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Patent Aversion: An Empirical Study of Patents Collateral in Bank Lending, 1980–2016

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The most valuable assets of many companies today are patents. If patents are valuable, why do banks operating across the United States refuse to lend against patents in commercial lending to reduce their risks? Lending is the primary function of banks. Yet banks have a strong aversion to accept patents as collateral, rendering the vast number of patents as idle assets. This empirical study is the first to identify the patent aversion problem as contrary to the frequent headlines of how valuable patents are to the economy. By carefully extracting relevant patent and security interest filings data and examining the nuances underlying the data from 1980 to 2016, this Article explains why very few banks are willing to accept patents as collateral and potential consequences to the innovation economy sectors when patent aversion continues to persist among banks. The Article proposes solutions rooted in Secured Transactions and Banking laws to end banks' patent aversion.

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INTRODUCTION

Patents are valuable, according to businesses, governments, media, commentators, and scholars. The supporting evidence includes headlines about the staggering prices paid for patents in Google's acquisition of Motorola Mobility for \$12.5 billion,¹ the Apple-led Consortium's purchase of Nortel patents for \$4.5 billion,² and Microsoft spending \$1.05 billion to obtain 925 patents from AOL.³ Facebook paid \$550 million to Microsoft for 650 patents that Microsoft had acquired from AOL.⁴ Facebook stockpiled its patent portfolio with buying sprees from IBM, Fujifilm, Friendster, AT&T, Vega Vista, Neeraj Jhanji, Smartebook.com, Mobile Technologies, Fawkes Acquisition and Face.com, and Truveo for hundreds of millions of dollars prior to its initial public offering.⁵ InterDigital and RealNetwork snatched \$375 million and \$120 million in sales of

1. Don Reisinger, *Google Officially Closes \$12.5 Billion Motorola Mobility Deal*, CNET (May 22, 2012, 6:20 AM), <https://www.cnet.com/news/google-officially-closes-12-5-billion-motorola-mobility-deal/> [https://web.archive.org/web/20180220093229/https://www.cnet.com/news/google-officially-closes-12-5-billion-motorola-mobility-deal/].

2. Alastair Sharp & Sinead Carew, *Apple/RIM Group Top Google in \$4.5 Billion Nortel Sale*, REUTERS (July 1, 2011, 12:58 AM), <http://www.reuters.com/article/us-nortel/apple-rim-group-top-google-in-4-5-billion-nortel-sale-idUSTRE7600PF20110701> [https://perma.cc/MQ8E-WKCF].

3. John Jannarone & Shalini Ramachandran, *AOL's Deal Eases Pressure*, WALL ST. J., Apr. 9, 2012, <https://www.wsj.com/articles/SB1000142405270230381540457733323756192742> [https://web.archive.org/web/20161025122623/https://www.wsj.com/articles/SB1000142405270230381540457733323756192742]. AOL's handsome price came as a surprise because one of AOL's advisers estimated \$250 million for the portfolio two weeks before it received the offer from Microsoft. Michael J. de la Merced, *AOL Strike \$1.1 Billion Patent Deal with Microsoft*, N.Y. TIMES, Apr. 9, 2012, https://dealbook.nytimes.com/2012/04/09/aol-strikes-1-1-billion-patent-deal-with-microsoft/?_r=0 [https://perma.cc/X6YV-V7RH].

4. Shira Ovide & Geoffrey A. Fowler, *Facebook Buys AOL Patents from Microsoft for \$550 Million*, WALL ST. J., Apr. 23, 2012, <https://www.wsj.com/articles/SB10001424052702303592404577361923087607762> [https://web.archive.org/web/20141223211334/https://www.wsj.com/articles/SB10001424052702303592404577361923087607762].

5. David Cohen, *A Look at Facebook's Patent Acquisitions*, ADWEEK (Sept. 3, 2014), <http://www.adweek.com/digital/envision-ip-patent-acquisitions/> [https://perma.cc/WTB6-UCBL]; Cadie Thompson, *Facebook Buys Microsoft Patents for \$550 Million*, CNBC (Apr. 23, 2012, 2:15 PM), <http://www.cnbc.com/id/47144621> [https://perma.cc/S44B-K9DB].

patents, respectively, to Intel.⁶ Fujifilm Corporation received \$105 million in patent sales covering organic, light-emitting diode technology to Universal Display Corporation.⁷ By all indications, there is a brokered patent market where patents are offered for sale through middlemen.⁸ The market is vibrant and robust.⁹

Besides patent acquisitions, firms increased their quests for filing and procuring patents, propelling the continual growth of the annual patent grants by the United States Patent and Trademark Office (“USPTO”).¹⁰ Since 2010, the total number of patents-in-force has passed the two million patent grants threshold, and there is no sign of abatement in the growth trajectory.¹¹ Studies by the USPTO confirm that United States companies rely on intellectual property (“IP”) as the leading tool for advancements, and the IP-intensive industries account for \$6.6 trillion in value added in 2014, up more than 30% from \$5.06 trillion in 2010.¹²

As of today, all indicators confirm that patents are indeed valuable business assets and commodities. But why don’t banks lend against patents and accept patents as collateral when innovative businesses come to banks for loans? Why do banks refuse to include patents in their calculation of risk reduction in secured financing?

6. Erin Fuchs, *The Six Biggest Patent Deals of 2012*, BUS. INSIDER (Dec. 10, 2012, 11:00 AM), <http://www.businessinsider.com/most-lucrative-patent-sales-of-2012-2012-11?op=1/#adaptixs-100-million-sale-to-acacia-research-1> [https://perma.cc/7WZQ-993E].

7. *Id.*; Jacob Schindler, *Fujifilm v Sony: A Rare Patent Fight Between Japanese Companies that Underscores IP’s Growing Strategic Role*, IAM (Sept. 8, 2016), <http://www.iam-media.com/Blog/Detail.aspx?g=99064d1c-663f-4f40-bf4f-afd3c81c09c7> [https://web.archive.org/web/20171022094649/http://www.iam-media.com/Blog/Detail.aspx?g=99064d1c-663f-4f40-bf4f-afd3c81c09c7].

8. Numerous companies offer patent brokering services. *See, e.g., Brokerage and Licensing*, RED CHALK GROUP, <https://www.redchalk.com/practices/intellectual-property/brokerage-and-licensing/> [https://perma.cc/RT3W-935X] (last visited Sept. 15, 2018); *Patent Brokering*, TAEU, <https://taeus.com/patent-brokering/> [https://perma.cc/PSK2-SPGZ] (last visited Sept. 15, 2018); *Welcome to Patent Bridge*, PATENT BRIDGE, <https://www.patentbridge.com/> [https://perma.cc/7YF3-W232] (last visited Sept. 15, 2018); *see also* Louis Carbonneau, *What Makes a Patent Valuable: A Patent Broker’s Perspective*, IPWATCHDOG (Feb. 3, 2015), <http://www.ipwatchdog.com/2015/02/03/what-makes-a-patent-valuable-a-patent-brokers-perspective/id=54441/> [https://perma.cc/6PPB-EG4R] (offering patent advice for brokering goal).

9. *See* Kent Richardson, Erik Oliver & Michael Costa, *2016 Patent Market Report: Patent Prices and Key Diligence Data*, IPWATCHDOG (Apr. 18, 2017), <http://www.ipwatchdog.com/2017/04/18/2016-patent-prices-key-diligence-data/id=81708/> [https://perma.cc/23C4-KAJ6]. A subsequent report is also available at Kent Richardson, Erik Oliver & Michael Costa, *2016 Patent Market Size and Conclusions*, IPWATCHDOG (Apr. 27, 2017), <http://www.ipwatchdog.com/2017/04/27/2016-patent-market-size-conclusions/id=81717/> [https://perma.cc/T83D-KTDT].

10. *See* U.S. Patent Statistics Chart: Calendar Years 1963 - 2015, U.S. PAT. & TRADEMARK OFF., https://www.uspto.gov/web/offices/ac/ido/oeip/taf/us_stat.htm [https://perma.cc/67W5-GQ7P] (last visited Sept. 15, 2018).

11. *See* WIPO IP Statistics Data Center, WIPO (May 2018), <https://www3.wipo.int/ipstats/index.htm> [https://perma.cc/YHA3-E8YC] (select “3 - Patents in force”, “Total count by filing office” from 2004 to 2016, and “United States of America”).

12. *See* JUSTIN ANTONIPILLAI & MICHELLE K. LEE, INTELLECTUAL PROPERTY AND THE U.S. ECONOMY: 2016 UPDATE i–iii (2016), <https://www.uspto.gov/sites/default/files/documents/IPandtheUSEconomySept2016.pdf> [https://perma.cc/B4BC-4LG8].

There are more than 5,000 banks operating across the nation, some with branches nationwide while others concentrate within a specific geographical region. Banks are where businesses go for loans. Banks reduce default risks by taking security interests, typically in accounts receivables, inventory, and equipment in business loans. Often, established midsized and larger corporations that are manufacturers, wholesalers, distributors, service companies, and retailers, are candidates for asset-based loans.¹³ Banks ignore patents even though patents are valuable corporate assets. Patents are absent as eligible collateral while banks are more willing to make business loans to “higher quality companies with easily recognizable brands that have value outside of the underlying products that represent the brand.”¹⁴

The acute underutilization of patents in secured financing by banks is the puzzle on which we focus our research.¹⁵ In this Article, we investigate banking activities involving patent collateral from 1980 to 2016. Through the database for patent assignment records maintained by the USPTO, we extract relevant data, conduct our searches, and provide analysis of banks’ aversion to accepting patents as collateral. We observe that the underutilization is persistent throughout these past decades. While companies accumulate patents as valuable assets, banks flatly reject them as security for loans. We identify that among the thousands of banks that have provided loans to companies, only a handful have taken a security interest in their patents.

We explore the potential culprit of the underutilization and propose a solution rooted in Banking law and Secured Transactions law to reverse the severe underutilization of patents in commercial lending by banks. Companies, particularly small and less established entities in innovation-intensive sectors, often have patents as their most valuable assets. If banks persist in not lending to these companies, banks are not participating in innovation creation. Consequently, banks themselves fail to evolve with potential new clients. Banks deprive these companies of the opportunity to innovate by eliminating their access to lower cost, commercial loans.

Part II details the empirical research design grounded in both Secured Transactions and Banking laws. The design leads to the extraction of the most relevant data from 1980 to 2016 relating to patent collaterals by banks and non-banks. Part II illuminates the data through tables and graphs, revealing patterns of bank aversion towards patents in commercial lending.

13. *Bank of America Merrill Lynch White Paper: Frequently Asked Questions About Asset-Based Lending*, BANK AM. MERRILL LYNCH (2014), http://www.ohiomfg.com/wp-content/uploads/01-13-17_lb_tax_FAQ-Asset-Based-Lending.pdf [<https://perma.cc/RMB4-3LUH>].

14. *Id.* at 2.

15. We are working on a series of papers in the IP Venture Banking project. This Article is the first paper in the series. Our future research will focus on outlier banks and later-stage growth companies, including post IPO companies. We will also conduct a case study of specific banks in IP Venture Banking. Additionally, we will investigate IP enhancement in venture banking.

Part III provides a closer study of a handful of banks that have been accepting patents as collateral from 1990 to 2016. The study maps these bank leaders and their patents as collateral activities against the backdrop of the Dotcom period of 1997 to 2000, the Great Recession of 2008, and the current period of recovery. The mapping reveals some insights, including banking cycles, banks' commercial lending to established companies with large patent portfolios, and banks' persistent aversion to lend against patents.

Explaining why banks, including leaders among banks, have exhibited strong resistance towards patent collateral in commercial financing, Part IV turns to Banking law. Indeed, as a regulated industry, banks function within strict regulations. Traditional banks and their lending practices, lending limits, capital reserve, banking regulations relating to unsafe or unsound practices, and what constitutes eligible collateral under banking regulations are roots of bank aversion towards patent collateral.

Consequently, ending bank aversion requires a change in Banking regulations. Part V explores solutions in both Banking law and Secured Transactions law, moving banks into commercial lending to businesses in the innovation-intensive sectors. Without banks, the Article concludes, these companies have no access to lower cost, commercial loans because non-banks often charge higher interest rates and dilute the equity of the business. On the other end of the spectrum, ignoring patent collateral, banks are leaving behind the innovators while continuing to hasten the shrinking banking industry.

I. THE PATENT COLLATERAL BY BANKS AND NON-BANKS

A. Defining Search Scope for Patent Collateral with an Understanding of Secured Transactions Law and Practices

In commercial finance, lenders often take security interests in a debtor's property in order to reduce their risks in the event the debtor cannot pay back the debt or is in violation of material provisions of the loan and security agreements.¹⁶ A debtor's property used as collateral is diverse. This includes the tangibles, such as inventory, equipment, and farm products; the quasi-tangibles like documents of

16. The law governing secured transactions is Article 9 of the Uniform Commercial Code. *See* JOSEPH H. FLACK, SECURED TRANSACTIONS: PRACTICAL THINGS EVERY BUSINESS LAWYER SHOULD KNOW ABOUT UCC ARTICLE 9, <https://apps.americanbar.org/buslaw/committees/CL983500pub/newsletter/201103/flack.pdf> [<https://perma.cc/E8QB-J8QV>] (last visited Sept. 15, 2018); *UCC Article 9, Secured Transactions (1998) Summary*, UNIFORM L. COMMISSION, [http://www.uniformlaws.org/ActSummary.aspx?title=UCC%20Article%209,%20Secured%20Transactions%20\(1998\)](http://www.uniformlaws.org/ActSummary.aspx?title=UCC%20Article%209,%20Secured%20Transactions%20(1998)) [<https://perma.cc/4W95-6S3R>] (last visited Sept. 15, 2018) ("The Uniform Commercial Code has eleven substantive articles. Article 9, Secured Transactions, may be the most important of the eleven. Article 9 provides the rules governing any transaction (other than a finance lease) that couples a debt with a creditor's interest in a debtor's personal property. If the debtor defaults, the creditor may repossess and sell the property (generally called collateral) to satisfy the debt. The creditor's interest is called a 'security interest.'").

title, instruments, chattel papers, and securities; and the intangibles like accounts and intellectual property.¹⁷

As historical records reveal, the practice of taking intellectual property assets as collateral in commercial finance is not new. Specifically, the practice of accepting patents as collateral to secure loans occurred in the 1800s where borrowers used patents to secure the payment of promissory notes.¹⁸ A notable case, where a single patent served as collateral for a loan between a creditor and an inventor's wife, who was the assignee of the patent from her husband, reached the Supreme Court in 1891, marking the new role of patents in commercial finance.¹⁹

In broad terms, the lenders in commercial finance practice today can be banks,²⁰ non-bank financial institutions,²¹ and specialty finance institutions.²² Among the relevant laws governing commercial finance is Secured Transactions, a body of state statutory provisions based on Article 9 of the Uniform Commercial Code ("UCC").²³ Pursuant to Secured Transactions law, lenders who take a security interest in a debtor's property typically record financing statements evidencing their

17. U.C.C. § 9-102(12) provides "Collateral" means "property subject to a security interest." Different types of property are specifically defined in U.C.C. § 9-102. Other property, such as intellectual property, is included in the catch-all "general intangible". See U.C.C. § 9-102 (AM. LAW INST. & UNIF. LAW COMM'N 2010); *id.* § 9-102 cmt. 5.d.:

"General Intangible"; "Payment Intangible." "General intangible" is the residual category of personal property, including things in action, that is not included in the other defined types of collateral. Examples are various categories of intellectual property and the right to payment of a loan of funds that is not evidenced by chattel paper or an instrument. As used in the definition of "general intangible," "things in action" includes rights that arise under a license of intellectual property, including the right to exploit the intellectual property without liability for infringement.

18. See, e.g., Xuan-Thao Nguyen, *Financing Innovation: Legal Development of Intellectual Property as Security in Financing, 1845-2014*, 48 IND. L. REV. 509 (2015).

19. *Id.* at 514–18 (analyzing *Waterman v. Mackenzie*, 138 U.S. 252 (1891), and explaining its significance in the evolution of patent mortgage to patent collateral).

20. For example, Wells Fargo Bank has a vibrant commercial lending practice. *Commercial Financing*, WELLS FARGO, <https://www.wellsfargo.com/com/financing/> [<https://perma.cc/BL8U-449R>] (last visited Sept. 15, 2018).

21. For example, CG Commercial Finance Corporation specializes in financing for capital equipment, software leasing, structured project and debt financing for mid-sized and large companies. *About CGCF*, CG COM. FIN., <https://cgcommercialfinance.com/about-cgcf/> [<https://perma.cc/S624-U9QQ>] (last visited Sept. 15, 2018).

22. Michael Gulliford et. al., *Patent-Based Financings: Unlocking Licensing Revenues While Mitigating IP Monetization Risks*, IPWATCHDOG (Oct. 31, 2017), <http://www.ipwatchdog.com/2017/10/31/patent-based-financings-unlocking-licensing-revenues/id=89705/> [<https://perma.cc/UUA8-SAQK>] (discussing the patent-centric financing institutions); Gene Quinn, *Debt vs. Equity – The Financing of Patent Monetization*, IPWATCHDOG (Nov. 18, 2014), <http://www.ipwatchdog.com/2014/11/18/debt-vs-equity-the-financing-of-patent-monetization/id=52210/> [<https://perma.cc/6UBY-7PGG>] (reporting Fortress Investment Group's business model of lending money to patent owners and taking a security interest in the owner's patent portfolio).

23. See *Frequently Asked Questions*, UNIFORM L. COMMISSION, <http://www.uniformlaws.org/Narrative.aspx?title=Frequently%20Asked%20Questions> [<https://perma.cc/2A9J-V7Y9>] (last visited Sept. 15, 2018); *UCC Article 9, Secured Transactions (1998) Summary*, *supra* note 16.

security interests with the appropriate filing office.²⁴ Often, this is in the Secretary of State's Office in the state where the debtor has incorporated or has its corporate headquarters.²⁵

At the state level, the appropriate filing office indexes the filed financing statements under the debtor's name.²⁶ Searchers apply the filing office's search logic to conduct searches in ascertaining whether a particular debtor's assets have already been subject to a security interest or whether they are still free of any encumbrances.²⁷ By perfecting a security interest through filing the financing statement, the lender puts everyone on notice, establishing the lender's priority over other creditors in the same collateral property.²⁸ Moreover, Secured Transactions law simplifies the filing requirement by permitting the financing statement to contain a simple and generic phrase to cover all of the debtor's property serving as collateral.²⁹ The purpose of the generic phrase is to inform, not to educate, the public about the exact collateral.³⁰ Consequently, a search for whether certain

24. See U.C.C. § 9-310(a) cmt. 2 (AM. LAW INST. & UNIF. LAW COMM'N 2010) ("Subsection (a) establishes a central article 9 principle: Filing a financing statement is necessary for perfection of security interests and agricultural liens."). Texas and all other states require the filing of security interests with the Secretary of State. See *Filing Instructions*, TEX. SECRETARY ST., <https://www.sos.state.tx.us/ucc/instructions.shtml> [<https://perma.cc/JCM3-EK6S>] (last visited Sept. 15, 2018).

25. U.C.C. § 9-307 (AM. LAW INST. & UNIF. LAW COMM'N 2010) (providing rules on how to determine debtor's location for filing purposes).

26. See *id.* §9-503(a) (sufficiency of debtor's name); *id.* § 9-506(b) ("[A] financing statement that fails sufficiently to provide the name of the debtor in accordance with Section 9-503(a) is seriously misleading."); *id.* § 9-519(c)(1) ("[T]he filing office shall: (1) index an initial financing statement according to the name of the debtor and index all filed records relating to the initial financing statement in a manner that associates with one another an initial financing statement and all filed records relating to the initial financing statement . . .").

27. For example, the State of Florida maintains the Florida Secured Transaction Registry and provides an explanation of the filing office's search logics. See FLA. SECURED TRANSACTIONS REGISTRY, <https://www.floridaucc.com/uccweb/SearchDisclaimer.aspx?> [<https://perma.cc/T8BV-46GF>] (last visited Sept. 15, 2018); see also *UCC Search Logic Help*, OR. SECRETARY ST., <http://sos.oregon.gov/business/Pages/ucc-search-help.aspx> [<https://perma.cc/M96F-ZZ7G>] (last visited Sept. 15, 2018).

28. The drafters of Article 9 made the importance of relying on the public record clear: Article 9 relies on the public record because it provides the means for creditors to determine if there is any security interest that precedes theirs—a notice function. A subsequent secured creditor cannot complain that his or her grant of credit was made in ignorance of the prior security interests easily found in the public record, and cannot complain of the priority of the prior interests as a result. Every secured creditor has a priority over any unsecured creditor.

UCC Article 9, Secured Transactions (1998) Summary, *supra* note 16.

29. U.C.C. § 9-504(2) (AM. LAW INST. & UNIF. LAW COMM'N 2010) ("A financing statement sufficiently indicates the collateral that it covers if the financing statement provides: . . . an indication that the financing statement covers all assets or all personal property.").

30. *Id.* § 9-504(2) cmt. 2:

In particular, an indication of collateral that would have satisfied the requirements of former section 9-402(1) (i.e., "a statement indicating the types, or describing the items, of collateral") suffices under section 9-502(a). . . . Debtors sometimes create a security interest in all, or substantially all, of their assets. To accommodate this practice, paragraph (2) expands the class of sufficient collateral references to embrace "an indication that the financing

patents serve as collateral by looking up the financing statement filed under the debtor's name is unhelpful because the financing statement's indication does not contain specific information about the patent collateral.³¹

On the one hand, patents are a creation of federal law;³² on the other hand, laws governing secured transactions are a creation of state law. Consequently, when a lender accepts patents as collateral, the lender often goes beyond what state Secured Transactions law requires for perfection of the security interest; the lender looks to the USPTO for additional recording of security interest in patents.³³ Indeed, lenders have been recording their security interests in patent collaterals with the Patent Office's Assignments Recordation Branch as an *extra precaution*, because the relevant statutory provision under Patent law does not cover security interests in patents, but patent ownership.³⁴ That means the lenders cannot rely on the simple

statement covers all assets or all personal property." If the property in question belongs to the debtor and is personal property, any searcher will know that the property is covered by the financing statement. Of course, regardless of its breadth, a financing statement has no effect with respect to property indicated but to which a security interest has not attached. Note that a broad statement of this kind (e.g., "all debtor's personal property") would not be a sufficient "description" for purposes of a security agreement. See Sections 9-108 and 9-203(b)(3)(A). It follows that a somewhat narrower description than "all assets," e.g., "all assets other than automobiles," is sufficient for purposes of this section, even if it does not suffice for purposes of a security agreement.

31. The typical practice is to mention generally "patents" in the financing statement. *See* Starlite Dev. (China) Ltd. v. Textron Fin. Corp., No. CV-F-07-1767 OWW/DLB, 2008 WL 2705395, at *4 (E.D. Cal. July 8, 2008) (noting that the secured party Textron filed a UCC-1 Financing Statement with the California Secretary of State giving Textron a security interest in "[a]ll accounts, chattel paper, general intangibles, documents, inventory, equipment and fixtures in which Debtor [the Turner Company] now or hereafter has rights, wherever located, including but not limited to, deposit accounts, copyrights, patents, trademarks, trade names and trade secrets; the books and records pertaining thereto, in whatever medium (including computerized data); and the products and proceeds of the foregoing."); *In re* Atl. Marble, Inc., 126 B.R. 463, 465 (Bankr. E.D. Penn. 1991) (noting that UCC-1 Financing Statements in the present case indicating that the security interest covers "[a]ll of the following, now owned or hereafter acquired and all accessions thereto, products and proceeds (including insurance proceeds) thereof: all inventory, accounts, chattel paper, and instruments; all equipment, machinery, furniture and fixtures; all contracts, contract rights, general intangibles, parts, patents, processes, trade names and trademarks; all books, records, and computer media and all data contained thereon.").

32. *Arachnid, Inc. v. Merit Indus., Inc.*, 939 F.2d 1574, 1578-79 (Fed. Cir. 1991) ("A patent is a creature of statute, as is the right of a patentee to have a remedy for infringement of his patent. Suit must be brought on the patent, as ownership only of the invention gives no right to exclude, which is obtained only from the patent grant.").

33. *See* Joseph A. Kelly, *Perfecting Security Interests in Registered and Unregistered Copyrights*, 45 UCC L.J., 187 (2013) ("[W]hen perfecting security interests in patents and trademarks, secured parties should be sure to file in the U.S. Patent and Trademark Office to protect against bona fide purchasers, as well as make the UCC filings.").

34. The recording provision of the Patent Act does not explicitly include security interest in patents but ownership of patents. *In re* Cybernetic Servs., Inc., 239 B.R. 917, 923 (B.A.P. 9th Cir. 1999) ("[T]he Patent Act is not sufficiently comprehensive to exclude state methods of perfecting security interests in patents. The Patent Act does not include security interests within any of the scope or definition provisions. Security interests in patents are not assignments governed by the mandatory recording provisions of § 261 of the Patent Act. Because the Patent Office records security interests on a discretionary basis and such recording does not provide constructive notice, the Patent Act

indication of the collateral on the financing statement as provided under Secured Transactions law.³⁵ Instead, the lenders must follow the filing requirements promulgated by the USPTO.³⁶ The lenders must provide specific and detailed information for each patent that serves as collateral in order to meet the filing requirements of the Patent Office's Assignments Recordation Branch.³⁷ For each patent used as collateral, the Office charges a fee and records the security interest correspondingly.³⁸

B. Searches in USPTO Database for Patents as Collateral by Banks

Relying on the USPTO's assignment data from 1980 to 2016, we crafted our queries, conducted our searches for "security interest" in patents held by banks, and extracted the relevant data.³⁹ We noted that the USPTO includes different types of conveyances for patents, including ownership, security interest, and others.⁴⁰ Our focus is strictly patents as collateral in banks' lending practices.

registration system is insufficient to provide the sole method of perfecting security interests in patents.”).

35. See U.C.C. § 9-504(2) (AM. LAW. INST. & UNIF. LAW COMM'N 2010).

36. The current state of perfection of security interest in patents has generated many comments about the uncertainty and dual filings. See generally Ronald J. Mann, *Secured Credit and Software Financing*, 85 CORNELL L. REV. 134, 153 (1999) (critiquing the perfection of security interest in intangible assets as “so ill-suited to modern commercial lending transactions that even well-counseled lenders on substantial transactions often find that it is not cost effective to comply with the system sufficiently to obtain a perfected security interest in their collateral.”); Harold R. Weinberg & William J. Woodward, Jr., *Easing Transfer and Security Interest Transactions in Intellectual Property: An Agenda for Reform*, 79 KY. L.J. 61, 67 (1990) (“This uneasy state of affairs injects uncertainty and substantial transaction costs into financing based on federal intellectual property. For nearly ten years, calls for reform have emanated from many quarters.”).

37. The lenders must provide for each of the patents that serve as collateral the corresponding patent numbers. The lenders cannot use only the term “patents” for all the patent collateral in a transaction. See U.S. PATENT & TRADEMARK OFFICE, U.S. DEP'T OF COMMERCE, RECORDATION FORM COVER SHEET: PATENTS ONLY (2011), <https://www.uspto.gov/sites/default/files/documents/pto1595.pdf> [<https://perma.cc/7BTV-SZKR>].

38. See *id.* (“A fee is required for each application and patent against which the document is recorded.”).

39. A copy of the data is on file with the authors. We first conducted the searches on March 24, 2017, at the USPTO's interactive webpages. See *Patent Assignment Search*, U.S. PATENT & TRADEMARK OFF., <https://assignment.uspto.gov/patent/index.html#/patent/search/resultFilter?searchPage=1&totalItemsPerPage=100&advSearchFilter=patAssigneeName:%22bank%22%7CconveyanceText:%22security%20interest%22&qc=2> [<https://perma.cc/LV4A-CSYX>] (last visited Sept. 15, 2018). We later obtained a more comprehensive set of data from the USPTO for the total numbers of patents issued and collateral assignments each year. *Patent Assignment Dataset*, USPTO, <https://www.uspto.gov/learning-and-resources/electronic-data-products/patent-assignment-dataset> [<https://perma.cc/2AL8-74PX>] (last updated Mar. 26, 2018); *U.S. Patent Statistics and Numbers for 2017*, PAT. LIBRARIAN'S NOTEBOOK (Dec. 28, 2017), <https://patentlibrarian.com/2017/12/28/u-s-patent-statistics-and-numbers-for-2017/> [<https://perma.cc/3VHZ-MMMX>]; *U.S. Patent Statistics Chart: Calendar Years 1963 - 2015*, *supra* note 10.

40. U.S. PATENT & TRADEMARK OFFICE, *supra* note 37; Alan C. Marco et al., *The USPTO Patent Assignment Dataset: Descriptions and Analysis 27* (USPTO Economic Working Paper No. 2015-2, 2015), https://www.uspto.gov/sites/default/files/documents/USPTO_Patents_Assignment_

In our search query, we used only the word “bank” in the Assignee’s name to capture all banks that have patent collateral recorded. Our restriction in using only the word “bank” originates from state corporation law, for example, Delaware’s Corporation law, which prohibits any corporation from using the word “bank” unless the entity has obtained pre-approval from the Delaware Banking Commission.⁴¹ Consequently, that means our search would capture “banks” not interlopers.

Next, we ran the search query and reviewed the outcome. By importing the search return to a workable Excel format, we were able to conduct quality control and obtain meaningful results. For example, the data reveals that in 2016, there were 117,262 patents and patent applications serving as collateral in secured financing by banks.⁴² This total number of patents represented 1,568 transactions by banks during that year.⁴³ We observed that the number for the transactions is slightly larger than the actual transactions, as we manually verified transactions when the same bank recorded more than one transaction with the same client on the same day.⁴⁴

For quality control, we randomly opened individual filing records and examined “security interest” documents for information details. This confirms that banks generally hold security interests in the patents, not ownership of patents via outright assignment of patent rights.⁴⁵ Banks are not in the business of owning patents belonging to their clients.⁴⁶ Ownership of patents entails enforcement and

Dataset_WP.pdf [https://perma.cc/8YGT-QHAH] (“Conveyance types include assignment, merger, change of name, government interest agreement, security agreement, and release by secured party.”).

41. Delaware law on corporate name provides:

The name of the corporation . . . shall not contain the word ‘bank,’ or any variation thereof, except for the name of a bank reporting to and under the supervision of the State Bank Commissioner of this State or a subsidiary of a bank or savings association (as those terms are defined in the Federal Deposit Insurance Act, as amended, at 12 U.S.C. § 1813), or a corporation regulated under the Bank Holding Company Act of 1956, as amended, 12 U.S.C. § 1841 *et seq.*, or the Home Owners’ Loan Act, as amended, 12 U.S.C. § 1461 *et seq.*

8 DEL. CODE ANN. tit. 8, § 102(a)(1)(iv) (2017).

42. *See infra* Table 4.

43. *See infra* Table 5.

44. Our data count is slightly different from the USPTO’s own reporting of the data as we have removed duplicate assignment records used to correct minor typographical errors in the original filings. We matched a few of these records with the original erroneous record. For the records that we examined, these corrections did not change the patent numbers. If there was a revision to the spelling of the bank’s name, we already successfully aggregated variation in the spelling of a bank’s name. Thus, the only issue for our data was that these were duplicate records and should be counted only once.

45. *Weast v. Arnold*, 474 A.2d 904, 908 (Md. 1984) (stating that a security interest is “something less than ownership”).

46. Outright ownership of patents requires assignment of patents and recording of the assignment with the Patent Office. The assignee becomes the new owner of the patents. *See Abraxis Bioscience, Inc. v. Navinta LLC*, 625 F.3d 1359, 1366 (Fed. Cir. 2010) (“[A]n appropriate written assignment is necessary to transfer legal title from one to the other.”); *Jim Arnold Corp. v. Hydrotech Sys. Inc.*, 109 F.3d 1567, 1577 (Fed. Cir. 1997) (“assignments pass title to the patentee’s rights, with all the accompanying rights of ownership, from the patentee to the assignee.”).

liability that are both costly and beyond the scope of bank business.⁴⁷ The patents collateral are security for the payment of the loans, and in the event of default, the bank can foreclose on the patents and dispose of them as soon as possible against the outstanding debt plus expenses incurred.⁴⁸ There are exceptions, of course, as some big banks have recently filed for patents relating to their own financial innovations in Fintech.⁴⁹ As original assignees of inventions from bank employees, a bank that owns its own patented inventions will not be included in the “Patent Assignment” branch’s database for security interests in patents.⁵⁰

For the patents in force, we relied on the data from World Intellectual Property Office (“WIPO”). WIPO’s website maintains patents in force by country, including the United States. We incorporated WIPO’s statistics for the United States into our selected data on patent collateral filings by banks and non-banks.

47. *Kimberly-Clark Corp. v. Procter & Gamble Distrib. Co., Inc.*, 973 F.2d 911, 914 (Fed. Cir. 1992) (“The rights to which one is entitled by ownership of a patent are principally the right to exclude others from making, using, and selling patented subject matter.”); *Arachnid, Inc. v. Merit Indus., Inc.*, 939 F.2d 1574, 1578 (Fed. Cir. 1991) (“[A]lthough the act of invention itself vests an inventor with a common law or “natural” right to make, use and sell his or her invention absent conflicting patent rights in others, . . . a patent on that invention is something more. A patent in effect enlarges the natural right, adding to it the *right to exclude others* from making, using or selling the patented invention.”).

48. For example, the bank in *Sky Technologies LLC v. SAP AG*, 576 F.3d 1374 (Fed. Cir. 2009), foreclosed on the patents after the client defaulted on the loan. On the same date that the bank exercised its right to repossess the collateral, the bank sold the patent to a purchaser. *Id.* There was no need for the bank to record its right in the collateral in order to assert its new ownership right in the patent. By operation of law, the bank became the new owner of the patent and sold the patent to the purchaser who later enforced the patents against others. *Id.*

49. Megan M. La Belle & Heidi Mandanis Schooner, *Big Banks and Business Method Patents*, 16 U. PENN. J. BUS. L. 431–88 (2014).

50. See, e.g., *Alzheimer’s Inst. of Am., Inc. v. Avid Radiopharmaceuticals*, No. 10–0–6908, 2011 WL 3875341, at *7 (E.D. Pa. Aug. 31, 2011) (“Because Mullan was employed by USF when the inventions were conceived, ownership of the inventions vested in USF by operation of Florida law When an inventor’s rights to an invention are deemed the property of his employer by operation of law, the inventor has no property rights to assign”).

Table 1**Total Patents In Force and New Collateral Recorded by Banks and Nonbanks**

Year	Patents In Force	Collateral Recorded	Ratio	Bank Collateral Recorded	Ratio	Non-Bank Collateral Recorded	Ratio
2016	2,763,055	178,855	6.5%	117,262	4.2%	61,593	2.2%
2015	2,644,697	103,358	3.9%	42,012	1.6%	61,346	2.3%
2014	2,527,750	102,513	4.1%	64,591	2.6%	37,922	1.5%
2013	2,387,502	134,002	5.6%	83,813	3.5%	50,189	2.1%
2012	2,239,231	74,438	3.3%	39,826	1.8%	34,612	1.5%
2011	2,113,628	71,913	3.4%	44,072	2.1%	27,841	1.3%
2010	2,017,318	89,773	4.5%	46,484	2.3%	43,289	2.1%
2009	1,930,631	92,726	4.8%	46,688	2.4%	46,038	2.4%
2008	1,872,872	56,149	3.0%	26,283	1.4%	29,866	1.6%
2007	1,815,531	66,962	3.7%	28,706	1.6%	38,256	2.1%
2006	1,774,742	57,313	3.2%	32,614	1.8%	24,699	1.4%
2005	1,683,968	40,383	2.4%	18,458	1.1%	21,925	1.3%
2004	1,633,355	42,194	2.6%	21,810	1.3%	20,384	1.2%

[1] We rely on the data provided by WIPO and USPTO for the total numbers patents in force and collateral assignments each year. 2016 Data was updated based on the release of year end of data year results.

<https://www3.wipo.int/ipstats/IpsStatsResultvalue>

<https://www.uspto.gov/learning-and-resources/electronic-data-products/patent-assignment-dataset>

(accessed Nov. 10, 2017).

<https://www3.wipo.int/ipstats/index.htm>

(accessed August 17, 2018).

We then separate the results in tables and graphs for further analysis.

C. Tables of Patents as Collateral by Banks and Non-Banks

With respect to patents, banks and non-banks have accepted and recorded their security interests in patents and patent applications with the USPTO.⁵¹ The underutilization of patents as collateral in commercial finance by banks is stark.⁵²

Table 1 and Figure 1, *Total Patents in Force and Patent Collateral Recorded by Banks and Non-Banks, 2004–2016*, show what banks and non-banks have recorded as patent collateral in contrast of the total patents in force for each year.⁵³ A patent has a legal life of twenty years from the time of filing, if the patent application was filed after June 8, 1995.⁵⁴ A shorter term of protection, seventeen years from the date of issue, was available for patents issued on or after June 7, 1978, and had not

51. See *supra* Table 1; *infra* Tables 2–3.

52. See *supra* Table 1 (showing that only 6.6% to 12.6% of patents in force are recorded by banks as collateral).

53. See *supra* Table 1.

54. We rely on the data reported by WIPO for the total patents in force for each year. See *Statistical Country Profiles: United States of America*, WORLD INTEL. PROP. ORG., http://www.wipo.int/ipstats/en/statistics/country_profile/profile.jsp?code=US [<https://perma.cc/4EB7-2TGG>] (last updated Mar. 2018).

expired before June 8, 1995. The total patents in force means the number of patents entitled to protection under the law. The number of patents in force is not constant because some older patents expire while new patents come into existence each year.

Table 1 shows the number of patents serving as collateral for secured transactions with banks as compared to the total number of patents in force for the corresponding year.⁵⁵ Despite the large number of patents available for use as collateral, banks accepted and recorded only 1.3% of the total patents in force for security interest purpose in 2004. Though the number increased to 4.2% in 2016, it is still an extremely small percentage.

Overall, during the period of 2004 to 2016, the percentage of patent collateral recorded by banks remained low within the range of 1.1% to 4.2% of patents in force, according to the most recently available data. The corresponding number of patents as collateral recorded by non-bank entities are in **Table 1**. In ratio terms, only one to seven out of every 100 patents serve as collateral to secure repayments or obligations. The vast majority of patents (93% to 99%) sits idle as waste, without being recognized for any value in commercial financing by banks and non-banks.

Figure 1 **Patents In Force and Collateral Recorded by Banks and Nonbanks**

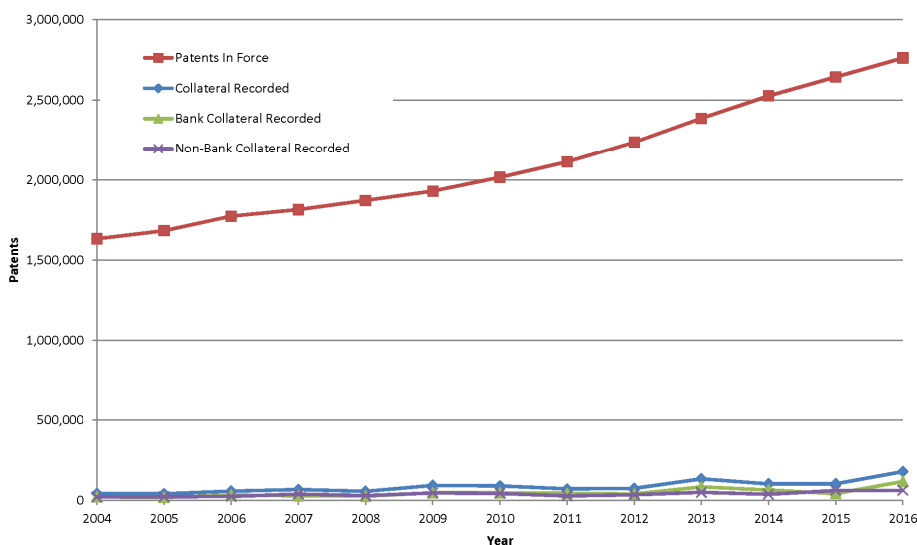


Figure 1 is a graphical demonstration of the data in **Table 1**. The graph exhibits the noticeable increase in the total patents in force available for each year from 2004 to 2016 while banks hardly accepted patents as collateral in the same period of time.

55. See *supra* Table 1.

Table 2

Total In Force:
Patents versus Collateral for Banks and Non-Banks, 2004-2016

Year	Patents In Force	Collateral In Force*	Ratio	Bank Collateral	Ratio	Non-Bank Collateral	Ratio
2016	2,763,055	593,166	21.5%	347,504	12.6%	245,662	8.9%
2015	2,644,697	486,224	18.4%	274,314	10.4%	211,910	8.0%
2014	2,527,750	472,639	18.7%	278,786	11.0%	193,853	7.7%
2013	2,387,502	462,852	19.4%	260,883	10.9%	201,969	8.5%
2012	2,239,231	384,999	17.2%	203,353	9.1%	181,646	8.1%
2011	2,113,628	377,523	17.9%	192,233	9.1%	185,290	8.8%
2010	2,017,318	362,923	18.0%	180,775	9.0%	182,148	9.0%
2009	1,930,631	313,533	16.2%	152,749	7.9%	160,784	8.3%
2008	1,872,872	263,001	14.0%	127,871	6.8%	135,130	7.2%
2007	1,815,531	255,396	14.1%	128,371	7.1%	127,025	7.0%
2006	1,774,742	233,926	13.2%	127,105	7.2%	106,821	6.0%
2005	1,683,968	207,713	12.3%	111,307	6.6%	96,406	5.7%
2004	1,633,355	192,900	11.8%	107,462	6.6%	85,438	5.2%

[1] We rely on the data provided by WIPO and USPTO for the total numbers patents in force and collateral assignments each year. 2016 Data was updated based on the release of year end of data year results.

<https://www3.wipo.int/ipstats/ipsStatsResultValue>

<https://www.uspto.gov/learning-and-resources/electronic-data-products/patent-assignment-dataset>

(accessed Nov. 10, 2017).

<https://www3.wipo.int/ipstats/index.htm>

(accessed August 17, 2018).

* Patent collateral in force estimated utilizing the statutory 5 year expiration of filings.

According to UCC § 9-515, the lender can perfect security interest in collateral by filing the financing statement with the appropriate filing office, this filing is effective for five years.⁵⁶ Consequently, the recording of the security interest in patent collateral is effective for the same length of time, unless the parties to the secured financing decide to terminate the security interest earlier by filing a release or a termination statement.⁵⁷ Applying the law, we aggregated the number of patent

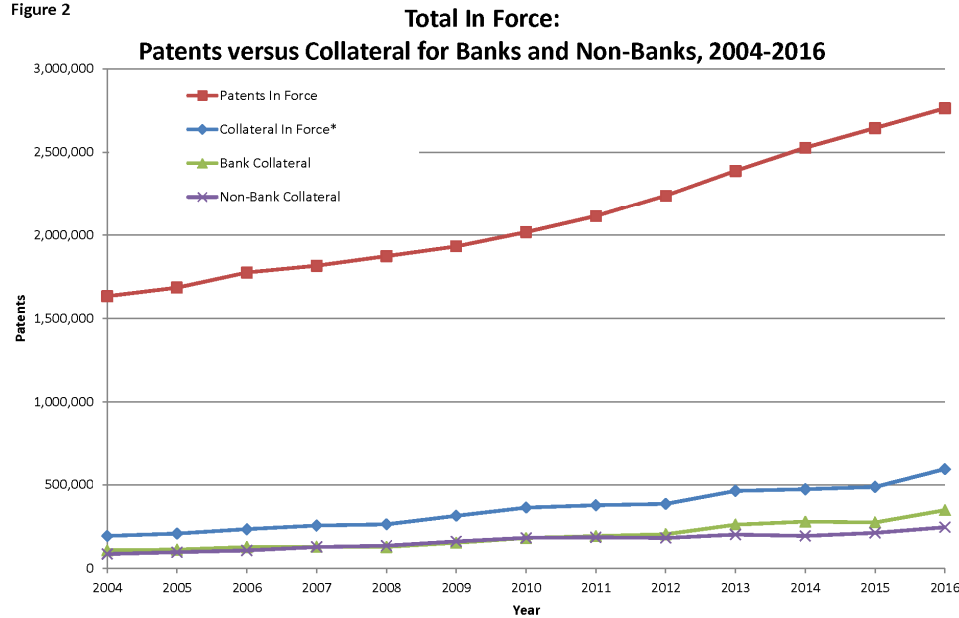
56. See U.C.C. § 9-515 (AM. LAW INST. & UNIF. LAW COMM'N 2010) (stating that “a filed financing statement is effective for a period of five years after the date of filing”). The rationale for the five year period is in the Official Comment 2 to the former U.C.C. § 9-403:

The theory of this Article is that the public files of financing statements are self-clearing, because the filing officer may automatically discard each financing statement after a period of five years . . . unless a continuation statement is filed This theory materially lessens the tension that would otherwise exist to have the files cleared by termination statements under Section 9-404. Similarly, a person searching the files need not go back past this five years . . . ; and if the indices are arranged by years, he has a limited and defined search problem.

R. Wilson Freyermuth, *Continuation Statements*, SCH. L.: U. MO., <http://www.law.missouri.edu/freyermuth/art9/continuation.htm> [<https://perma.cc/2KVG-SVP9>] (last visited Sept. 15, 2018).

57. See U.C.C. § 9-513(c) (AM. LAW INST. & UNIF. LAW COMM'N 2010) (“[W]ithin 20 days after a secured party receives an authenticated demand from a debtor, the secured party shall cause the secured party of record for a financing statement to send to the debtor a termination statement for the financing statement or file the termination statement in the filing office if: (1) except in the case of a

Figure 2



collateral in the five-year period and subtracted the number of patent collateral that are no longer covered by effective filing period, which gave us the total number of patent collateral in force for each year from 2004 to 2016. We incorporated this new aggregation in **Table 2**.

Table 2 compares the total patents in force to the total patent collateral in force for each year during 2004 to 2016. For example, in 2016, there were 2,763,055 patents in force and 593,224 patents served as collateral in force. The ratio is 21.5%, or only twenty-one out of 100 patents, that serve as security for all secured financing transactions as of 2016. With respect to banks, there were 347,504 patents, or 12.6%, that served as collateral in force. That means banks accepted and recorded less than seventeen patent collateral in force out of 100 patents in force as of 2016. Nevertheless, the 12.6% is an increase from the 6.6% in 2004.

Figure 2 provides the companion graph to **Table 2**.

Table 3, *Patents Issued and Collateral Recorded by Banks and Non-Banks, 1980–2016*, shows the total patents newly issued each year, the number of patents recorded by all entities as collateral, the number of patents recorded by banks as new collateral, and the number of patents recorded by non-banks as new collateral.⁵⁸ The ratio of patents as collateral recorded by all entities, banks and non-banks, to

financing statement covering accounts or chattel paper that has been sold or goods that are the subject of a consignment, there is no obligation secured by the collateral covered by the financing statement and no commitment to make an advance, incur an obligation, or otherwise give value . . .”).

58. We rely on the data provided by USPTO for the total numbers of utility patents and design patents issued each year. See *U.S. Patent Statistics Chart: Calendar Years 1963 - 2015*, *supra* note 10.

Table 3

Patents Issued and Collateral Recorded by Banks and Non-Banks, 1980-2016

Year	Patents Issued	Collateral Recorded	Ratio	Bank		Non-Bank	
				Collateral Recorded	Ratio	Collateral Recorded	Ratio
2016	333,586	178,855	53.6%	117,262	35.2%	61,593	18.5%
2015	325,979	103,358	31.7%	42,012	12.9%	61,346	18.8%
2014	326,032	102,513	31.4%	64,591	19.8%	37,922	11.6%
2013	302,948	134,002	44.2%	83,813	27.7%	50,189	16.6%
2012	276,788	74,438	26.9%	39,826	14.4%	34,612	12.5%
2011	247,713	71,913	29.0%	44,072	17.8%	27,841	11.2%
2010	244,341	89,773	36.7%	46,484	19.0%	43,289	17.7%
2009	191,927	92,726	48.3%	46,688	24.3%	46,038	24.0%
2008	185,224	56,149	30.3%	26,283	14.2%	29,866	16.1%
2007	182,899	66,962	36.6%	28,706	15.7%	38,256	20.9%
2006	196,405	57,313	29.2%	32,614	16.6%	24,699	12.6%
2005	157,718	40,383	25.6%	18,458	11.7%	21,925	13.9%
2004	181,299	42,194	23.3%	21,810	12.0%	20,384	11.2%
2003	187,012	48,544	26.0%	26,783	14.3%	21,761	11.6%
2002	184,375	45,492	24.7%	27,440	14.9%	18,052	9.8%
2001	183,970	31,100	16.9%	16,816	9.1%	14,284	7.8%
2000	175,979	25,570	14.5%	14,613	8.3%	10,957	6.2%
1999	169,085	20,679	12.2%	9,822	5.8%	10,857	6.4%
1998	163,142	22,002	13.5%	13,731	8.4%	8,271	5.1%
1997	124,069	12,662	10.2%	7,479	6.0%	5,183	4.2%
1996	121,696	14,851	12.2%	9,198	7.6%	5,653	4.6%
1995	113,834	11,132	9.8%	5,739	5.0%	5,393	4.7%
1994	113,587	10,495	9.2%	5,258	4.6%	5,237	4.6%
1993	109,746	10,685	9.7%	5,970	5.4%	4,715	4.3%
1992	107,394	10,394	9.7%	6,277	5.8%	4,117	3.8%
1991	106,696	11,428	10.7%	6,222	5.8%	5,206	4.9%
1990	99,077	12,979	13.1%	7,759	7.8%	5,220	5.3%
1989	102,533	13,112	12.8%	8,663	8.4%	4,449	4.3%
1988	84,272	14,840	17.6%	9,257	11.0%	5,583	6.6%
1987	89,385	8,933	10.0%	5,024	5.6%	3,909	4.4%
1986	76,862	15,865	20.6%	8,884	11.6%	6,981	9.1%
1985	77,245	6,086	7.9%	3,040	3.9%	3,046	3.9%
1984	72,650	5,770	7.9%	2,546	3.5%	3,224	4.4%
1983	61,982	5,418	8.7%	3,439	5.5%	1,979	3.2%
1982	63,276	3,426	5.4%	1,421	2.2%	2,005	3.2%
1981	71,064	2,658	3.7%	737	1.0%	1,921	2.7%
1980	66,170	848	1.3%	226	0.3%	622	0.9%

[1] We rely on the data provided by USPTO for the total numbers patents issued and collateral assignments each year.

https://www.uspto.gov/web/offices/ac/ido/oeip/taf/us_stat.htm

<https://www.uspto.gov/learning-and-resources/electronic-data-products/patent-assignment-dataset>

(accessed Nov. 10, 2017).

<https://patentlibrarian.com/2017/12/28/u-s-patent-statistics-and-numbers-for-2017/>

(Update accessed Jan. 15, 2018).

the number of newly issued patents each year followed a zig zag path from 1.3% to 53%. From 1980 to 1985, the ratio remained in the single digits. From 1986 to 1991, the ratio advanced into the teens. From 1992 to 1995, the ratio dropped back to the single digits. From 1996 to 2001, the ratio returned to the teens. From 2002, the ratio jumped into the 20s, fluctuating between 23% and 53.6%.

In 1981, there were 71,064 patents issued while banks recorded 737 patents as collateral, yielding the ratio of 1%. However, in the same year, non-banks were more receptive than banks and accepted 1,921 patents, or 2.7%, as collateral. Likewise, in 1982, banks recorded 1,421 patents, or 2.2%, as collateral, while non-banks recorded 2,005 or 3.2%. For most of the subsequent years (1983 to 2016), banks recorded more patents as collateral than non-banks.

Overall, banks, as well as non-banks, exhibit strong aversion to lending against patents. Even in the best year, 2016, banks and non-banks accepted and recorded a total of 178,855 patents, or 53.6% of patents issued that year, as collateral. That means the majority of patents remain unleveraged in financing.⁵⁹

Figure 3

Patents Issued and Collateral Recorded by Banks and Non-Banks

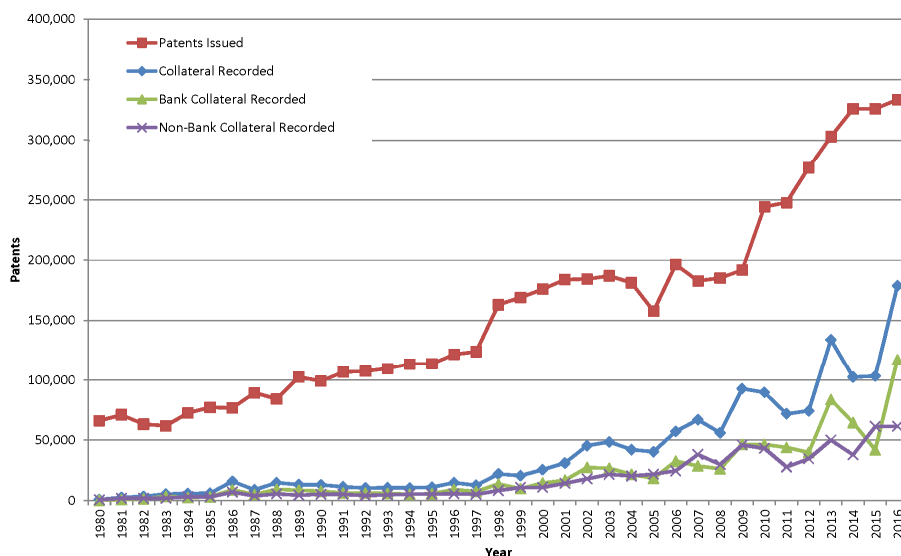
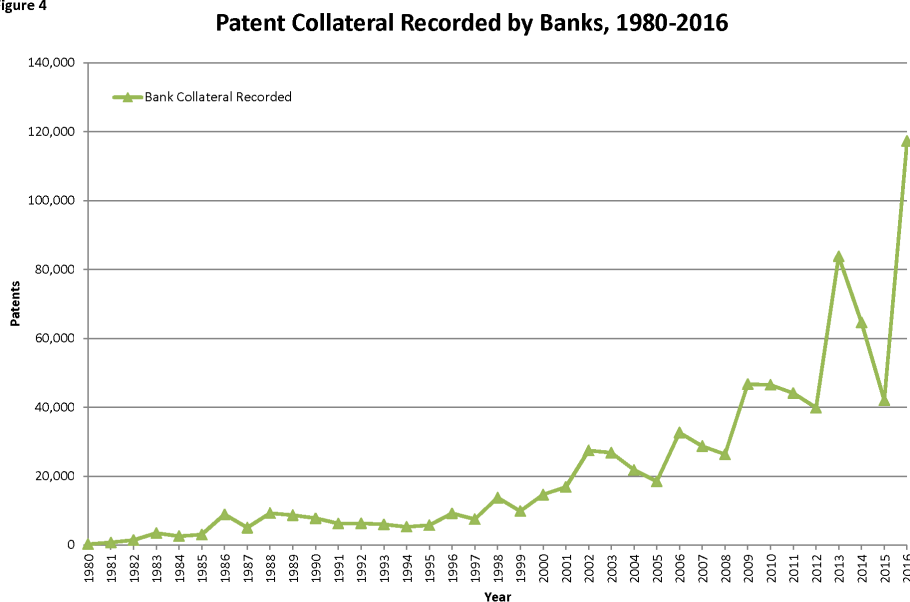


Figure 3, *Patents Issued and Collateral Recorded by Banks and Non-Banks, 1980–2016*, is a companion to **Table 1**, demonstrating the underutilization of patents as collateral in graphic means.

59. For comparison purposes, in 2017 alone, more than 70% of houses serve as collateral. Ann Carrns, *Owning a Home, Mortgage Free*, N.Y. TIMES, Jan. 16, 2013, <https://bucks.blogs.nytimes.com/2013/01/16/owning-a-home-mortgage-free/> [<https://perma.cc/ZG83-Y2FL>] (reporting that 71% of home owners use their houses as collateral); Matthew Michaels, *The Way Americans Buy Homes Is Changing — And It Could Mean Trouble for the Middle Class*, BUS. INSIDER (Dec. 6, 2017, 11:28 AM), <http://www.businessinsider.com/home-buying-america-changing-2017-12> [<https://perma.cc/9C8K-3JET>].

In summary, **Tables 1-3** and **Figures 1-3** reveal that banks indeed have a strong aversion to recognizing and accepting patents as collateral in commercial financing with their customers. Millions of patents procured by companies are available as security for loans, but banks decline to include patents in their calculation of reserve and reduction of risks. Regardless of the evidence that patents are valuable, banks ignore patents. Part IV, *infra*, will explore possible explanations for banks' strong aversion toward accepting patents as collateral.

Figure 4



II. A CLOSER STUDY OF BANKS ACCEPTING PATENTS AS COLLATERAL

A. Banks and Patent Collateral from 1980 to 2016

Observing that an overwhelming majority of banks do not provide loans with patents as collateral, provides an incomplete picture. The few banks that have recorded their security interests in patents warrant due attention. Though the actual number of patents as collateral is miniscule compared to the vast number of patents available for use as collateral, a closer examination reveals a pattern of bank activities involved in patent collateral. **Figure 4** and **Table 4** illustrate that banks have increased their filings of security interests in patents. From 226 patents as collateral

Table 4

**Patent Collateral Recorded by Banks
1980-2016**

<u>Year</u>	<u>Bank Collateral Recorded</u>	<u>Year</u>	<u>Bank Collateral Recorded</u>
2016	117,262	1997	7,479
2015	42,012	1996	9,198
2014	64,591	1995	5,739
2013	83,813	1994	5,258
2012	39,826	1993	5,970
2011	44,072	1992	6,277
2010	46,484	1991	6,222
2009	46,688	1990	7,759
2008	26,283	1989	8,663
2007	28,706	1988	9,257
2006	32,614	1987	5,024
2005	18,458	1986	8,884
2004	21,810	1985	3,040
2003	26,783	1984	2,546
2002	27,440	1983	3,439
2001	16,816	1982	1,421
2000	14,613	1981	737
1999	9,822	1980	226
1998	13,731		

[1] We rely on USPTO data for the collateral assignments each year.
<https://www.uspto.gov/learning-and-resources/electronic-data-products/patent-assignment-dataset>
 (accessed Nov. 10, 2017).

recorded by banks in 1980, the number gradually increased to 13,731 in 1998.⁶⁰ By 2009, the number advanced into the 40,000 territory.⁶¹ In recent years, the number leaped to 83,813 in 2013; 64,591 in 2014; 42,012 in 2015; and 117,262 in 2016.⁶²

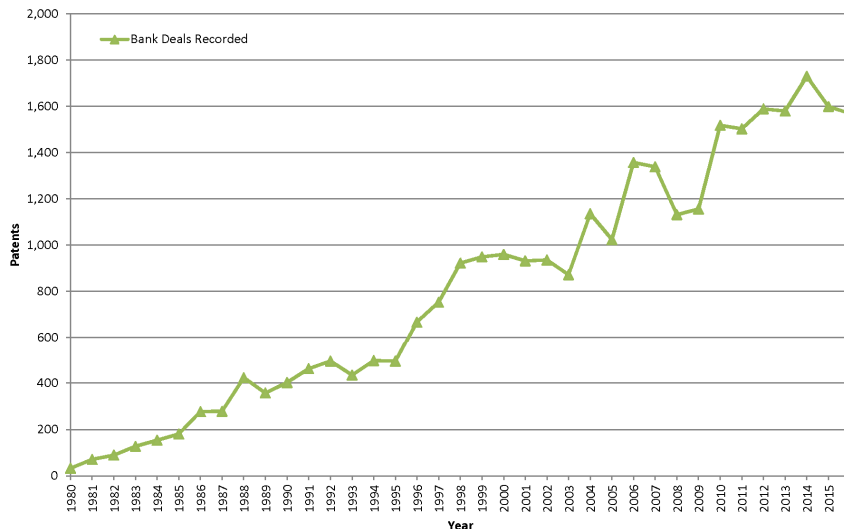
60. *See supra* Table 4.

61. *See supra* Tables 3–4.

62. *Id.*

Figure 5

Bank Deals with Patent Collateral, 1980-2016



From 2002 to 2016, the ratio between patents issued and patents as collateral recorded by banks left the single digits, as seen in the prior two decades, and jumped into the double digits. The ratio expressed in percentage, however, fluctuated between 11.7% and 35.2% of patents issued each year. For example, in 2013, there were 302,948 patents issued and banks recorded 83,813 patents, or 27.7%, as collateral. In 2015, however, there were 325,979 patents newly issued but banks recorded 42,012 patents, or 19.8%, as collateral.

Overall, based on the patent collateral recorded each year, there is a clear indication that banks are becoming more willing to accept patents as collateral. But the patent collateral recorded by banks is still modest compared to the total patents issued each year and the total patents in force.⁶³

Also, banks have increased the number of deals or transactions involving patent collateral, as seen in **Figure 5** and **Table 5**.

The increase in patent collateral and deals with patents as collateral, as shown in **Tables 4-5** and **Figures 4-5**, is a credible signal that some banks have recognized that patents are worthy of inclusion in their commercial lending to businesses. The inclusion, however, does not mean that banks make their loans specifically against

63. See *supra* Tables 1–2.

Table 5**Bank Deals with Patent Collateral, 1980-2016**

<u>Year</u>	<u>Bank Deals Recorded</u>	<u>Year</u>	<u>Bank Deals Recorded</u>
2016	1,568	1997	753
2015	1,599	1996	667
2014	1,730	1995	495
2013	1,580	1994	497
2012	1,589	1993	434
2011	1,503	1992	495
2010	1,518	1991	462
2009	1,156	1990	402
2008	1,132	1989	357
2007	1,339	1988	423
2006	1,357	1987	278
2005	1,024	1986	277
2004	1,136	1985	180
2003	872	1984	153
2002	936	1983	127
2001	932	1982	89
2000	960	1981	71
1999	949	1980	32
1998	922		

[1] We rely on USPTO data for the collateral assignments each year.

<https://www.uspto.gov/learning-and-resources/electronic-data-products/patent-assignment-dataset>
(accessed Nov. 10, 2017).

the patents.⁶⁴ In a bank loan, the bank may count only inventory and accounts receivable in their risk calculation, but the banks may take a security interest on *all* of the borrower's assets, including patents.⁶⁵

64. *In re Cybernetic Servs., Inc.*, 239 B.R. 917, 923 (B.A.P. 9th Cir. 1999) (“[The lenders] have a blanket security interest in all of Debtor’s assets, including ‘general intangibles.’ The parties agree that this was sufficient to create a security interest in the Patent.”).

65. For example, the debtor granted to the lender a security interest in all of debtor’s assets. *In re Adoni Grp., Inc.*, 530 B.R. 592, 594 (Bankr. S.D.N.Y. 2015). The security agreement includes the

Table 6**Patent Collateral per Bank Deal, 1980-2016**

<u>Year</u>	<u>Patents per Bank Deals</u>	<u>Year</u>	<u>Patent per Bank Deals</u>
2016	74.8	1997	9.9
2015	26.3	1996	13.8
2014	37.3	1995	11.6
2013	53.0	1994	10.6
2012	25.1	1993	13.8
2011	29.3	1992	12.7
2010	30.6	1991	13.5
2009	40.4	1990	19.3
2008	23.2	1989	24.3
2007	21.4	1988	21.9
2006	24.0	1987	18.1
2005	18.0	1986	32.1
2004	19.2	1985	16.9
2003	30.7	1984	16.6
2002	29.3	1983	27.1
2001	18.0	1982	16.0
2000	15.2	1981	10.4
1999	10.3	1980	7.1
1998	14.9		

The lien on all of the borrower's assets often refers to the powerful "blanket lien."⁶⁶ The blanket lien has become very common in commercial lending by

following assets

[A]ll of our accounts, contract rights, computer software, programs, stored data, aging schedules, customer lists, and general intangibles (including all patents, trademarks, and copyrights registered in the United States Copyright or Patent offices, together with the goodwill of the business in connection with which such trademark may be used and the royalties and other fees which become due for the use of such patents, trademarks, or copyrights), whether or not otherwise specifically assigned to you in this Agreement, now existing or hereafter acquired, and in the proceeds and products thereof, any security and guarantees therefor, in the goods and property represented thereby, and in all of our books and records relating to the foregoing, and in all reserves, credit balances, sums of money at any time to our credit with you, and any of our property at any time in your possession. In addition to Receivables and all proceeds thereof, we also assign to you all right, title and interest, and grant to you a security interest in, the following collateral to secure all of our present and future obligations and indebtedness to you: (1) all deposit, savings, passbook or like accounts maintained at any bank, savings and loan or similar institution; and (2) the proceeds of any tax refund due to us by the state or federal government.

Id.

66. *In re Qmect, Inc.*, No. 04-41044 TK, 2007 WL 435756, at *3 (Bankr. N.D. Cal. Dec. 11, 2007) (noting that "the secured creditor . . . had a security interest in virtually all of the debtor's assets, including accounts receivable and inventory—that is, a 'blanket lien'"); *In re Cafeteria Operators*,

banks.⁶⁷ That means banks continue to have a strong aversion to patents as collateral.

Moreover, the patents to deals ratio, shown in **Table 6** and **Figure 6**, provides a better understanding of banks and their dealings with patents.

Table 6 and **Figure 6** show the ratio of patents serving as collateral per deal. The larger the number of patents per deal means the more established the borrower is. That is not good news to companies in the innovation sectors. Startups and technology companies generally are high growth, generate no profits, and have few patents.⁶⁸ Established and legacy companies have more patents. In other words, banks have made loans to mostly established companies, as seen in **Table 6** and **Figure 6**.

L.P., 299 B.R. 400, 406 (Bankr. N.D. Tex. 2003) (noting that the parties “do not dispute that the Bank Group’s security interest extends to virtually all of Debtors’ real and personal property—characterized by the Bank Group as a ‘blanket lien’”). The blanket lien is powerful, as observed by the Court in *In re Eastern Equipment Co.*, 327 B.R. 980, 984 n.5 (S.D.W. Va. 1983):

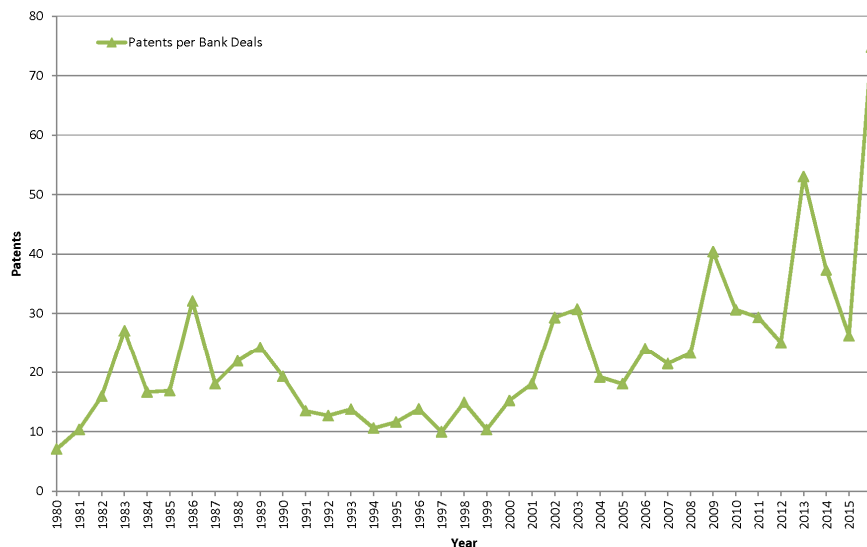
Where, soon after a bankruptcy filing, a creditor seeking relief from the § 362 stay holds a security interest not only in equipment sold to the debtor but also a blanket lien on all other debtor assets, including after-acquired property, it will often times be of dubious worth at that early and sometimes confused stage of the bankruptcy case to make the painstaking analysis required to inventory virtually every personal property item of a business debtor’s estate, evaluate it, search the records for liens, seek out other potential lienholders and possibly add them as parties as well as determine the validity and amount of their claims and rank the relative priorities of all the claimants as to each such asset. This time-consuming process, expensive to the parties and consuming of the court’s resources, may often prove to be utterly useless and highly wasteful as the case develops.

67. See Barbara M. Goldstein, *Collateral Descriptions and Blanket Liens: Is the Kitchen Sink Enough?*, N.Y.L.J. (Jun. 4, 2015), <https://www.law.com/newyorklawjournal/almID/1202728248480/collateral-descriptions-and-blanket-liens-is-the-kitchen-sink-enough/> [<https://perma.cc/9JMV-V94T>] (observing that blanket or “all assets” security interests are among “the most common, if not the most common, type of lien required of borrowers by secured lenders in commercial transactions”).

68. See, e.g., CAROLINE HAUSSLER, DIETMAR HARGHO & ELIZABETH MULLER, *TO BE FINANCED OR NOT . . . – THE ROLE OF PATENT FOR VENTURE CAPITAL-FINANCING* (2009), <http://ftp.zew.de/pub/zew-docs/dp/dp09003.pdf> [<https://perma.cc/EFE4-X5UL>]; Sebastian Hoenen et al., *The Diminishing Signaling Value of Patents Between Early Rounds of Venture Capital Financing*, 43 RES. POL’Y 956 (2014); David H. Hsu & Rosemarie H. Ziedonis, *Patents as Quality Signals for Entrepreneurial Ventures*, 8 ACAD. MGMT. PROC. 1, 1 (2008).

Figure 6

Patent Collateral per Bank Deal, 1980-2016



B. The Leaders Among Six Thousand Banks

Our preliminary data on identifying leaders among six thousand banks reveals a striking pattern. There is a small group of banks dominating the filing of patents as collateral. Each bank filed more than two thousand patents as collateral in 2016. **Table 7** shows the top banks with the largest number of patents as collateral filed with the USPTO in 2016. These top banks are familiar names and are among the largest banks in the United States.⁶⁹

Table 7

<u>Name</u>	<u>Patent Collateral</u>
Bank of America	35,220
BNY Mellon	11,188
Citibank	2,639
Deutsche Bank	5,784
JPMorgan Chase Bank	19,605
Royal Bank of Canada	2,457
U.S. Bank	21,661
Wells Fargo Bank	6,319

69. *Federal Reserve Statistical Release: Large Commercial Banks*, BOARD GOVERNORS FED. RES. SYS. (last updated Jan. 18, 2018), <https://www.federalreserve.gov/releases/lbr/20170930/default.htm> [<https://perma.cc/237F-4F4Z>].

To understand this group of bank leaders better, we extracted the number of deals associated with the patent collateral filing and then calculated the ratio. **Table 8** shows that there is a range of 37 to 860 patents as collateral for each deal, averaging 143 patents as collateral per deal. The large number (143 patents per deal) suggests that the leaders provided loans to established companies and recorded patents as collateral. This data indicating that loans are primarily made to established companies means that the leaders have shunned startup and technology companies in the innovation-intensive sector because these young and entrepreneurial companies are still in the high-growth stage and have few patents.

Table 8
2016 Deals and Ratio

<u>Name</u>	<u>Patent Collateral</u>	<u>Deals</u>	<u>Ratio</u>
Bank of America	35,220	192	183.4
BNY Mellon	11,188	13	860.6
Citibank	2,639	48	55.0
Deutsche Bank	5,784	51	113.4
JPMorgan Chase Bank	19,605	175	112.0
Royal Bank of Canada	2,457	26	94.5
U.S. Bank	21,661	58	373.5
Wells Fargo Bank	6,319	169	37.4

The data in **Table 8** confirms that these “leaders” are not the type of outlier banks that operate in the innovation sectors and lend to startups, or high-growth entrepreneurial companies.⁷⁰

III. TRADITIONAL BANK LENDING AND PATENT AVERSION

A. Banks and Their Decline

Banks in the United States are chartered either as state or national banks.⁷¹ A “national bank” or “federal savings bank,” as the name denotes, can operate across the United States under the federal bank charter system.⁷² The Office of the

70. Examples of outlier banks are Silicon Valley Bank and Comerica. In our companion paper, *IP Venture Banking*, we focus on the outlier banks that lend to startups and high growth entrepreneurial companies. Xuan-Thao Nguyen & Erik Hille, *IP Venture Banking* (forthcoming) (on file with authors).

71. Christine E. Blair & Rose M. Kushmeider, *Challenges to the Dual Banking System: The Funding of Bank Supervision*, 18 FDIC BANKING REV. 1 (2006), <https://www.fdic.gov/bank/analytical/banking/br18n1full.pdf> [<https://perma.cc/CE4V-3JHE>].

72. See *Watters v. Wachovia Bank, N.A.*, 550 U.S. 1, 6 (2007) (describing national banks and their activities across the United States as authorized under the National Bank Act, and the role of the Office of the Comptroller of the Currency in supervising national banks and their subsidiaries). In

Comptroller of the Currency has the authority to charter and regulate national banks and federal savings institutions.⁷³

Under the dual banking system, the counterpart of federal banking is state banking.⁷⁴ That means a state-chartered bank does not carry “national” or “federal” in its name and has permission to conduct banking services only within a particular state.⁷⁵ Every state has a specific agency to charter and regulate state-chartered banks.⁷⁶ Because some state banks are members of the Federal Reserve, they are also subject to the Federal Reserve’s regulations.⁷⁷ The remainder, non-member state banks, are under the regulations of the Federal Deposit Insurance Corporation (“FDIC”).⁷⁸

recent years, some national banks have decided to shift charter, relieving themselves from U.S. regulators and subjecting themselves to laxer state regulators. See Jessica Silver-Greenberg, *Small Banks Shift Charter to Avoid US as Regulator*, N.Y. TIMES, Apr. 2, 2012, <http://www.nytimes.com/2012/04/03/business/small-banks-shift-charters-to-avoid-us-as-regulator.html> [<https://web.archive.org/web/20180730202540/http://www.nytimes.com/2012/04/03/business/small-banks-shift-charters-to-avoid-us-as-regulator.html>] (reporting that small and community banks shift charters from federal to state because they don’t want to face the same federal regulator for big commercial banks).

73. The OCC was established by the National Currency Act of 1863. See *History: 150 Years of the OCC*, OFF. COMPTROLLER CURRENCY, <https://www.occ.gov/about/what-we-do/history/index-history.html> [<https://perma.cc/C9UV-EYTW>] (last visited Sept. 15, 2018). It is an independent bureau within the U.S. Department of the Treasury, having the authority to charter, regulate, and supervise all national banks, federal savings institutions, and foreign banks in the United States. See *About the OCC*, OFF. COMPTROLLER CURRENCY, <https://www.occ.gov/about/what-we-do/mission/index-about.html> [<https://perma.cc/29HX-K3PZ>] (last visited Sept. 15, 2018).

74. Arthur E. Wilmarth, Jr., *The Expansion of State Bank Powers, the Federal Response, and the Case for Preserving the Dual Banking System*, 58 FORDHAM L. REV. 1133, 1152–54 (1990) (describing the history of dual banking system in the United States).

75. Today, State Banking Departments often list all local banks chartered by the state at their websites. See, e.g., *State Chartered Banks*, ARK. ST. BANK DEP’T, <http://banking.arkansas.gov/financial-institution-info/financial-institution-lists/state-chartered-banks> [<https://perma.cc/9LHK-HG8U>] (last visited Sept. 15, 2018). Alternatively, states may provide easy searches of active state chartered banks. See, e.g., *DIFS Insurance and Financial Services Search*, DEP’T INS. & FIN. SERVICES, <http://difs.state.mi.us/locators?searchtype=ChtBank> [<https://perma.cc/T6GZ-YC8D>] (last visited Sept. 15, 2018).

76. Carl Felsenfeld & Genci Bilali, *Is There a Dual Banking System?*, 2 J. BUS. ENTREPRENEURSHIP & L. 30, 53 (2008) (asserting that the dual banking system is illusory). The authors note the unique aspects of the American dual banking system:

In America, banks report to a combination of federal and state banking regulators. Banks can select their own type of charter, federal or state, which best fits their business purpose. Commercial banks, which are federally chartered, are regulated by the OCC. On the other hand, state banks are regulated by their home states and occasionally a federal regulator (e.g., the Federal Reserve System regulates state chartered banks which voluntarily select membership in the Federal Reserve; the FDIC regulates state, nonmember banks). In other words, banks determine which regulators they will report to based on the chosen charter.

Id.

77. *Id.*

78. *The FDIC and the Banking Industry: Perspective and Outlook*, FED. DEPOSIT INS. CORP., <https://www.fdic.gov/about/strategic/bankingindustry.html> [<https://perma.cc/K6ZR-5J3Y>] (last updated Sept. 15, 2018) (“[T]he FDIC is the primary federal regulator of federally insured state-chartered banks that are not members of the Federal Reserve System.”).

In addition, “commercial banks” and “community banks” are two frequent names for banks based on their activities. Commercial banks typically provide national banking operations, have large cash reserves to make large business loans, tolerate greater risks associated with the loans, offer corporate clients comprehensive banking services, and employ technology to enhance their services.⁷⁹ Community banks are stand-alone and small banks, serving local community needs for cash safe, loans to small businesses and farmers, and mortgages for local housing.⁸⁰ Community banks represent ninety-two percent of FDIC-insured institutions.⁸¹ Despite having only fourteen percent of the banking industry’s assets, community banks provide forty-three percent of the industry’s small loans to businesses and farmers.⁸²

Since the 1990s, the banking sector has been experiencing a steady decline in the number of banks.⁸³ In the decade between 1994 and 2004, the sector witnessed a 29.2% decline in bank charters, as seen in the bank downfall from 12,589 in 1994 to 8,918 in 2004.⁸⁴ The mergers and acquisitions of banks across states, encouraged by the enactment of the Riegle-Neal Interstate Banking and Branching Efficiency Act in 1994, accelerated the drop in bank charters.⁸⁵ Likewise, the Great Recession witnessed bank failures, decimating 507 bank charters between 2008 and 2014.⁸⁶

79. Charles S. Morris, *What Should Banks Be Allowed to Do?*, FED. RES. BANK KANSAS CITY ECON. REV., Fourth Quarter 2011, at 55, <https://www.kansascityfed.org/YiRMZ/publicat/econrev/pdf/11q4Morris.pdf> [<https://perma.cc/P564-YYK9>] (explaining the traditional role of commercial banks in the economy such as “taking demand and other deposits, making loans, and providing payment services—form the basis of the financial structure that supports economic activity”).

80. For a fuller description of community banks, see *Financial Performance and Management Structure of Small, Closely Held Banks*, FDIC Q., Third Quarter 2015, at 38, <https://www.fdic.gov/bank/analytical/quarterly/2015-vol9-4/article1.pdf> [<https://perma.cc/Z4DQ-KC9M>]. Community banks focus on relationships in competing for customers against large commercial banks. See Evan Sparks, *Small Business: A Competitive Edge for Community Banks*, ABA BANKING J. (Apr. 29, 2016), <https://bankingjournal.aba.com/2016/04/small-business-a-competitive-edge-for-community-banks/> [<https://perma.cc/4W9P-HKES>].

81. *Financial Performance and Management Structure of Small, Closely Held Banks*, *supra* note 80.

82. “Community banks, which account for forty-three percent of the industry’s small loans to businesses, continued to grow their small business loans at a faster pace than the rest of the industry.” See Martin J. Gruenberg, Chairman, Fed. Deposit Ins. Corp., Chairman’s Opening Statement Fourth Quarter 2016 Quarterly Banking Profile (Feb. 28, 2017), <https://www.fdic.gov/news/news/speeches/spfeb2817.html> [<https://perma.cc/AX2K-BHMY>]; see also Constance Gustke, *Community vs. Big Banks*, BANKRATE (Jan. 23, 2014), <http://www.bankrate.com/banking/community-banks-vs-big-banks/> [<https://perma.cc/USL7-WQ95>].

83. *Bank Charters, Branches on the Decline*, FED. RES. BANK ST. LOUIS (Sept. 22, 2015), <https://www.stlouisfed.org/on-the-economy/2015/september/bank-charters-branches-decline> [<https://perma.cc/C8RY-GERF>]; see also Michelle Cissi, *Recent U.S. Facility and Deposit Trends*, FED. RES. BANK ST. LOUIS (Aug. 25, 2015), <https://www.stlouisfed.org/bank-supervision/supervision-and-regulation/banking-insights/recent-us-facility-and-deposit-trends> [<https://perma.cc/PV77-VMYR>].

84. *Bank Charters, Branches on the Decline*, *supra* note 83.

85. *Id.*

86. *Id.*

Advances in technology and online banking also contribute to the decline in bank branch networks.⁸⁷

B. Banks and Lending Practices

Based on assets, there are two groups of small and large banks. As of the end of 2014, there were 5,961 banks with \$10 billion or less in assets and 101 banks with more than \$10 billion in assets.⁸⁸ Banks exist primarily for lending purposes and their lending practices are subject to statutes and regulations with respect to lending limits, loans to insiders, involuntary tying arrangements involving loans, and usury.⁸⁹ Lending limits restrict the total amount of loans to any one person at any one time.⁹⁰ The limits force banks to diversify their loans to different borrowers and increase access to banking services.⁹¹

Under the generally applicable lending limits, how much a bank can lend to a borrower depends on whether the loan is fully secured by “readily marketable collateral.”⁹² If the loan does not satisfy the collateral requirement, the applicable limit is the basic fifteen percent of the bank’s unimpaired capital and surplus.⁹³ If the loan satisfies the collateral requirement, the applicable limit is an additional ten

87. Andy Peters, *Not Dead Yet: Branches Remain Crucial to Banks’ Growth Plans*, AM. BANKER (Mar. 1, 2018, 9:00 AM), <https://www.americanbanker.com/slideshow/not-dead-yet-branches-remain-crucial-to-banks-growth-plans> [https://perma.cc/59H2-U48B] (“[A]ll the new offices banks are opening will not make up for the scores of ones they are closing. It is safe to say that banks’ continued pruning will result in a net loss of branches over both the short term and long term.”).

88. Hester Peirce & Stephen Matteo Miller, *Small Banks by the Numbers, 2000–2014*, GEO. MASON: MERCATUS CTR. (Mar. 17, 2015), <https://www.mercatus.org/publication/small-banks-numbers-2000-2014> [https://perma.cc/5VSD-5GWX].

89. MICHAEL P. MALLOY, *BANKING LAW AND REGULATION* 6-8 to 6-11 (2d ed. 2017).

90. The term “person” includes an individual, sole proprietorship, partnership, joint venture, association, trust, estate, business trust, corporation, sovereign government or agency, instrumentality, or political subdivision thereof, or any similar entity or organization. 12 U.S.C. § 84(b)(2) (2012).

91. See MALLOY, *supra* note 89, at 6-11 (“Lending limits are intended to ensure the safety and soundness of banks by preventing excessive concentrations of lending to one person (or to related persons that are financially dependent). This device also has the effect of promoting diversification of loans and equitable access to banking services.”).

92. 12 C.F.R. § 32.2(v) (2015). This section further provides that “readily marketable collateral” means “financial instruments and bullion that are salable under ordinary market conditions with reasonable promptness at a fair market value determined by quotations based upon actual transactions on an auction or similarly available daily bid and ask price market.” *Id.* The term “financial instrument” is further defined in section 32.2(p) as follows:

Financial instrument means stocks, notes, bonds, and debentures traded on a national securities exchange, OTC margin stocks as defined in Regulation U, 12 CFR part 221, commercial paper, negotiable certificates of deposit, bankers’ acceptances, and shares in money market and mutual funds of the type that issue shares in which national banks or savings associations may perfect a security interest. Financial instruments may be denominated in foreign currencies that are freely convertible to U.S. dollars. The term financial instrument does not include mortgages.

93. See *id.* § 32.3(a) (“A national bank’s or savings association’s total outstanding loans and extensions of credit to one borrower may not exceed 15 percent of the bank’s or savings association’s capital and surplus, plus an additional 10 percent of the bank’s or savings association’s capital and surplus, if the amount that exceeds the bank’s or savings association’s 15 percent general limit is fully secured by readily marketable collateral.”).

percent of the bank's unimpaired capital and surplus, separate and additional to the basic fifteen percent limit.⁹⁴ That means the bank can make loans with a total amount of up to the twenty-five percent limit.

As illustrated elsewhere, a hypothetical commercial bank has a total unimpaired capital and surplus of \$10,000,000.⁹⁵ The bank has a borrower who has no outstanding loans or credit with the bank.⁹⁶ The borrower has assets that are readily marketable collateral to fully secure loans.⁹⁷ That means the bank can lend to that borrower \$1,500,000 (15% basic limit) plus \$1,000,000 (the additional 10% limit), for a total of \$2,500,000.⁹⁸ If the borrower is not qualified for the additional 10% limit, the bank can provide loans and extensions to the borrower that would not, in the aggregate, exceed the \$1,500,000 limit.⁹⁹

Applying the general limit requirements, technology companies will not be able to obtain loans for the ten percent additional limit because they simply do not own "readily marketable collateral."¹⁰⁰ Intellectual property assets do not fall within the definition of "readily marketable collateral," as the definition covers mainly financial instruments.¹⁰¹ That means banks will not blatantly violate the law by making loans or extending credit to technology companies for the additional ten percent limit with intellectual property as collateral.

The next concern is whether banks are willing to lend to technology companies for the basic fifteen percent limit. Though the law allows banks to make the aggregate loans with or without collateral within the fifteen percent limit of the bank's capital and surplus, banks are required to engage in banking practices that are not unsafe or unsound.¹⁰² A banking practice is unsafe or unsound if the bank's action is "contrary to generally accepted standards of prudent operation and potentially exposes the bank to an abnormal risk of loss or harm contrary to prudent banking practices."¹⁰³ In other words, an unsafe or unsound practice is the type of practice that poses a "reasonably foreseeable undue risk to the institution."¹⁰⁴

The law does not provide a list of unsafe or unsound banking practices. Court cases and FDIC Board decisions, however, provide numerous examples of unsafe

94. *See id.*:

To qualify for the additional 10 percent limit, the bank or savings association must perfect a security interest in the collateral under applicable law and the collateral must have a current market value at all times of at least 100 percent of the amount of the loan or extension of credit that exceeds the bank's or savings association's fifteen percent general limit.

95. *See* MALLOY, *supra* note 89, at 6-11 to 6-12.1.

96. *Id.*

97. *Id.*

98. *Id.*

99. *Id.*

100. *See generally* 12 C.F.R. § 32.2(v) (providing definition of "readily marketable collateral").

101. *See generally id.* § 32.2(p) (providing definition for "financial instruments").

102. *See* Van Dyke v. Bd. of Governors of Fed. Reserve Sys., 876 F.2d 1377, 1380 (8th Cir. 1989) (articulating the standards to evaluate whether a bank is engaging in unsafe or unsound practices).

103. Michael v. FDIC, 687 F.3d 337, 352 (7th Cir. 2012).

104. Landry v. Fed. Deposit Insurance. Corp., 204 F.3d 1125, 1138 (D.C. Cir. 2000).

or unsound banking practices. They include, for instance, lacking the necessary expertise and information to evaluate the transactions the bank enters into,¹⁰⁵ extending credit without adequate documentation,¹⁰⁶ making loans without credit analysis,¹⁰⁷ violating the bank's loan policy, obtaining inadequate collateral, and failing to verify collateral being pledged and double-pledging of the collateral.¹⁰⁸

In the riskier area of bank lending activities, such as lending for corporate acquisitions, developments, and construction projects, the unsafe or unsound practices reflect concerns unique to those industries. They encompass, for example, generating loans that the bank lacks the capacity to underwrite adequately, relying on deficient or outdated appraisals, lending to a borrower without ensuring that the borrower will have sufficient funds to complete the project, and failing to perform sufficient analysis of the borrower and guarantor's finances in order to verify their ability to repay the loan.¹⁰⁹

Consequently, banks would be averse to making a loan or extending credit to technology companies with patents as their key asset of the enterprise value for fear of falling into the unsafe or unsound practices.¹¹⁰ First, most startup and technology companies are losing money because they are still in the growth stages.¹¹¹ These companies often have cash flow problems.¹¹² Second, these companies do not have an established credit history.¹¹³ Third, technology companies do not have tangible

105. See, e.g., *id.* (upholding FDIC Board's finding of unsafe and unsound practice where the bank's management entered into transactions "with minimal information and virtually no expertise").

106. *In re* Stephens Sec. Bank, 1991 WL 789326, at *1 (F.D.I.C. Aug. 9, 2003).

107. *In re* First State Bank, 2003 WL 21307613 (F.D.I.C. Apr. 25, 2003).

108. *Michael*, 687 F.3d at 353.

109. See *Alliance Fed. Sav. & Loan Ass'n v. Fed. Home Loan Bank Bd.*, 782 F.2d 490, 494–95 (5th Cir. 1986) (addressing unsafe or unsound practices in the acquisition, development, and construction context); *In re* Faigin, 2015 WL 9855325, at *13 (F.D.I.C. Dec. 15, 2015).

110. David J. Denis, *Entrepreneurial Finance: An Overview of the Issues and Evidence*, 10 J. CORP. FIN. 301, 310–13 (2004) (noting innovative companies do not have track records, tangible collateral, revenues, or positive cash flows to satisfy traditional bank loans); *These 15 Hot Tech Companies Actually Are Losing Millions*, AOL (Oct. 7, 2015, 6:29 PM), <https://www.aol.com/article/2015/10/07/these-15-hot-tech-companies-actually-are-losing-millions/21246375/> [<https://perma.cc/S2XV-8C6F>]; Martin Zwilling, *10 Cash-Flow Surprises That Could Kill Your Startup*, ENTREPRENEUR (July 12, 2014), <https://www.entrepreneur.com/article/229048> [<https://perma.cc/RM4G-YS4J>] (stating that ninety percent of small-business failures are caused by poor cash flow).

111. Jean Murray, *Why Do Banks Say No to Business Startup Loans?*, BALANCE (Nov. 14, 2016), <https://www.thebalance.com/why-do-banks-say-no-to-business-startup-loans-398025> [<https://perma.cc/W8LG-Y7N6>] (explaining that new businesses lack the "four C's of Credit": collateral, capital, capacity, character).

112. Thomas Murphy, *Playing to a New Crow: How Congress Could Break the Startup Status Quo by Raising the Cap on the JOBS ACT's Crowdfunding Exemption*, 758 B.C. L. REV. 775, 782 (2017) (stating that tech companies often cannot meet the cash flow demands for traditional loans from banks).

113. Brian Krumm, *Understanding the New Tennessee Small Business Investment Company Credit Act: Stimulating Economic Growth at the Intersection of Free Market Capitalism and Government Intervention*, 11 TENN. J. BUS. L. 93, 93 (2010) ("Small businesses have difficulty raising capital primarily because banks are reluctant to provide conventional debt financing to companies with little to no track record.").

collateral to secure the loan or credit line.¹¹⁴ Fourth, even if a technology company does not have a cash flow problem, banks do not want to accept patents as collateral because banks have no expertise in conducting patent valuation.¹¹⁵

Overall, current bank lending practices prevent banks from making loans against intellectual property assets. Banks cannot rely on patents as collateral to reduce the bank's estimates of expected losses in case of default. That would have a direct impact on the bank's statutory capital requirements.

IV. ENDING PATENT AVERSION IN BANK LENDING

A. Ending Aversion with Banking Regulations

Hedge funds, investment banks, and investors' participation in patents-based lending are not new.¹¹⁶ These non-banks have aggressively pursued companies with marketable patents by providing loans secured by patent collateral.¹¹⁷ Non-banks have no aversion to patents because they operate outside banking regulatory constraints, and they do not face higher standards of lending based on financial ratios and capital requirements that hound both commercial and community banks.¹¹⁸

As the innovation economy and sectors continue to grow, non-banks will expand their lending practices to companies with patents as their main assets.¹¹⁹

114. David Mashburn, Comment, *The Anti-Crowd Pleaser: Fixing the Crowdfund Act's Hidden Risks and Inadequate Remedies*, 63 EMORY L.J. 127, 140 (2013) (noting that startups rarely have sufficient collateral to qualify for bank loans); see also OFFICE OF THE COMPTROLLER OF THE CURRENCY, U.S. DEP'T OF THE TREASURY, 2016 SURVEY OF CREDIT UNDERWRITING PRACTICES (2017), <https://www.occ.treas.gov/publications/publications-by-type/survey-credit-underwriting-practices-report/pub-survey-cred-under-2016.pdf> [<https://perma.cc/MJN3-3QBV>] (showing that banks made \$200.5 billion in loans to small businesses compared to \$4.689 trillion in loans to others, meaning that loans to small businesses constitute 4% of bank credit products).

115. A few companies have valuation experts work with financial institutions, including banks, to solve the valuation problem. See Jennifer Rankin, *M.CAM, The Knowledge Underwriter – How to Value Intangible Assets*, GUARDIAN (May 4, 2014, 9:11 AM), <https://www.theguardian.com/business/2014/may/04/innovators-mcam-knowledge-underwriter-value-intangible-assets-intellectual-property> [<https://web.archive.org/web/20151008163145/https://www.theguardian.com/business/2014/may/04/innovators-mcam-knowledge-underwriter-value-intangible-assets-intellectual-property>].

116. William Mann, *Creditor Rights and Innovation: Evidence from Patent Collateral*, 130 J. FIN. ECON. 25, 46 (2018); Maria Loumioti, *The Use of Intangible Assets as Loan Collateral* 37 (Nov. 1, 2012) (unpublished manuscript), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1748675 [<https://perma.cc/5JTX-2N4J>].

117. Sun Kim, *IP Asset Value as Collateral: The Increasing Use of Patents as Collateral in Asset-Based Lending*, ABFJOURNAL (Jan./Feb. 2016), <http://www.abfjournal.com/articles/ip-asset-value-as-collateral-the-increasing-use-of-patents-as-collateral-in-asset-based-lending/> [<https://perma.cc/4AU8-236M>].

118. *Id.* (noting that non-bank lenders “do not face regulatory constraints of commercial banks and are not beholden to lending standards based on financial ratios and capital regulation. Commercial banks are constrained by higher lending standards which have reduced the credit available to borrowers since the financial crisis.”).

119. Darian M. Ibrahim, *Debt as Venture Capital*, 2010 U. ILL. L. REV. 1169, 1191–92 (noting specialized lenders providing loans as venture capital to startups).

That means banks will miss out on the opportunity to have these companies as potential clients. Banks will not participate in lending to, and the shaping of, the innovation economy. To put it differently, banks are facing the danger of failing to evolve with the changing of what constitutes important assets in the new economy.

A way to end bank aversion to patent collateral in lending practices is to lift restrictions in banking laws and regulations to allow banks to accept patents as collateral and to provide loans against patents. Obviously, regulators and banks will be concerned about how to value patents, as they need certainty in identifying acceptable financial ratios and capital requirements.¹²⁰ With the rise in recognition of patents in assets-based lending by non-banks, expertise in patent valuation has been significantly improved over the years. Like any professional industry, the experts themselves can develop best practices to screen and evaluate patents. Also, banks can also rely on underwriters to reduce their risk exposure.¹²¹

Without addressing the valuation concern, banks will continue to be very reluctant in providing loans against patents for fear of violating the safe and sound lending requirements.

B. Ending Aversion with Secured Transactions Law

In general, Article 9 of the UCC governs all things relating to secured transactions, regardless of form, wherein all different types of personal property secure the payments or obligations.¹²² Recent revisions of UCC-9 improve and encourage the availability and accessibility of finance to businesses.¹²³ Unfortunately, the revisions fail to explicitly recognize the existence and the importance of intellectual property assets for collateral purposes.¹²⁴ Most

120. Sam Thacker, *Using Patents as Loan Collateral*, ALL BUS., <https://www.allbusiness.com/using-patents-as-loan-collateral-12743413-1.html> [<https://perma.cc/BS8F-6PZR>] (last visited Sept. 15, 2018) (recounting that for fifteen years in banking, the author has seen banks make loans against patents only two times, and stating that though most banks “acknowledge the greatest asset a company may own is its intellectual property, it is very difficult to put a value on that property so it can be used as collateral for loans”).

121. See Rankin, *supra* note 115 (stating that the company “underwrites lending on intellectual property, earning a fee from the lender, usually a bank, and in most cases the right to sell on the IP if the company defaults”).

122. U.C.C. § 9-109(a) (AM. LAW. INST. & UNIF. LAW COMM’N 2010) (providing the scope of Article 9); *id.* § 1-201(35) (providing that a “security interest” means an interest in personal property or fixtures which secures payment or performance of an obligation”).

123. John L. McCabe & Arthur H. Travers, *Introducing Revised Article 9 of The Uniform Commercial Code*, COLO. LAW., Sept. 2001, at 9 (“Article 9 was the great success story of the original UCC. It replaced the complex and confusing regime of independent security devices with a single device, the security interest in personal property, and it established a single filing system within each enacting state as the primary mechanism for giving notice to adverse claimants of that security interest. The Revision builds on that success.”); *UCC Article 9 Amendments (2010) Summary*, UNIFORM L. COMMISSION, [http://www.uniformlaws.org/ActSummary.aspx?title=UCC%20Article%209%20Amendments%20\(2010\)](http://www.uniformlaws.org/ActSummary.aspx?title=UCC%20Article%209%20Amendments%20(2010)) [<https://perma.cc/TF8D-EXE4>] (last visited Sept. 15, 2018).

124. UCC-9 drafters, instead, focused on the owners and users of intellectual property, and balanced their interest in the intellectual property. See Steven O. Weise, *The Financing of Intellectual Property Under Revised UCC Article 9*, 74 CHI. KENT L. REV. 1077, 1107 (1999) (“Revised Article 9

specifically, in the statutory provision for definitions of different types of collateral, from accession, accounts, as-extracted collateral, inventory, equipment, documents, instruments, chattel papers, investment property, letter of credit, and more—none exists for patents, trademarks, and copyrights.¹²⁵ This glaring omission speaks volumes as it is asserting that patents and other types of intellectual property assets are not as important as the assets listed in the same statutory provision.¹²⁶ The omission suggests that many assets of the old economy continue to serve as important collateral in secured financing.¹²⁷ The omission perhaps intimates that the drafters failed to comprehend what to do with intellectual property assets as collateral, refusing to directly address intellectual property assets, and preferring to sweep intellectual property under the rug within the use of residual “general intangibles.”¹²⁸

True, the drafters did mention intellectual property in the Official Comments to UCC 9-102 in its explanation of the catch-all “General Intangibles.”¹²⁹ That is grossly inadequate in both form and substance. In form, the mentioning of “intellectual property” is embedded within the explanation of a different collateral, i.e., “general intangible,” and it is not in the definition of that term itself.¹³⁰ In substance, it fails to recognize the new, innovation economy and the significant role of intellectual property assets to companies in this vibrant and vital sector to the general economy.¹³¹

facilitates the financing of intellectual property and in the process carefully balances the interests of licensors, licensees, and secured parties. The results are practical and fair.”)

125. U.C.C. § 9-102 (AM. LAW INST. & UNIF. LAW COMM’N 2010).

126. *Id.*

127. *Id.*

128. *Id.* § 9-102(42) (providing definition for “general intangibles”). The Official Comment for “General Intangible” provides:

“General intangible” is the residual category of personal property, including things in action, that is not included in the other defined types of collateral. Examples are various categories of intellectual property and the right to payment of a loan of funds that is not evidenced by chattel paper or an instrument. As used in the definition of general intangible, things in action includes rights that arise under a license of intellectual property, including the right to exploit the intellectual property without liability for infringement. The definition has been revised to exclude commercial tort claims, deposit accounts, and letter-of-credit rights. Each of the three is a separate type of collateral. One important consequence of this exclusion is that tortfeasors (commercial tort claims), banks (deposit accounts), and persons obligated on letters of credit (letter-of-credit rights) are not account debtors having the rights and obligations set forth in Sections 9-404, 9-405, and 9-406. See Comment 5.h. Another important consequence relates to the adequacy of the description in the security agreement. See Section 9-108.

Id. § 9-102 cmt. 5.d.

129. *Id.* § 9-102 cmt. 5.d.

130. *Id.*

131. See Weise, *supra* note 124, at 1093 (focusing instead on balancing the interests of licensors, licensees, and secured parties of intellectual property used as collateral).

Moreover, the definition for “General Intangibles” provides:

“General intangible” means any personal property, including things in action, other than accounts, chattel paper, commercial tort claims, deposit accounts, documents, goods, instruments, investment property, letter-of-credit rights, letters of credit, money, and oil, gas, or other minerals before extraction. The term includes payment intangibles and software.¹³²

Nowhere in the definition of “General intangibles” does it explicitly include patents, trademarks, and copyrights.¹³³ The definition indicates that the term includes “payment intangibles and software.”¹³⁴ It is confusing to readers, as they may not know what the phrase “general intangibles” means for patents.¹³⁵ It is also confusing to readers that UCC-9 continues to remain in the old economy.¹³⁶ The confusion is not academic, as the cases below bear evidence.

In *Moldo v. Matsco, Inc.*, the debtor’s primary asset was a patent for a data recorder designed to capture data from a video signal regardless of the horizontal in which the data is located.¹³⁷ The secured party, Matsco and Financial, had a blanket security interest in all of debtor’s assets, including “general intangibles.”¹³⁸ The secured party filed a UCC-1 Financing Statement covering general intangibles with the Secretary of State of the State of California where the Debtor was located.¹³⁹ Subsequently, when the debtor was in bankruptcy, the patent, as the primary bankruptcy asset, was at issue.¹⁴⁰ The question relating to the patent was whether the security interest in the patent was property perfected by the secured party. Because the term “general intangibles” fails to squarely cover patent collateral, the court and all parties involved seemed unsure about what “general intangibles” really meant.¹⁴¹ The case illustrates that contrary to UCC-9, patents have already become important assets for secured transactions purposes and begs for a more explicit treatment of patent collateral within the framework of UCC-9.

Likewise, in *In re Transportation Design and Technology, Inc.*, Mitsui loaned money to the debtor, TDT, and took a security interest in a number of TDT assets, including “all general intangibles.”¹⁴² In addition, TDT granted Mitsui a security interest in after-acquired collateral of the collateral pledged in the security agreement. Mitsui filed a UCC-1 financing statement to perfect its security interest with the California Secretary of State. Like the above case, TDT later filed for

132. U.C.C. § 9-102(42).

133. *Id.*

134. *Id.*

135. Readers have to look to the Official Comments to see the word “intellectual property” mentioned. *Id.* § 9-102 cmt. 5.d. Further, the word “patent” is nowhere in the Official Comment. *Id.*

136. *Id.*

137. *In re Cybernetic Services, Inc.*, 239 B.R. 917, 918 (B.A.P. 9th Cir. 1999), *aff’d*, 252 F.3d 1039, 1052 (9th Cir. 2001), *cert. denied*, 534 U.S. 1130 (2002).

138. *Id.*

139. *Id.*

140. *Id.*

141. *Id.* at 921.

142. *In re Transp. Design & Tech., Inc.*, 48 B.R. 635, 635 (Bankr. S.D. Cal. 1985).

bankruptcy and one of the issues that arose was whether the security interest in the intellectual property assets was property perfected by the filing of the UCC-1 in the “general intangibles” with the State. Again, the court had to determine the scope of whether “general intangibles” covered patent collateral.

Additionally, the confusion emanates from the uncertainty of where to file the security interest for different types of intellectual property assets. Illustratively, in *MCEG Sterling, Inc. v. Phillips*, the attorney for the lender failed to file the security interest in copyright proceeds and faced a malpractice suit because the lender asserted that the attorney had a duty to employ a “belt and suspenders” approach to perfecting the security interest, “so as to prevent any possible legal challenge.”¹⁴³ The Court rejected the lender’s argument.¹⁴⁴ Though the case is about copyright collateral, the issue is the same for patent collateral, as the case serves as further evidence that UCC-9 should be more clear in addressing the intellectual property collateral problem.

In summary, each type of intellectual property asset must have its own recognition in the definitions and index of definitions in UCC 9-102. Moreover, clear and concise rules on perfection of security interests in different types of intellectual property, along with Official Comments and illustrative examples, are necessary in the amended UCC-9. In other words, it is time to directly address and embrace patents, trademarks, and copyrights as collateral in modern secured transactions law.

CONCLUSION

Innovation necessitates change. New solutions in both banking regulations and Secured Transactions law are necessary to move banks into commercial lending to businesses in the innovation-intensive sectors. Without banks providing loans against patents, small companies with patent concentration in the technology industries have no access to lower cost, commercial loans. These companies cannot escape non-banks who often charge much higher interest rates and dilute equity of the business. On one end of the spectrum, by ignoring patent collateral, banks are leaving behind the innovators while continuing to hasten the shrinking of the banking industry.

143. *MCEG Sterling, Inc. v. Phillips* Nizer Benjamin Krim & Ballon, 646 N.Y.S.2d 778, 780 (Sup. Ct. 1996).

144. *Id.* at 781 (holding that the “obligation plaintiff seeks to impose upon defendants exceeds any duty the court may properly impose upon counsel; it would require them to anticipate future case law and to take all actions necessary to avoid any legal challenge, even if such challenge would be unsupported by legal authority then existing”).

