn holds may not be indicative of the amount of innovation, since multiple patents may reference a single invention.

unicorns tend to hold fewer patents than their non-unicorn company counterparts.¹⁷⁶ In fact, past and present unicorns “have to date generated barely a fraction of the patents of more established [technology companies].”¹⁷⁷ In large part, differences in the age of the companies can explain these differences in patent production and ownership.¹⁷⁸ However, age does not explain away the whole phenomenon, as even more veteran unicorns hold significantly fewer patents than their public counterparts. For example, in 2019, former-unicorn Facebook had 3,475 patents.¹⁷⁹ Compare that number with Twitter—one of Facebook’s competitor social-media companies—which owned just 114 patents¹⁸⁰ even though it launched only two years after Facebook.¹⁸¹

Compared to both startup companies of smaller sizes, and similarly large public companies with more experience, unicorns come up short in terms of their patent holdings.

2. Other IP Assets

Unicorns do not typically have extensive patent holdings, but there are other forms of IP relevant to innovative, fast-growing companies. There is some indication that unicorn companies focus their IP strategies on these faster forms of protection, namely trademarks and trade secrets.¹⁸² This may be because of their industry focuses (e-commerce and content¹⁸³), or it may be because the patent system is slow or in some other way unappealing to unicorn companies across the board.

There is unfortunately little analytical information that explains unicorns’ preference for trademarks and trade secrets.¹⁸⁴ In an article focusing on startup companies generally, two scholars found that trade

176. Berman, *supra* note 86.

177. *Id.*

178. *Id.*

179. *Id.*

180. *Id.*

181. *Company Info*, META, <https://about.facebook.com/company-info/> [<https://perma.cc/SWK2-ZJCQ>] (last visited Mar. 20, 2022) (noting that Facebook launched in 2004); *Twitter Turns Six*, TWITTER (Mar. 21, 2012), https://blog.twitter.com/official/en_us/a/2012/twitter-turns-six.html [<https://perma.cc/A5T2-RRBT>] (noting that Twitter launched in 2006).

182. *See, e.g.*, Berman, *supra* note 86 (reporting that unicorns “appear to opt for investing in other IP rights, most notably trademarks and trade secrets”).

183. *Id.*; *see also* Kasznik & Dudinsky, *supra* note 165 (reporting that about 65% of unicorns in the world are in the software industry).

184. *See, e.g.*, David S. Levine & Ted Sichelman, *Why Do Startups Use Trade Secrets?*, 94 NOTRE DAME L. REV. 751, 751, 753–54 (2018) (lamenting, “[e]mpirical studies of the use of trade secrecy are scant, and those focusing on startups, nonexistent”).

secrets are important for early entry and that “trade secrets may serve as important strategic assets” because they can “function[] much in the same manner as patents in terms of licensing”¹⁸⁵ Trade secrecy has other benefits for young companies. It protects startups from losing their workforce to competitors,¹⁸⁶ while also promoting collaboration within the company.¹⁸⁷

Some authors use case-study data to explore trade secrecy and other forms of nonpatent IP holdings in unicorns. WeWork serves as such an example, and somewhat of a cautionary tale. One author’s review revealed that WeWork, a unicorn that billed itself as a tech-focused real-estate company, had “immaterial patent holdings, little investment in [research and development,] and virtually no technology acquisitions.”¹⁸⁸ Despite holding itself out as a tech company, WeWork’s only meaningful IP to back up its multi-billion-dollar valuation was its brand, protected by various trademarks.¹⁸⁹ The company’s valuation fell from \$47 billion to \$8 billion practically overnight when WeWork had to call off its IPO after investors questioned its business model and realized that it was not actually a technology company.¹⁹⁰ The fall of WeWork suggests the possible downside of a lack of patents and other hard IP: trademarks and brand identity may stir up interest in a company, but perhaps provide less actual value under strict scrutiny.

B. Why Patents May Be Unappealing to Unicorns

These modern companies of high worth and innovation are not filing patent applications at the same rate as traditional, publicly held companies. Understanding why unicorns do not buy into the existing patent system could help scholars understand the downsides of the existing U.S. patent system and contemplate reforms. There are a number of potential reasons for unicorns’ reluctance to engage in the patent system, including financial setbacks, image concerns, and fear of litigation.

First, unicorns may value their image over the actual product, service, or technology they sell. Thus, a unicorn may instead pursue trademarks, trade secrets, and copyrights to enforce its brand and influence how the public views the company.¹⁹¹ Further, it may follow

185. *Id.* at 751, 755.

186. *Id.* at 767 (explaining that some states will not enforce non-compete agreements, but in those “states, trade secrets and patents can be used to mimic the preclusive effects of noncompetition agreements by creating significant penalties for bringing proprietary information to a new employer”).

187. *Id.* at 785.

188. Kasznik, *supra* note 27.

189. *Id.*

190. *Id.*

191. *See* Berman, *supra* note 86.

that if a unicorn's ultimate goal is an exit, then the company's management may determine it is more important to drum up interest among potential buyers than to protect the long-term viability of any one product or service.

Second, many large startups, not just unicorns, operate at a loss in their early days.¹⁹² As a result, spending money on patent preparation and prosecution may not be worthwhile. While the actual filing fees for a U.S. patent are under \$2,000,¹⁹³ the associated costs—research, development, searching prior art, drafting the patent, and attorney time and fees—can drive the actual cost of obtaining a patent into the tens of thousands of dollars.¹⁹⁴ Even though unicorns are valued very highly, they may not generate any profits, and thus outgoing money has to be allocated carefully. Plus, banks typically will not lend against a company's patent holdings, so investing in patent creation will not give unicorns a quick return on investment or easy access to capital.¹⁹⁵ Thus, drafting and filing patents may not be a worthwhile or viable item in a unicorn's budget.

Third, patents publicly signal value and require inventors to explain their inventions to the public, which may be unappealing to growing unicorn companies. While public disclosure is a positive policy that underlies the U.S. patent system,¹⁹⁶ disclosure has its downsides for the inventor—the idea is no longer private, and it is protected only for a finite period of time.¹⁹⁷ In this respect, patent laws are a balance between an inventor's interest in monetizing his or her discovery through exclusive property rights, and society's interest in obtaining and building on that invention.¹⁹⁸ Unicorn companies, though, may opt

192. *See, e.g.*, Mullaney, *supra* note 71 (reporting that since the rise of internet-based companies, startups like Facebook, Netflix, and Amazon have operated at losses early on).

193. *Current Fee Schedule*, U.S. PAT. & TRADEMARK OFF. (effective Jan. 1, 2021), <https://www.uspto.gov/learning-and-resources/fees-and-payment/uspto-fee-schedule> [<https://perma.cc/WF4H-V5P9>]. For example, obtaining a basic utility patent would incur the following fees: \$320 basic filing fee; \$700 search fee; \$800 examination fee. *Id.*

194. *See* NARD, *supra* note 130, at 49 (explaining the additional costs and providing a survey of median patent-acquisition costs across the country).

195. *See, e.g.*, Xuan-Thao Nguyen & Erik Hille, *Disruptive Lending for Innovations: Signaling Model and Banks Selection of Startups*, 21 U. PA. J. BUS. L. 200, 203 (2018) (“[B]anks have a strong aversion to patents and are wary of lending to innovative startups due to default risks.”).

196. *See* NARD, *supra* note 130, at 2–3 (identifying disclosure of inventions to the public as one of the policy goals of patent law).

197. *See id.* at 31 (“Inventors often need to disclose their ideas to facilitate licensing negotiations, secure venture capital, arrange for manufacturing capabilities, or otherwise efficiently utilize their invention.”).

198. *Id.*

out of the patent system because the balance is not worthwhile. The costs of disclosure may be too high for an economically unstable, young, innovative company. There is evidence of patent rights working against unicorns at early stages. Namely, unicorns that seek patent protection are sued aggressively by existing competitors. In 2015, eight of the ten most highly valued unicorns that had patents in their name “were sued for patent infringement within six months of a major funding round.”¹⁹⁹ Unicorns may avoid patents because, coupled with an influx of cash, patents may turn unicorns into low-hanging fruit for established competitor companies. Unicorns are less likely to have organized legal departments, their patents will be largely untested, and their futures are hard to guess—so a lawsuit could be detrimental to a unicorn’s early growth. Simply put, unicorns may avoid patents to avoid suit.²⁰⁰ Thus, the patent system’s disclosure requirement may be what deters unicorns from obtaining patents.

In reality, it may be that all three of these factors play varying roles in each unicorn company’s decision to not pursue patent protection. It is clear, though, that unicorn companies are not seeking patents at the same rate as traditional, large, high-value companies.

IV. HOW TO ENCOURAGE UNICORNS TO PATENT THEIR INNOVATIONS (AND WHY THAT MATTERS)

While unicorn companies represent a relatively small portion of U.S. corporations, and an even smaller percentage of corporate patent-holders, their interactions with intellectual property are worrisome for the existing IP regime. These companies are not engaging in the existing patent-law system. For a number of reasons discussed below, if U.S. unicorns were to seek more patent protection, then there would be multi-dimensional benefits for individual investors, venture capitalists, innovators, and potentially the U.S. economy as a whole. At first blush, it may not seem that reforms to benefit some of the most highly valued companies in the world are necessary or desirable. However, their lack of patents keeps beneficial information out of the public’s hands and confuses valuations, which can lead to harmful effects to society and investors.

199. Malek, *supra* note 173.

200. *See id.* There is, however, indication that “[s]ome startups with valuation above one billion dollars stockpile patents for defensive purposes before they go public.” *See* Nguyen & Hille, *supra* note 195, at 202. Companies often accomplish this stockpiling of patents not by disclosing new inventions, but by acquiring existing patents. *Id.* In that way, purchasing patents may be another iteration of the same fear: unicorns want to protect themselves from lawsuits, but do not want to let their competitors know what they are doing.

A. Benefits to Unicorns Seeking Additional Patent Protection

It may seem antithetical to public policy to pave a smoother path for unicorn companies. These risky businesses receive massive valuations as a result of massive influxes of investor capital. However, public-policy concerns support encouraging unicorns to utilize the patent system. The two main policy reasons are the patent system's disclosure benefits and potentially increased certainty in unicorn valuations.

1. Public Policy: Disclosure

Patents have bidirectional benefits. In fact, “[t]he essence of the U.S. patent system is a quid pro quo between the patentee and the public.”²⁰¹ To encourage inventors to share their knowledge, “the patentee must be given something in return,” which is the exclusive property right in their invention.²⁰² Inventors would be unlikely to share their inventions if they were not guaranteed the right to be the sole user of that idea and given the exclusive right to license the idea for profit. This bargain is based on disclosure, which is one of the underpinning policies of the patent system

Further, when an inventor seeks a patent, and thereby makes his or her idea publicly available, the newly disclosed patent “has potential to create immediate value for follow-on researchers keen on improving the patented invention and for the public who would be the beneficiaries of these improvements.”²⁰³ With public knowledge comes public improvements.²⁰⁴ This is good for society, as improvement begets future improvements, allowing society to progress.²⁰⁵

Unicorns are often, though certainly not always, built around innovative ideas and technologies. The public has an interest in those inventions. If unicorns were to disclose their inventions, then other inventors could build on them. Eventually, these inventions could be further improved. When unicorns keep their ideas hidden, by opting out of the patent system, only the unicorns themselves can benefit from the inventions, and the public misses out.

201. Sean B. Seymore, *Making Patents Useful*, 98 MINN. L. REV. 1046, 1073 (2014).

202. *Id.* at 1073–74.

203. Nard, *supra* note 7, at 202.

204. *See generally* Suzanne Scotchmer, *Standing on the Shoulders of Giants: Cumulative Research and the Patent Law*, 5 J. ECON. PERSPS. 29 (1991) (equating inventors improving upon inventions disclosed in patents to Sir Isaac Newton's famous quote analogy about seeing further when on the shoulders of “giants,” referring to past scientists).

205. *See, e.g.*, Lauren Henry Scholz, *Privacy Petitions and Institutional Legitimacy*, 37 CARDOZO L. REV. 891, 892 (2016) (contending that “[p]rogress in the Information Age is premised on the notion that the more information society has, the more we know about how to respond to society's needs and wants”).

2. Public Policy: Increased Certainty in Valuations

A second benefit that would arise if unicorns disclosed their patents is increased certainty in unicorn company valuations. Valuations of unicorns are clearly inconsistent, and often unreliable.²⁰⁶ Patent valuations, too, are far from perfect. However, patents, though intangible, are an identifiable asset that can factor into unicorn company valuations. There are established theories of valuation, and in some instances, there are reliable benchmarking figures. Patents are not easy to value, but they are not impossible to value.²⁰⁷ Unicorns disclosing their patents, which could then be used as part of the company valuation, would certainly not solve every problem that attempting to value massive startups presents. Nonetheless, adding factors to the valuation beyond speculation will lead to increased certainty in these companies' valuations.

Increased certainty in unicorn company valuations would be beneficial to the public. These companies "have captured the attention of investors, analysts and other market observers who are trying to understand the factors driving the formidable valuations commanded by these mythical ventures and, in some cases, bet on their future, or even announce their sudden demise."²⁰⁸ Individual investors as well as large companies want to know the level of risk involved in investing in a certain unicorn. For strong unicorns with innovative technologies, their patent portfolios, if they had them, could make securing funding easier. For unicorns without technology to back up their values, they may miss out on some additional funding. Or they might get more risk-averse investors. For risk-averse investors, knowing more about the technology supporting a unicorn company may make them more inclined to invest in one of these massive startups. Increased certainty in valuations can protect individual investors, as well as large venture capital firms, while increasing capital flow into unicorns. Furthermore, increased certainty in unicorn valuations would positively affect competitive employees making decisions about which companies to bet on and whether to accept stock options as part of compensation packages.

Certainty in unicorn company valuations would be beneficial to investors, venture capitalists, and potential employees, and may even lead to increased faith in the market. That certainty would also avoid future overvaluation-driven failures like WeWork and Theranos, preserving the public's faith in the economy and valuation metrics, and employees' and investors' money and time.

206. *See supra* Part I(B).

207. *See supra* Part II(A).

208. Kasznik & Dudinsky, *supra* note 165.

B. How to Encourage Unicorns to Use the Patent System

Currently, unicorn companies may see the patent system as unappealing, expensive, or even dangerous to their survival. The bargain the system contemplates—disclosure in exchange for a property right—may not be worthwhile to these companies. However, while disclosing their inventions is dangerous, not having a strong patent portfolio can also be dangerous to unicorns.²⁰⁹ This is particularly true when the unicorn attempts to disrupt a market and when it seeks an exit.²¹⁰ This part proposes two changes to existing patent law that may encourage innovative, modern companies to share their inventions with the world, thereby protecting the public, private investors, and the companies themselves. These suggestions are by no means exhaustive; plenty of other changes to U.S. patent law or best practices could lead to similarly favorable results. This part, however, contemplates two statutory changes that could increase unicorn companies' patent filings: added privacy and lower costs.

1. Proposal 1: Additional Privacy

Currently, unicorn companies, like any innovative startup, must “contrast patenting, with its concomitant disclosure of the advance to the public, with secrecy.”²¹¹ At this point, a patent and secrecy are mutually exclusive. A unicorn may, reasonably, choose secrecy over public disclosure. Unicorns are trying to grow, raise capital, and possibly disrupt an existing market, and secrecy may be more valuable than a property right in those pursuits. While a patent provides a twenty-year exclusivity period,²¹² it requires immediate and broad disclosure.²¹³

A meaningful change to the patent code could be in the form of delayed disclosure requirements. The USPTO could issue patent rights, but keep the specifications and drawings sealed. This could be for the life of the patent (the full twenty years), or for a shorter period, such

209. See, e.g., Efrat Kasznik, *The Role of Intellectual Property in ‘Unicorn’ Valuations*, BUS. J. (Nov. 4, 2015, 9:20 AM), <https://www.bizjournals.com/bizjournals/how-to/funding/2015/11/role-of-intellectual-property-in-unicorn-valuation.html> [<https://perma.cc/359Y-VSFV>].

210. *Id.* (“There are several junctures where any company, and in particular a unicorn with an abnormally high valuation, is most vulnerable to having a weak IP position: entering new markets with established incumbents, and approaching an exit point such as an IPO.”).

211. Derek E. Bambauer, *Secrecy is Dead—Long Live Trade Secrets*, 93 DENV. L. REV. 833, 834 (2016).

212. 35 U.S.C. § 154(a)(2).

213. 35 U.S.C. § 102 (describing the general requirements for patentability); *id.* § 112 (describing the requirements for the patent’s specification, including “a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable” a skilled practitioner to reproduce the invention).

as five years. Either way, the inventor may be more inclined to pursue a patent and eventually disclose the invention to the public.

Under this proposal, complications would arise, most predictably in litigation. Without disclosing the invention, competitors cannot be put on notice of someone else's property right and would not know they were potentially infringing an issued patent.²¹⁴ Since notice is a key policy of the patent regime, this would be problematic. This suggests a more nuanced approach is likely necessary. Perhaps, based on the type of patent at issue, the abstract but not the specifications would be public; or a general description, but no technical drawings, would be made public. Developing the exact method for allowing secrecy to precede disclosure would require many interested parties and experts to come together, debate, and agree on the best course of action.

A related possibility that would heighten the protection of a patent would be to reevaluate the protection period, which is currently 20 years.²¹⁵ Some scholars have suggested that a discriminatory policy—one that offers different protection terms to different technologies instead of a uniform time period—would be beneficial.²¹⁶ The administrative costs would certainly increase, but patent scholars point to some economists who “argue that economic welfare is improved if elements such as difficulty, cost, benefit, and other characteristics of the industry are taken into account when granting patent protection.”²¹⁷ In the case of unicorn companies, they may be more inclined to apply for patent protection if they believed the nature of their innovation would make it eligible for a long protection period. A property right for an increased period of time would impact the balance of the patent system and may induce unicorns to disclose their inventions more frequently. Again, determining exactly how to administer a variable patent term policy would require input from various interested parties.

2. Proposal 2: Lower Costs

Another way to encourage unicorns' engagement with the patent system would be to lower the cost of filing for a patent. Since unicorns

214. See, e.g., Michael J. Meurer & Craig Allen Nard, *Patent Policy Adrift in a Sea of Anecdote: A Reply to Lichtman*, 93 GEO. L.J. 2033, 2035 (2005) (discussing “the notice function of patent claims”).

215. 35 U.S.C. § 154(a)(2).

216. See Simon Lester & Huan Zhu, *Rethinking the Length of Patent Terms*, 34 AM. U. INT'L L. REV. 787, 805–06 (2019).

217. *Id.* at 806. It is worth noting that Lester & Zhu are, in large part, arguing for shorter periods of patent protection, since they examine comparative perspectives from developing countries, and specifically contemplate shortening patent protection for the pharmaceutical industry. *Id.* at 803–04. However, though the authors look to shorten protection in the case of some patents, they still argue for discriminatory patent terms, which is in keeping with the argument to have disproportionately long time periods for certain technologies. See generally *id.*

tend to lose money while growing early on,²¹⁸ the cost of a patent may be prohibitive. Decreasing the cost of patent filings would have the added benefit of allowing more individual inventors, not backed by large corporations or research-and-design budgets, to reasonably seek patent protection. Lower upfront costs may allow more innovative unicorns to economically disclose their inventions.

However, as discussed, most costs associated with patent prosecution are in fact external to the fees the USPTO charges.²¹⁹ Instead, the largest costs incurred are usually a result of attorney time to research and write the patent. Thus, decreasing the cost to file may have a relatively small impact on the overall cost of obtaining a patent. Nonetheless, decreased costs would be a step in the right direction, and would benefit inventors whether they are associated with a company or not.

CONCLUSION

Unicorn companies are difficult to value, largely because they are not public and because they are so innovative that they lack benchmarking data. Incorrect valuations of these companies can affect individual investors, investing companies, potential employees, and the public. Patents, while also difficult to value due to their innovativeness, could potentially provide additional data points for valuing unicorn companies. However, unicorns tend to avoid the U.S. patent system, probably due to the disclosure requirement or the cost. Changes to the patent system—such as implementing a period of patent secrecy or lowering costs—may encourage unicorn companies to seek patent protection, thereby increasing certainty in unicorn valuations and eventually disclosing inventions that would contribute to public progress.

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218. *See supra* Part I(B)(1).

219. *See supra* notes 193–94 and accompanying text.

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