

Cooperative Federalism and Patent Legislation: A Study Comparing China and the United States

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Abstract

How should patent legislative power be allocated between central and local governments in order to construct a patent system conducive to promoting innovation? A comparative analysis of the models of the U.S. and China sheds light on this question. The early American states established their patent systems before the formation of the federal system, but the U.S. Constitution arrogated patent legislative power to the federal government, ending the era of decentralized patent systems. This centralized structure ensures uniformity in rules but might hinder the system's adaptability and ability to experiment. In contrast, as China's patent system evolved, its patent legislative power spread from the central to the local governments. This shift led to the coexistence of dual-level patent legislative structure. Currently, twenty-nine out of thirty-one province-level authorities (93.5%) and twenty-one out of 323 city-level authorities with local legislative power (6.5%) have established local patent laws. China's patent system is not entirely decentralized but rather, semi-decentralized, as the locales not only implement their local patent laws but also must enforce the central government's national patent laws. China's semi-decentralized patent legislation model embodies significant features of cooperative federalism, where the central and local governments share the national power to handle affairs and collaborate to address issues. Yet, the central government maintains a dominant position in this cooperative relationship, as a consequence of China's unitary state structure. Compared to the current centralized patent legislation model in the U.S., China's semi-decentralized patent legislation model has the advantage of making statutory law more adaptable to local specificities and promoting local competition and institutional innovation. However, it also faces challenges, such as increased costs due to inconsistency; efficiency decline stemming from rent-seeking behaviors; and the risk that local protectionism will create anti-competitive effects.

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I. INTRODUCTION

The patent system is a pivotal component of the innovation infrastructure in contemporary industrialized nations. By granting inventors exclusive rights to their inventions for a set period, it encourages investment in innovation and facilitates the disclosure of novel technological knowledge.¹ The allocation of patent legislative power between central and local governments can shape the development of this system, either bolstering or undermining its ability to foster innovation. But what is the optimal way to distribute this power? An exploration of the patent legislative models in China and the United States can shed light on this intricate question, helping to elucidate the interplay between law and innovation.

Although it began with a decentralized patent system, where states created their own patent schemes in the absence of a national patent law,² the U.S. currently centralizes patent legislative power, as do many of the world's major industrialized economies, such as the United Kingdom,³ Japan,⁴ and Germany.⁵ In the U.S., Congress established a federal statutory framework that governs patents across the nation.⁶ The roots of this system appear in the U.S. Constitution. Article I, Section 8, Clause 8 grants Congress the power to “promote the progress of science and useful arts, by securing for limited times to authors and inventors the exclusive right to their respective writings and discoveries.”⁷ This provision vests the power of patent legislation in Congress. As Edward Walterscheid, the preeminent historian of this constitutional clause and American patent law, noted, “the enactment of federal patent and copyright laws in 1790 was largely viewed as removing the need for state patents and copyrights, because the advantages of uniformity and broader protection inherent in the federal system were obvious to almost everyone.”⁸ States retained no legislative power; patent

¹ See Rebecca S. Eisenberg, *Patents and the Progress of Science: Exclusive Rights and Experimental Use*, 56 U. CHI. L. REV. 1017, 1024–30 (1989).

² Camilla A. Hrды, *State Patent Laws in the Age of Laissez-Faire*, 28 BERKELEY TECH. L. J. 45, 48 (2013).

³ Patents Act 1977 c. 37, §§ 1–130 (1977) (Eng.). The Patents Act 1977 (as amended). The author has obtained confirmation from the U.K. Intellectual Property Office (on file with the author).

⁴ Tokkyohō 特許法, [Patent Act], Law No. 121 of 1959 (Japan). The author has obtained confirmation from Japan Patent Office (on file with the author).

⁵ Patentgesetz [PatG] [Patent Act], Dec. 16, 1980, BGBL I, at 1 (Ger.). The author has obtained confirmation from German Patent and Trademark Office (on file with the author).

⁶ Patent Act of 1790, Pub. L. No. 1–7, 1 Stat. 109 (1790).

⁷ U.S. CONST. art. I, § 8, cl. 8.

⁸ EDWARD C. WALTERSCHEID, *THE NATURE OF THE INTELLECTUAL PROPERTY CLAUSE: A STUDY IN HISTORICAL PERSPECTIVE* 436–37 (2002).

law became purely federal.⁹ For over two hundred years, states have not been authorized to issue their own patents, and this remains the case today.¹⁰

A uniform patent law that offers protection across states is a benefit of centralized legislation under a federal system. However, for the achievement of cross-state patent protection within a federal system, complete centralization of legislative power doesn't appear to be necessary. A middle ground exists between the full centralization and full decentralization of legislative power, where the central government and local governments can co-exist in patent lawmaking.¹¹ In this intermediate state, a central government can offer extensive patent protection through legislation while local governments can refine the patent system in cooperation with the central government. However, the current U.S. system does not offer state governments any avenues by which to participate in the making of patent law. This approach maintains legal uniformity and avoids rule diversity.¹² But, as Roger Ford pointed out, uniformity in patent law does not guarantee an optimal level of patent protection.¹³ Centralizing patent legislative power at the federal level keeps states from enacting patent laws that reflect their specific conditions and the needs of their specific industries and innovator communities.¹⁴ It also means that they cannot experiment with different laws and approaches related to patent issues.¹⁵ Thus, the conclusion that the benefits of maintaining uniformity in patent rules outweigh the cooperation between state and federal governments in constructing the patent system is not a given.

Collaboration between central and local governments in institution-building is not a novel concept. In constitutional law, one characteristic of cooperative

⁹ *Id.*

¹⁰ Hrdy, *supra* note 2, at 47.

¹¹ Cf. Lisa Larrimore Ouellette, *Patent Experimentalism*, 101 VA. L. REV. 65, 69 (2015) (contending that “the debate between centralized uniformity and local control [of the patent system] overlooks a third option: promotion of policy variation by central planners”).

¹² See John F. Duffy, *The Festo Decision and the Return of the Supreme Court to the Bar of Patents*, 6 SUP. CT. REV. 273, 286–87 (2002) (“The policy in favor of national uniformity in patent law has . . . ancient roots in the country's law.”).

¹³ Roger Allan Ford, *The Uneasy Case for Patent Federalism*, 2017 WIS. L. REV. 551, 557 (2017) (“A necessary premise of this argument is that federal law strikes the right balance between these interests, such that state interference would be socially costly. Yet there are many reasons to think that is not the case; instead, complaints about the patent system have been common for years.”).

¹⁴ Camilla A. Hrdy, *State Patents as a Solution to Underinvestment in Innovation*, 62 U. KAN. L. REV. 487, 498–500 (2013) (explaining that technological innovation is a “local enterprise” that often serves the specific communities in which the invention takes place).

¹⁵ John F. Duffy, *Harmony and Diversity in Global Patent Law*, 17 BERKELEY TECH. L. J. 685, 691 (2002) (complete uniformity in patent systems forces experiments to occur sequentially rather than geographically, resulting in slower innovation).

federalism, which originated in the New Deal era in the U.S.,¹⁶ is the sharing of regulatory authority between the federal government and the states, allowing states to regulate within a framework that federal law delineates.¹⁷ This model fosters problem-solving cooperation between different levels of government,¹⁸ providing a flexible framework that adjusts to changing circumstances.¹⁹ It stands in contrast to the concept of dual federalism, which imposes a rigid division of powers,²⁰ defining a distinct regulatory domain which it assigns to one level of government and fortifies against encroachment from others,²¹ thereby creating “tension rather than collaboration” between federal and state governments.²² It also differs from preemptive federalism, in which a unitary federal system overrides all state authority “instead of leaving room for state regulation.”²³

Environmental legislation in the U.S. exemplifies cooperative federalism. Federal agencies such as the Environmental Protection Agency establish broad environmental standards and policies, while states fine-tune their implementation and enforcement according to local conditions; the Clean Air Act exemplifies this system.²⁴ Environmental issues, such as air emissions, necessitate the intervention of the central government due to their cross-boundary nature, which often extends beyond individual jurisdictions.²⁵ However, the participation of local governments is equally vital, as they are best positioned to adjust centrally crafted laws to meet local needs and conditions.²⁶ A cooperative federalism model that sets broad federal guidelines while permitting state-level variations allows states to

¹⁶ Ernest A. Young, *State Standing and Cooperative Federalism*, 94 NOTRE DAME L. REV. 1893, 1903 (2019).

¹⁷ See Philip J. Weiser, *Towards a Constitutional Architecture for Cooperative Federalism*, 79 N.C. L. REV. 663, 665 (2001).

¹⁸ Young, *supra* note 16, at 1904.

¹⁹ *Id.*

²⁰ Ernest A. Young, *Dual Federalism, Concurrent Jurisdiction, and the Foreign Affairs Exception*, 69 GEO. WASH. L. REV. 139, 139 (2001).

²¹ See *id.* at 141; Norman R. Williams, *The Commerce Clause and the Myth of Dual Federalism*, 54 UCLA L. REV. 1847, 1849 (2007) (asserting that “what the U.S. Congress may do, the states may not, and vice versa”).

²² Edward S. Corwin, *The Passing of Dual Federalism*, 36 VA. L. REV. 1, 4 (1950).

²³ Weiser, *supra* note 17, at 665–66.

²⁴ Young, *supra* note 16, at 1904.

²⁵ See Douglas R. Williams, *Cooperative Federalism and the Clean Air Act: A Defense of Minimum Federal Standards*, 20 ST. LOUIS U. PUB. L. REV. 67, 97–98 (2001).

²⁶ Alice Kaswan, *A Cooperative Federalism Proposal for Climate Change Legislation: The Value of State Autonomy in a Federal System*, 85 DENV. U. L. REV. 791, 804 (2007). See also Holly Doremus & W. Michael Hanemann, *Of Babies and Bathwater: Why the Clean Air Act’s Cooperative Federalism Framework Is Useful for Addressing Global Warming*, 50 ARIZ. L. REV. 799, 834 (2008).

offer tailored solutions and to engage in state-level institutional experimentation, thereby fostering institutional innovation.²⁷

Like environmental concerns, issues of innovation have both local and cross-border ramifications. A national patent system under the central government's auspices is valuable because the benefits generated by new inventions can diffuse across state boundaries and potentially cover the entire society. It can be challenging for a state's powers to enable the inventor to convert these cross-border benefits into revenues to stimulate their innovation.²⁸ Establishing separate patent systems in each state, requiring inventors to secure patent rights individually in each, could result in substantial costs and be socially wasteful.²⁹ Conversely, a cross-border national patent system could mitigate this resource wastage. Yet, the localized aspects of innovation should not be overlooked. Innovation is inherently specific to location and sector,³⁰ so introducing a cooperative federalism model, which allows local governments to adjust and refine the patent law that the central government has enacted, can facilitate a more nuanced and effective system to encourage innovation.

In contrast to the U.S., China has developed a patent regime that embodies a cooperative approach between central and local governments. While Western scholars have paid attention to China's patent system for quite some time, they have only focused on the national patent laws of the central authority.³¹ In doing so, they have largely overlooked the significant shift toward the decentralization of China's patent system over the past three decades.³² On October 9, 1996, the Standing Committee of the Guangdong Provincial People's Congress enacted and implemented the Guangdong Province Patent Protection Regulations. Since then, an increasing number of local governments in China have formulated their own patent laws. Through a comprehensive survey of China's local patent laws, this Article has found that as of January 16, 2023, twenty-nine of the thirty-one

²⁷ Kaswan, *id.* at 800–01; Doremus & Hanemann, *id.* at 829.

²⁸ Hrdy, *supra* note 14, at 497; Ouellette, *supra* note 11, at 69.

²⁹ Hrdy, *supra* note 14, at 497.

³⁰ *Id.* at 491–99.

³¹ When scholars study China's patent system and comment on it, they do so only in relation to the central government's patent laws. *See, e.g.*, David Ben Kay, *The Patent Law of the People's Republic of China in Perspective*, 33 UCLA L. REV. 331, 331–33 (1985); David Hill & Judith Evans, *Chinese Patent Law: Recent Changes Align China More Closely with Modern International Practice*, 27 GEO. WASH. J. INT'L L. & ECON. 359, 359–63 (1993); Cynthia Smith, *A Practical Guide to Chinese Patent Law*, 29 SETON HALL LEGIS. J. 643, 643–45 (2005); Linda Yueh, *Patent Laws and Innovation in China*, 29 INT'L REV. L. & ECON. 304, 305 (2009); Rachel T. Wu, *Awaking the Sleeping Dragon: The Evolving Chinese Patent Law and its Implications for Pharmaceutical Patents*, 34 FORDHAM INT'L L. J. 549, 553–57 (2010).

³² Moreover, as Peter Yu pointed out, a key challenge in studying the Chinese intellectual property system is the lack of foreign researchers' understanding of local conditions in China. *See* Peter K. Yu, *A Half-Century of Scholarship on the Chinese Intellectual Property System*, 67 AM. U. L. REV. 1045, 1128–30 (2018).

(93.5%) province-level authorities had passed one or more patent laws applicable to their administrative region.³³ Of the 323 city-level authorities with local legislative power, twenty-one (6.5%) have enacted patent laws. Cities that have not done so are still bound by the patent laws of their provinces. To be clear, China's patent system is not fully decentralized but rather, it is *semi-decentralized*, as the central government's national patent laws remain applicable at the local level.

The semi-decentralized patent legislation model in China presents important features of cooperative federalism, where local governments collaborate with the central government regarding patent legislation. Despite the distinctive nature of China's patent legislation model, which diverges from the predominantly centralized patent regimes of the U.S. and many other industrialized countries, existing literature has not sufficiently explored the specifics and implications of this model. Consequently, much of its impact remains largely unexplored. An analysis of China's semi-decentralized patent legislation model can not only help policymakers and scholars rethink whether the prevailing centralized patent system is the optimal arrangement, but it can also provide a specific case study about the cooperation between central and local governments in this area.

To unpack China's semi-decentralized patent legislation model, this Article examines the distribution of China's patent legislative power within its unitary state structure, systematically analyzes China's local patent laws, and evaluates their merits and challenges. In order to reveal the characteristics of the semi-decentralized patent legislation model more comprehensively, this Article adopts a comparative analysis approach when investigating the distribution of legislative power and evaluating its merits and challenges, specifically contrasting it with the patent legislation model of the United States.

The Article suggests that the Chinese central government's distribution of patent legislative powers to provincial and municipal entities has cultivated a layered patent system. In this structure, national and local patent laws coexist. Within this cooperative relationship, the central government maintains a dominant position as a result of China's unitary state structure. Below that, three factors drive local patent legislation: directives from the central government to bolster intellectual property protection; competition among local governments following centrally determined evaluation schemes; and the central government's emphasis on rule-of-law governance aimed at enhancing the adaptability of laws to specific socio-economic conditions. The involvement of local governments in shaping the patent system enhances patent laws' adaptability to local specifics and fosters institutional innovation. However, this model also grapples with challenges, including the additional costs stemming from inconsistencies in laws, a decline in efficiency because of rent-seeking behaviors, and the risk of anti-competitive effects spurred by local protectionism.

³³ See Appendix.

Following the introductory section, Section II compares the models of patent legislation in the U.S. and China, that is, decentralized and centralized legislation within a federal structure, and semi-decentralized legislation within a unitary structure. The Article underlines that the former is a non-cooperative model, where central and local governments do not work together in the institution-building of the patent system through legislation, while the latter is a cooperative model, in which the local governments participate in patent legislation with the central. Section III illustrates how local governments in China enact patent laws under the promotion of the central government, identifying three critical factors that propel local patent legislation. Section IV, a survey of Chinese local patent laws, reveals how city and provincial governments adapt the patent system to local specificities. Section IV also contrasts five Chinese provincial administrative regions in terms of their patent legislation, showcasing how they adjust the level of patent protection to align with local conditions amid regional competition. Section V analyzes the merits of China's semi-decentralized patent legislation model and the challenges it faces by comparing it with the patent legislation model in the U.S. A conclusion follows.

II. THE PATENT LEGISLATION MODELS IN THE U.S. AND CHINA

A. Non-Cooperative Models in the U.S.

The federal system in the U.S. emerged from the Philadelphia Convention of 1787, at which the delegates formulated a constitution that would address the weaknesses of the Articles of Confederation³⁴ and strike a balance between a strong central government and states' autonomy,³⁵ allocating legislative powers between federal and state governments. This framework grants the U.S. Congress the power to enact centralized legislation regarding matters of national importance.³⁶ While it is true that federal law has progressively extended into areas once under state jurisdiction, this does not mean an outright usurpation of state control.³⁷ Rather, in many instances, Congress chooses not to exercise its constitutionally-granted federal powers, indirectly allowing states a degree of governance flexibility.³⁸ However, tracing the evolutionary history of the patent

³⁴ Michel Rosenfeld, *The European Convention and Constitution Making in Philadelphia*, 1 INT'L J. CONST. L. 373, 374 (2003).

³⁵ See Michael W. McConnell, *Federalism: Evaluating the Founders' Design*, 54 U. CHI. L. REV. 1484 (1987).

³⁶ See CAROL BERKIN, *A BRILLIANT SOLUTION: INVENTING THE AMERICAN CONSTITUTION* 17 (2002); Abbe R. Gluck, *Our [National] Federalism*, 123 YALE L. J. 1996, 1999 (2014).

³⁷ Gluck, *supra* note 36, at 1997–99.

³⁸ *Id.*

system, it appears that Congress has fully assumed patent legislative power from the states, leaving little flexibility for state regulation.

During the period between independence and the ratification of the Constitution, individual American states and colonies encouraged inventors and entrepreneurs, granting them exclusive rights to innovations of local benefit.³⁹ These grants differed from modern U.S. patents in that they did not require universal novelty or original inventorship; instead, they focused on establishing beneficial technology within the state.⁴⁰ During this period, the states operated their patent systems independently. No cooperation existed with a central governing body akin to the current federal government.

The expansion of interstate commerce and improvements in transportation rendered state patents less viable. Steam-powered transportation facilitated trade between states, posing challenges in enforcing patents even within a single jurisdiction.⁴¹ Inventors increasingly realized the necessity for a national patent system that would create broader protection and maximize profits across multiple states.⁴² They advocated the creation of a unified system that would ensure consistent rulings and address issues of priority and infringement.⁴³ The Framers of the Constitution acknowledged the limitations of individual state provisions. James Madison wrote in Federalist Paper No. 43 that “[t]he States cannot separately make effectual provisions for either of the [patent or copyright] cases.”⁴⁴ Without significant debate, they added the Intellectual Property Clause to the Constitution, affirming the need for a centralized patent system.⁴⁵

³⁹ Hrdy, *supra* note 2, at 48.

⁴⁰ *Id.* See also Oren Bracha, *The Commodification of Patents 1600-1836: How Patents Became Rights and Why We Should Care*, 38 LOY. L. REV. 177, 243 (2004); Mario Biagioli, *Patent Republic: Representing Inventions, Constructing Rights and Authors*, 73 SOC. RES. 1129, 1138 (2006) (“Privilege-granting authorities wanted to maximize local utility, not to disclose knowledge about the invention.”).

⁴¹ Hrdy, *supra* note 2, at 68–69.

⁴² *Id.*; Michael F. Martin, *The End of the First-to-invent Rule: A Concise History of Its Origin*, 49 IDEA 435, 460–67 (2008) (describing the influence of inventors like John Fitch, who advocated for federal patents to protect their natural rights in their inventions). Walterscheid has effectively highlighted the limitations of the state-level system: The most pronounced flaw was the jurisdictional boundary of states, which only allowed them to legislate within their territories. This meant that state patents and copyrights could be violated without consequence in neighboring states. Obtaining multiple patents or copyrights was a laborious, costly, and often exasperating process. Furthermore, there was no guarantee of uniformity in terms and conditions across different states. See WALTERSCHEID, *supra* note 8, at 76.

⁴³ Hrdy, *supra* note 2, at 69–70. See also B. Zorina Khan, *Property Rights and Patent Litigation in Early Nineteenth-century America*, 55 J. ECON. HIST. 58, 62 (1995) (“Consistent regional decisions would serve to increase the value of holding a patent; first, by expanding the coverage of the patent to a much wider market; and second, by eliminating the uncertainty and costs of enforcement if litigation were governed by the laws of individual states.”).

⁴⁴ THE FEDERALIST NO. 43, at 279 (James Madison) (Edward Mead Earle ed., 1938).

⁴⁵ Hrdy, *supra* note 2, at 70.

So, while legislative powers in the U.S. are divided between the federal and state governments, when it comes to patents, only the federal government has authority. This power stems from Article I, Section 8, Clause 8 of the U.S. Constitution, which leaves the states with no role in patent legislation. While the colonies had patent-like rights before the Constitution's ratification, and a few states continued this practice in the early years of the U.S., the granting of state patents gradually ceased, with New York awarding the last one in 1798.⁴⁶ While studies indicate that the Framers permitted states to maintain their own autonomous power to grant patents, leading to ongoing debates about the scope of this authority and its interaction with federal patent law,⁴⁷ courts generally recognized that only Congress has the power to enact patent-related legislation. In the case of *Bonito Boats, Inc. v. Thunder Craft Boats, Inc.*,⁴⁸ the U.S. Supreme Court firmly established that states are prohibited from granting patents or similar rights due to preemption by the Supremacy Clause. This restriction ensures that state-level competition will not undermine inventors' decisions to pursue U.S. patents and preserves Congress's exclusive authority to define patentability requirements and terms.⁴⁹ In the case of *Hunter Douglas, Inc. v. Harmonic Design, Inc.*, the Federal Circuit affirmed that the Congress-enacted Patent Act "occupies the field of patent law."⁵⁰

This centralizing legislative power at the federal level has precluded state governments from collaborating with the federal government in the construction of patent systems via legislation. Yet, as Roger Allan Ford underscores, many states have made endeavors to integrate themselves into the patent landscape.⁵¹ Their efforts, however, have been largely restricted to modulating patent litigation procedures due to the concentration of patent legislative authority at the federal level.⁵² My analysis suggests that the rationale for concentrating patent legislation authority at the federal level is insufficient because it does not take into account the intermediate scenario in which states do not separately enact patent laws but do cooperate with the federal government. Granted, state legislative involvement might introduce inconsistencies in the rules. However, whether the negative

⁴⁶ *Id.* at 47–80.

⁴⁷ Hrdy, *supra* note 14, at 495–96; Malla Pollack, *Unconstitutional Incontestability? The Intersection of the Intellectual Property and Commerce Clauses of the Constitution: Beyond a Critique of Shakespeare Co. v. Silstar Corp.*, 18 SEATTLE U.L. REV. 259, 301–02 (1995).

⁴⁸ 489 U.S. 141, 154 (1989).

⁴⁹ Hrdy, *supra* note 2, at 47–49.

⁵⁰ *Hunter Douglas, Inc. v. Harmonic Design, Inc.*, 153 F.3d 1318, 1334 (Fed. Cir. 1998).

⁵¹ Ford, *supra* note 13, at 555 (noting that from 2013 to August 2016, thirty-one states have passed laws aimed at reforming patent litigation to limit the enforcement of federal patents within their jurisdictions).

⁵² *Id.* at 560 (noting that state law provisions regulate patent holders' out-of-court actions to reduce the risk of these state laws being overridden by federal patent law).

impact of such inconsistencies outweighs the positive effects of cooperation between federal and state governments warrants further examination. The need for cross-state protection of patents justifies granting the federal government the power to legislate patents, but it does not suffice as a reason to remove all legislative power from state governments.

B. A Cooperative Model in China

Unlike the federal system in the United States, the unitary system in China emerged over millennia, shaped by the country's long history of imperial rule and consolidation of power,⁵³ culminating in the establishment of the People's Republic of China (PRC) in 1949.⁵⁴ This unitary Chinese system amalgamates power in the central government.⁵⁵ The principle of democratic centralism has been foundational to China's political system; all of the constitutions of the PRC emphasize the leading role of the central government.⁵⁶ Local governments retain the limited authority to implement and adapt centrally mandated policies within their jurisdictions.⁵⁷ The power dynamic between the central government and local governments under China's unitary system achieves a balance between national unity and local responsibility by emphasizing central leadership while allowing local governments to exercise power within a certain range.⁵⁸

Since the establishment of the PRC, legislative powers in China have primarily resided within the central government, affecting patents, as well as many other fields. The 1954 Constitution formalized this highly centralized legislative system, with the National People's Congress (NPC) as the sole organ for exercising legislative power.⁵⁹ To enhance efficiency, in 1955, the NPC delegated some of that law-making power to its Standing Committee.⁶⁰ Under the current

⁵³ Jianxun Wang, *The Road to Democracy in China: A Tocquevillian Analysis*, in CONVERSATIONS WITH TOCQUEVILLE: THE GLOBAL DEMOCRATIC REVOLUTION IN THE TWENTY-FIRST CENTURY 271, 280 (Aurelian Craiutu & Sheldon Gellar eds., 2009).

⁵⁴ SEBASTIAN HEILMANN, CHINA'S POLITICAL SYSTEM 29, 76 (2016).

⁵⁵ *Id.*

⁵⁶ See HAN ZHAI, THE CONSTITUTIONAL IDENTITY OF CONTEMPORARY CHINA: THE UNITARY SYSTEM AND ITS INTERNAL LOGIC 5 (2019).

⁵⁷ HEILMANN, *supra* note 54, at 29, 76; ZHAI, *supra* note 56, at 6.

⁵⁸ See ZHAI, *supra* note 56, at 4–7.

⁵⁹ XIANFA art. 22 (1954) (China) (Constitution of the People's Republic of China).

⁶⁰ On July 30, 1955, the Second Session of the First National People's Congress passed the Resolution of the Second Session of the First National People's Congress on Authorizing the Standing Committee to Formulate Single-Line Regulations, for the first time granting legislative power to the Standing Committee of the National People's Congress. See Di Qu, Quanguo Renmin Daibiao Dahui Shouquan Changwu Weiyuanhui Xingshi Xiangguan Zhiquan Yanjiu (全国人民代表大会授权常务委员会行使相关职权研究) [Research on the National People's Congress Delegating

Constitution and Legislation Law, the NPC enacts and amends fundamental laws, while the Standing Committee legislates other matters,⁶¹ such as the three primary national Intellectual Property laws—the Trademark Law, the Copyright Law, and the Patent Law. The State Council and its departments also have legislative authority, but the laws that the NPC and its Standing Committee enact supersede it.⁶² The State Council received its legislative power in 1982,⁶³ under Article 89 (1) of the Chinese Constitution.⁶⁴

Local authorities in China only began acquiring legislative power in 1979,⁶⁵ with the Constitution formalizing this in 1982.⁶⁶ It wasn't until 1986 that the Organic Law of Localities delegated power to enact local laws at the city level to the people's congresses and standing committees of forty-nine cities.⁶⁷ The Legislation Law, which the NPC adopted in 2000 and amended in 2015, expanded this delegation to 289 cities.⁶⁸

One area that exemplifies the decentralization of legislation in China is the field of patents. Beginning with Guangdong's first local patent law in 1996,⁶⁹ localities have progressively enacted patent legislation. This decentralization is manifested by the central government actively encouraging local legislative bodies to establish local intellectual property laws, including patent laws and laws related

Relevant Powers to the Standing Committee], 38 ZHONGGUO FALÜ PINGLUN [CHINA LAW REVIEW] 187, 187–88 (2021).

⁶¹ XIANFA art. 62, 67 (2018) (China); Zhonghua Renmin Gongheguo Lifafa (中华人民共和国立法法) [Legislation Law of the People's Republic of China] (promulgated by the Nat'l People's Cong., Mar. 15, 2000, effective Jul. 1, 2000) (China) [hereinafter Legislation Law], art. 10.

⁶² Legislation Law, *supra* note 61, art. 99.

⁶³ Although between 1955 and 1982, the Standing Committee of the National People's Congress authorized the State Council to legislate three times.

⁶⁴ Xianfa art. 89, § 3 (1982) (China).

⁶⁵ Zhonghua Renmin Gongheguo Difang Geji Renmin Daibiao Dahui He Difang Geji Renmin Zhengfu Zuzhi Fa (中华人民共和国地方各级人民代表大会和地方各级人民政府组织法) [Organic Law of the Local People's Congresses and Local People's Governments of the People's Republic of China] (promulgated by the Nat'l People's Cong., Dec. 4, 1979, effective Dec. 4, 1979) art. 6 (China) [hereinafter Organic Law of Localities 1979], The Organic Law of Localities 1979 granted the provincial people's congresses and their standing committees the right to enact local laws and regulations.

⁶⁶ XIANFA, art. 100, § 5 (1982) (China).

⁶⁷ Zhonghua Renmin Gongheguo Difang Geji Renmin Daibiao Dahui He Difang Geji Renmin Zhengfu Zuzhi Fa (中华人民共和国地方各级人民代表大会和地方各级人民政府组织法) [Organic Law of the Local People's Congresses and Local People's Governments of the People's Republic of China] (amended by the Nat'l People's Cong., Dec. 2, 1986, effective Dec. 2, 1986) art. 7 (China) [hereinafter Organic Law of Localities 1986].

⁶⁸ Legislation Law, *supra* note 61, arts. 80, 81.

⁶⁹ This local patent law has been amended in 2010. The original version can be found in the legal database of the World Intellectual Property Organization. *See* Regulations on Patent Protection in Guangdong Province, WIPO LEX (Sept. 25, 1996), <https://perma.cc/KW9Z-G4F3>.

to patents. The central government generally does this by providing policy guidance using official documents,⁷⁰ policy directives,⁷¹ and speeches by top leaders.⁷² This guidance helps to align local legislation with the overall objectives of the central government. In the field of patent law, the central government's two most important guidelines are the 2008 National Intellectual Property Strategy Outline, and the 2021 Outline for the Construction of a Strong Intellectual Property State (2021–2035).⁷³ The State Council promulgates these guidelines to the lower levels of government. In the former Outline, the central government requires local governments to accelerate the building of the intellectual property legal system to adapt to new IP issues in a timely and effective manner.⁷⁴ The latter requires local governments to make and amend IP laws “promptly” so as to “adapt to the needs of scientific and technological progress and economic and social development.”⁷⁵

While China's patent system leans towards decentralization, this contrasts sharply with the period in U.S. history when state patents were operational in the absence of a nationwide patent law. The move towards decentralization in China's patent system is uniquely underpinned by a unitary structure. In this structure, regional governments enact local patent laws that operate alongside national patent laws. These local patent laws must be consistent with the Constitution and national laws that the National People's Congress (NPC) and the State Council

⁷⁰ Guowuyuan Guanyu Yinfa “Shisanwu” Guojia Zhishi Chanquan Baohu He Yunyong Guihua de Tongzhi (国务院关于印发“十三五”国家知识产权保护和运用规划的通知) [Notice of the State Council on Issuing the “13th Five-Year” National Intellectual Property Protection and Utilization Plan] (promulgated by the State Council, Jan. 13, 2017, effective Jan. 13, 2017) (China); Guowuyuan Guanyu Yinfa “Shisiwu” Guojia Zhishi Chanquan Baohu He Yunyong Guihua de Tongzhi (国务院关于印发“十四五”国家知识产权保护和运用规划的通知) [Notice of the State Council on Issuing the “14th Five-Year” National Intellectual Property Protection and Utilization Plan] (promulgated by State Council, Oct. 28, 2021, effective Oct. 28, 2021) (China) [hereinafter “The “14th Five-Year” IP Protection and Utilization Plan”].

⁷¹ Guojia Zhishi Chanquan Zhanlue Gangyao (国家知识产权战略纲要) [Outline of National Intellectual Property Strategy] (promulgated by the State Council, June 5, 2008, effective June 5, 2008) State Council Gaz., June 20, 2008, (China) [hereinafter 2008 Outline]; Zhishi Chanquan Qiangguo Jianshe Gangyao (2021–2035 Nian) (知识产权强国建设纲要(2021–2035年)) [Outline for the Construction of a Strong State of Intellectual Property (2021–2035)] (promulgated by the Central Comm. of the Chinese Communist Party and the State Council, Sept. 22, 2021, effective Sept. 22, 2021) State Council Gaz., Oct. 20, 2021, (China) [hereinafter 2021 Outline].

⁷² See, e.g., Xi Jinping, *Quannian Jiaqiang Zhishi Chanquan Baohu Gongzuo Jifang Chuangxin Huoli Tuidong Guojian Xin Fazhan Geju* (全面加强知识产权保护工作 激发创新活力推动构建新发展格局) [Strengthening the Protection of Intellectual Property Rights Comprehensively to Stimulate Innovation and Promote the Construction of a New Development Paradigm], 3 QIUSHI 4, 4–8 (2021) <https://perma.cc/68QC-7D6H>.

⁷³ 2008 Outline, *supra* note 71; 2021 Outline, *supra* note 71.

⁷⁴ 2008 Outline, *supra* note 71.

⁷⁵ 2021 Outline, *supra* note 71.

have promulgated.⁷⁶ This layered system of coexistence of national and local patent laws forms a “semi-decentralized system.” This system exhibits significant attributes of cooperative federalism as regional governments collaborate with the central government in constructing patent systems through legislation, thereby addressing innovation-related issues. However, this system diverges from the federal system in the U.S. where the power to deal with specific matters is distributed between local and central governments, both being equal in status.⁷⁷ In China, the central government maintains a dominant position in this cooperative relationship, a stance rooted in its unitary state structure.

III. COOPERATIVE FEDERALISM IN CHINA: CENTRAL GOVERNMENT GUIDED LOCAL PATENT LEGISLATION

Why do local governments want to engage in the patent legislation that the semi-decentralized patent system in China encourages? An analysis of legislative guidance documents from the central government and legislative preparation documents at the local level offers valuable insights. Overall, the formation of China’s semi-decentralized patent system follows a top-down approach. Local patent legislation acts as a tool for enhancing the patent systems that the central government sets out within a defined blueprint. We can view the process of forming such a semi-decentralized patent system as a nationwide experiment taking place across diverse regions, under the central government’s guidance and supervision.⁷⁸ Lisa Ouellette describes this as an *experimentalist system*, representing a third alternative often overlooked in the debate between centralized uniformity and local control.⁷⁹

One key factor contributing to the development of this semi-decentralized patent system is the central government’s increasing emphasis on the importance and protection of intellectual property. In 2008, China’s State Council promulgated the National Intellectual Property Strategy Outline to strengthen the

⁷⁶ Legislation Law, *supra* note 61, arts. 80–82.

⁷⁷ John Kincaid, *The Eclipse of Dual Federalism by One-Way Cooperative Federalism*, 49 ARIZ. ST. L. J. 1061, 1063 (2017) (“The dual structure of American federalism . . . does not obligate states to administer federal programs . . . [I]here is no constitutional expectation that states implement framework legislation enacted by the federal government.”); Weiser, *supra* note 17, at 673 (noting that federalism should be seen as a strategic approach to ensure a higher level of decentralization than that of a unitary system, and that cooperative federalism necessitates a constitutional framework that both enables state participation in federal initiatives and maintains state independence). *But see* Corvin, *supra* note 22, at 21 (raising the concern that in the model of cooperative federalism, the superior fiscal resources of the national government might lead to an increasing centralization of power, enabling the national government to influence local policies).

⁷⁸ The Legislation Law introduces procedures for the review and supervision of the legislation that local governments enact. *See* Legislation Law, *supra* note 61, ch. 5.

⁷⁹ Ouellette, *supra* note 11, at 659 (noting that in experimentalist systems “local experimentation is guided by central goals and robust feedback”).

role of intellectual property in economic, cultural, and social policies. Complementary to this, former Premier Wen Jiabao proposed in the government work report at the Fifth Session of the 10th National People's Congress that "we should speed up the formulation and implementation of the national intellectual property strategy and earnestly strengthen the protection of intellectual property."⁸⁰ Moreover, the Central Economic Work Conference called for the vigorous implementation of an intellectual property strategy that would "gradually spread" from the national level to regional ones.⁸¹ In other words, the central government requires local governments to take active steps to enact local intellectual property laws. In 2019, the General Office of the Communist Party of China (CPC) Central Committee and the General Office of the State Council issued the Opinions on Strengthening the Protection of Intellectual Property, further proposing to "strengthen the protection of intellectual property."⁸² In response to this encouragement, local governments have passed laws that provide levels of protection that are higher than those of the national patent law system.⁸³

Building on this foundation, a second driving force is the competition among local governments as they strive to offer ever higher levels of patent protection to secure a competitive edge. By enhancing patent protection, they safeguard the investments of innovators, enticing them to engage in local innovation and thereby stimulating economic growth. This motivates local officials to enhance the economic performance of their jurisdictions, as China's cadre evaluation system—one of the ways that the central government assesses the performance of local officials—places considerable emphasis on economic indicators.⁸⁴ Metrics such as GDP growth rate and fiscal revenue contribute significantly to these evaluations.⁸⁵ The direct link between economic performance and the career prospects of officials gives them an incentive to prioritize economic growth. Recent reforms in China's official promotion mechanisms have further intensified this patent-related competition among local jurisdictions. Evaluations of local party and government leaders now factor in their accomplishments in innovation-

⁸⁰ CHINA NAT'L INTELLECTUAL PROP. ADMIN., 2007 年中国知识产权保护状况 [2007 REPORT ON THE SITUATION OF INTELLECTUAL PROPERTY RIGHTS PROTECTION IN CHINA] (2008), <https://perma.cc/KY66-4FN9>.

⁸¹ *Id.*

⁸² Press Release, Cent. Comm. of the Communist Party of China & State Council, Guanyu Qianghua Zhishi Chanquan Baohu de Yijian (关于强化知识产权保护的意见) [Opinions on Strengthening Intellectual Property Protection] (Nov. 24, 2019).

⁸³ See, e.g., GUANGDONG MARKET SUPERVISION ADMIN., *Guangdong Sheng Zhishi Chanquan Baohu Tiaoli Qicao Shuoming* (广东省知识产权保护条例起草说明) [Explanation for Drafting the Guangdong Province Intellectual Property Protection Regulation] 1–2 (2021).

⁸⁴ Lynette H. Ong, *Fiscal Federalism and Soft Budget Constraints: The Case of China*, 33 INT'L POL. SCI. REV. 455, 464–65 (2012).

⁸⁵ *Id.* at 466.

driven development, including improvements in intellectual property laws, the exploration of protection strategies for innovative outcomes in new business models, the refinement of litigation mechanisms, enhanced infringement investigation and enforcement, and the establishment of mechanisms to assist in overseas intellectual property rights protection.⁸⁶

Competition among localities in terms of economic growth and intellectual property protection drives the decentralization of China's patent system. Take for instance Guangdong, a developed southeastern coastal province, which aims to "continuously innovate and build a new highland for intellectual property protection."⁸⁷ The provincial government believes that this principle will cultivate innovative enterprises with independent intellectual property rights and core competitiveness, boosting the province's economy.⁸⁸ Recognizing the intensifying domestic market competition, the neighboring government in Hunan province notes that "enterprises in developed coastal regions are accelerating patent layouts," leading to imbalances in regional intellectual property development and widening economic and social disparities.⁸⁹ It believes that formulating its own local patent laws to enhance patent protection is an "urgent need."⁹⁰

A third factor contributing to the formation of the semi-decentralized patent system stems from the central government's active promotion of a rule-of-law-based government. It encourages localities to establish functional, scientifically organized, legally accountable, strictly enforced, open, fair, honest, efficient, and law-abiding administrations.⁹¹ This process includes two aspects that are closely related to local patent legislation. First, "strengthening government legislation in key areas" is vital when building a rule-of-law-based government,⁹² especially in

⁸⁶ Shenhua Keji Tizhi Gaige Shishi Fang'an (深化科技体制改革实施方案) [Implementation Plan for Deepening the Reform of the Scientific and Technological System] (promulgated by the General Office of the CPC Central Committee & General Office of the State Council, Sept. 24, 2015, effective Sept. 24, 2015) (China).

⁸⁷ *Id.* at 1.

⁸⁸ *See id.* at 3.

⁸⁹ Jiaqiang Zhuanli Baohu, Cujin Chuangxinxing Hunan Jianshe - Jiedu 'Hunan Sheng Zhuanli Tiaoli' (加强专利保护、促进创新型湖南建设——解读湖南省专利条例) [Strengthening Patent Protection and Promoting Innovative Development in Hunan Province: An Explanation of the "Hunan Provincial Patent Regulations"], (promulgated by PEOPLE'S GOV'T OF HUNAN PROVINCE, Feb. 3, 2012, http://hunan.gov.cn/hnszf/hdjl/zxft/jbft/szdwft/201202/t20120203_5050279.html [hereinafter Explanation of Hunan Patent Law].

⁹⁰ *Id.*

⁹¹ *See* Fazhi Zhengfu Jianshe Shishi Gangyao (2015-2020 Nian) (法治政府建设实施纲要(2015-2020年)) [Outline of the Implementation of the Rule of Law Government Construction (2015-2020)] (promulgated by the CPC Central Committee & State Council, Dec. 27, 2015, effective Dec. 27, 2015) (China) [hereinafter Rule of Law Government Construction (2015-2020)].

⁹² *Id.*

the area of technological innovation.⁹³ Second, “proactively adapting legislation to the needs of reform and economic and social development” is a core requirement.⁹⁴ As the central government actively promotes itself as a nation with a strong intellectual property framework,⁹⁵ local governments recognize that the current patent system cannot meet their region’s evolving needs.⁹⁶ Thus, it is critical that they formulate local patent and intellectual property laws that will improve their local legal and policy systems and allow them to respond to changing economic and social developments.⁹⁷ The combination of strengthening innovation-related legislation and adapting that legislation to reform and development needs drives local patent legislation, further decentralizing China’s patent system.

At present, China’s local patent systems consist of the laws that the authorities at the province and city levels have enacted. These laws take two forms: specialized patent legislation, which focuses exclusively on patent-related content, and IP legislation, which covers not only patents but also other types of IP, such as copyrights. In this Article, the term “patent legislation” refers to both forms, including stand-alone patent laws and patent-specific sections within broader IP laws. As of January 16, 2023, twenty-nine of the thirty-one (93.5%) province-level authorities had enacted one or more patent laws applicable to their administrative region. Only the province-level authorities of Tibet and Inner Mongolia have not done so. Of the 323 city-level authorities with local legislative power, twenty-one (6.5%) of them have enacted patent laws applicable to their administrative region.⁹⁸ Although a relatively small percentage of cities have local patent laws,

⁹³ Fazhi Zhengfu Jianshe Shishi Gangyao (2021–2025 Nian) (法治政府建设实施纲要(2021–2025年)) [Outline of the Implementation of the Rule of Law Government Construction (2021–2025)] (promulgated by the CPC Central Comm. & St. Council, Aug. 11, 2021, effective Aug. 11, 2021) (China).

⁹⁴ Rule of Law Government Construction (2015–2020), *supra* note 91.

⁹⁵ Zhao Jianguo (赵建国), *Facilitating the Coordinated Development of Local Legislation to Support the Construction of an Intellectual Property Powerhouse*, CHINA NAT’L INTELLECTUAL PROP. ADMIN. (Sept. 21, 2016), <https://perma.cc/H25U-PUBR> (noting that under the local legislative guidance coordination mechanism of the China National Intellectual Property Administration, twenty-one provinces, autonomous regions, and municipalities have revised their local patent regulations).

⁹⁶ See GUANGDONG PROV. MARKET REG. ADMIN., *Guangdong Sheng Zhishi Chanquan Baohu Tiaoli Qicao Shuoming* (广东省知识产权保护条例起草说明) [EXPLANATION FOR DRAFTING THE GUANGDONG PROVINCE INTELLECTUAL PROPERTY PROTECTION REGULATION] 2–3 (2021).

⁹⁷ *Id.*

⁹⁸ Zhao Leji (赵乐际), *Zai Quanguo Difang Lifa Gongzuo Zuotanhui Shang De Jianghua* (在全国地方立法工作座谈会上的讲话) [Speech at the National Symposium on Local Legislation Work in China], Nat’l People’s Cong. of the P.R.C. (Sept. 19, 2023), <https://perma.cc/3N9C-C4Y3> (“Currently, there are a total of 354 local legislative entities in our country, including 31 provinces (regions, cities), 289 cities with districts, 30 autonomous prefectures, and 4 prefecture-level cities without districts.”). The author, utilizing the Chinalawinfo Database (<https://perma.cc/NH2M-ZTNN>)—

those that do not are still bound by the patent laws of their provinces. A rare case is when there is city-level patent legislation but no province-level patent legislation. Inner Mongolia does not have province-level patent legislation, but Baotou, a city in the province, does have one in place: the Baotou City Patent Promotion and Protection Regulations.⁹⁹ Cities that have local legislation regarding patents are usually among the most economically developed cities in their province. For example, in 2021, Baotou, with a thriving rare earth industry,¹⁰⁰ had the second highest GDP of any city in Inner Mongolia.¹⁰¹ Currently, there is a growing trend toward city-level patent legislation, with city governments either enacting patent laws or incorporating patent-related content into their intellectual property legislation.¹⁰²

IV. A SURVEY OF THE LOCAL PATENT LEGISLATION IN CHINA

A. Local Patent Legislation to Adapt to Regional Specificities

Increasing the adaptability of the patent system, or more broadly, the intellectual property system, to local economic and social needs is a requirement that the central government imposes on localities. This is evident in the 2008 National Intellectual Property Strategy Outline and the 2021 Outline for the Construction of a Strong Intellectual Property State (2021–2035).¹⁰³ The State Council has promulgated these guidelines for China’s lower levels of

a platform systematically collecting Chinese legislations, cases, and other legal documents—conducted a search on local patent laws and local intellectual property laws that encompass patent laws. It was discovered that there are local patent legislations in thirty-one province-level administrative regions and twenty-one city-level administrative regions.

⁹⁹ Baotou City Patent Promotion and Protection Regulations (包头市专利促进与保护条例) [Regulations on the Promotion and Protection of Patents in Baotou City] (promulgated by the Standing Comm. People’s Cong. Baotou City, Feb. 26, 2009, effective Aug. 1, 2009) (China) [hereinafter Baotou Patent Law].

¹⁰⁰ See Stew Magnuson, *China Maintains Dominance in Rare Earth Production*, NAT’L DEF. (Sept. 8, 2021), <https://perma.cc/A4QV-WAKF> (noting that Baotou is one of the two rare earth R&D hubs in China); Jack Lau, *China’s Inner Mongolia Region Aims to Earn Five Times More from Rare Earths by 2025*, SOUTH CHINA MORNING POST (Dec. 14, 2021), <https://perma.cc/A4QV-WAKF> (noting that Baotou, known as “China’s rare earth capital,” reported a production value of 21.9 billion yuan in 2020, reflecting its substantial role in the country’s rare earth industry).

¹⁰¹ STATISTICS BUREAU OF INNER MONGOLIA AUTONOMOUS REGION, INNER MONGOLIA STATISTICAL YEARBOOK 404 (2022).

¹⁰² For instance, in a press conference on April 20, 2023, the municipal government of Changsha, the capital of Hunan province, proposed the construction of a strong intellectual property city. It included local intellectual property regulations in the legislative plan for the year, to strengthen the laws to that would support this goal. See Feng Zhiwei et al. (冯志伟等), Changsha Jianshe Guojia Zhishichanquan Qiangshi Shixian Qiangjing Kaiju (长沙建设国家知识产权强市示范城市实现强劲开局), [*Changsha Makes a Strong Start in Building a National Intellectual Property Powerhouse Demonstration City*] CHINA DAILY (April 30, 2023), <https://perma.cc/8S8Q-VDDR>.

¹⁰³ 2008 Outline, *supra* note 71; 2021 Outline, *supra* note 71.

government.¹⁰⁴ In the former outline, the central government requires local governments to “accelerate the building of the intellectual property legal system” in order to “adapt to new IP issues in a timely and effective manner.”¹⁰⁵ The latter requires local governments to make and amend IP laws and regulations “promptly” so as to “adapt to the needs of scientific and technological progress and economic and social development.”¹⁰⁶ In fact, the Legislation Law obligates local authorities to take local specificities into account. Articles 80 and 81 of the Legislation Law require the local people’s congresses and standing committees to legislate in accordance with the “specific circumstances and practical needs.”¹⁰⁷

It should not be surprising that the central government emphasizes the adaptability of local patent legislation. Regional economic disparities, variations in industrial structure, cultural differences, and other factors lead to the need for well-tailored patent law that can meet specific local circumstances. In fact, most of China’s local patent laws explicitly state that they were enacted based on local circumstances.¹⁰⁸ These circumstances include local industries, local development plans, local traditions and culture, as well as political functions delegated to the locality by the central government.

1. Adaptation to local industries.

Different regions have unique industry clusters, which require patent laws that cater to their specific needs. For example, regions with strong technology and innovation-driven industries might require more stringent patent protection and enforcement mechanisms. As of January 2023, fourteen of the thirty-one province-level authorities had introduced special provisions into their local patent laws to accommodate established and upcoming local industries.¹⁰⁹ Ten of the

¹⁰⁴ *Id.*

¹⁰⁵ 2008 Outline, *supra* note 71.

¹⁰⁶ 2021 Outline, *supra* note 71.

¹⁰⁷ Legislation Law, *supra* note 61, arts. 80, 81.

¹⁰⁸ *E.g.*, Shandongsheng Zhishi Chanquan Baohu He Cujin Tiaoli (山东省知识产权保护和促进条例) [Regulations on the Protection and Promotion of Intellectual Property in Shandong Province] (promulgated by the Standing Comm. Shandong Provincial People’s Cong. Mar. 20, 2022, effective May 1, 2022), art. 1, 2022 Standing Comm. Shandong Provincial People’s Cong. Gaz. 201 (China) [hereinafter Shandong IP Law]; Chengdushi Zhuanli Baohu He Cujin Tiaoli (成都市专利保护和促进条例) [Regulations on the Protection and Promotion of Patents in Chengdu City] (promulgated by the Standing Comm. Chengdu City People’s Cong. Aug. 30, 2013, effective Nov. 28, 2013), art. 1 (China) [hereinafter Chengdu Patent Law].

¹⁰⁹ Hainan; Beijing; Hunan; Xinjiang; Yunnan; Anhui; Guangdong; Liaoning; Shanxi; Shaanxi; Tianjin; Zhejiang; Hubei; Guizhou. For example, Article 21 of the Regulations on Intellectual Property Rights Protection in Guangdong Province stipulates that

Governments at the county level and above, as well as relevant departments, should explore and undertake intellectual property protection efforts in new fields and new business models, as well as in areas

twenty-one city-level authorities (or almost half) have enacted special provisions for local industries.¹¹⁰

The measures that local legislatures introduce through patent laws for local industries are diverse, adopting one approach or a combination of several. Typical financial measures include government-funded support for the industrialization of patented technologies of local industries,¹¹¹ as well as prizes for patents and the patented products of those industries.¹¹² In terms of acquiring patent rights, local governments grant priority for review,¹¹³ or privilege for faster review, to the technologies belonging to the industries that local policies support.¹¹⁴ Patent rights

of traditional culture and traditional knowledge. They should provide necessary training and guidance for intellectual property protection in fields such as big data, artificial intelligence, genetic technology, the internet, sports broadcasting and live streaming, and traditional Chinese medicine.

Guangdongsheng Zhishi Chanquan Baohu Tiaoli (广东省知识产权保护条例) [Regulations on Intellectual Property Rights Protection in Guangdong Province] (promulgated by the Standing Comm. Guangdong Province People's Cong., Mar. 29, 2022, effective May 1, 2022), art. 21 (China) [hereinafter Guangdong IP Law].

¹¹⁰ Kunming; Xiamen; Shantou; Shenzhen; Nanjing; Suzhou; Hangzhou; Shenyang; Taiyuan; Wuhan. For example, Article 31 of Regulations on the Promotion and Protection of Patents in Xiamen Special Economic Zone stipulates “[p]romot[ing] the priority review of patent applications in areas such as next-generation information technology, biopharmaceuticals, high-end equipment manufacturing, new energy, new materials, and energy conservation and environmental protection, to boost the development of strategic emerging industries” Xiamen Jingji Tequ Zhishi Chanquan Cujin He Baohu Tiaoli (厦门经济特区知识产权促进和保护条例) [Regulations on the Promotion and Protection of Patents in Xiamen Special Economic Zone] (promulgated by the Standing Comm. Xiamen City People's Cong., Oct. 30, 2010, effective Dec. 1, 2020), art. 31 (China) [hereinafter Xiamen IP Law].

¹¹¹ See Xinjiang Weiwuer Zizhiqu Zhuanli Cujin Yu Baohu Tiaoli (新疆维吾尔自治区专利促进与保护条例) [Regulations on the Promotion and Protection of Patents in the Xinjiang Uygur Autonomous Region] (promulgated by the Standing Comm. Xinjiang Uygur Autonomous Region People's Cong., Sept. 28, 2012, effective Dec. 1, 2012), art. 15, <https://perma.cc/9SK2-8MY9> (China) [hereinafter Xinjiang Patent Law].

¹¹² Guangdong Sheng Zhuanli Jiangli Banfa (广东省专利奖励办法) [Patent Award Measures in Guangdong Province] (promulgated by the Guangdong Prov. People's Gov't, Apr. 1, 2019, effective May 1, 2019), art. 9 (China).

¹¹³ Hainan Ziyu Maoyigang Zhishi Chanquan Baohu Tiaoli (海南自由贸易港知识产权保护条例) [Regulations on the Protection of Intellectual Property in Hainan Free Trade Port] (promulgated by the Standing Comm. Hainan Province People's Cong., Dec. 1, 2021, effective Jan. 1, 2022), art. 11 (China).

¹¹⁴ Beijingshi Zhishi Chanquan Baohu Tiaoli (北京市知识产权保护条例) [Regulations on Intellectual Property Rights Protection in Beijing City] (promulgated by the Standing Comm. Beijing City People's Cong., Mar. 31, 2022, effective Jul. 1, 2022), art. 14 (China) [hereinafter Beijing IP Law]; Guangdong IP Law, *supra* note 109, art. 16.

belonging to these industries often receive better protection and enjoy expedited enforcement processes.¹¹⁵

The measures targeting advantageous industries in different regions reflect the patent system's adaptability to local specificities through local patent laws. A comparison between Beijing and Yunnan's local patent laws demonstrates this. Beijing's legislature has incorporated five industries—mobile internet, big data, artificial intelligence, quantum technology, and cutting-edge biotechnology—into the scope of its supported measures,¹¹⁶ reflecting and enhancing the region's comparative advantage in these areas. Beijing is home to prestigious universities and research institutions that contribute cutting-edge research in these fields.¹¹⁷ The region's well-developed infrastructure and vibrant innovation ecosystem further support these industries.¹¹⁸ In contrast, Yunnan's local patent law supports industries such as biology, opto-electronics, high-end equipment manufacturing, new materials, renewable energy, and energy conservation,¹¹⁹ reflecting and enhancing its regional comparative advantage. Yunnan, located in southwest China, has abundant sunlight¹²⁰ and diverse manufacturing capabilities.¹²¹ This

¹¹⁵ See Anhui Sheng Zhishi Chanquan Baohu Banfa (安徽省知识产权保护办法) [Regulations on the Protection of Intellectual Property in Anhui Province] (promulgated by the People's Government of Anhui, Oct. 26, 2021, effective Oct. 26, 2021), art. 25 (China) [hereinafter Anhui IP Law].

¹¹⁶ See Beijing IP Law, *supra* note 114, art. 8.

¹¹⁷ See Jane Qiu, *Research and Development of Artificial Intelligence in China*, 3 NAT'L SCI. REV. 538, 540 (2016); Yong Zhao et al., *Characteristics of Research Collaboration in Biotechnology in China: Evidence from Publications Indexed in the SCIE*, 107 SCIENTOMETRICS 1373, 1383–86 (2016); *Beijing Academy of Quantum Information Sciences*, NATURE INDEX (June 20, 2023), <https://perma.cc/9PYV-FCZG>; *Beijing—AI Superpower*, THE ECONOMIST (June 9, 2023), <https://perma.cc/VE77-F87F>. In 2021, Beijing's higher education institutions had the highest research and development (R&D) expenditure than those of all provincial-level administrative regions in China, reaching 29,220.95 million yuan (about \$4.54 billion). See CHINA STATISTICAL YEARBOOK ON SCIENCE AND TECHNOLOGY 94 (Xiaojing Guan, ed., 2022) [hereinafter CHINA STATISTICAL YEARBOOK].

¹¹⁸ Juan Pedro Tomás, *Beijing Aims to Expand 5G Infrastructure to Cover Key Areas*, RCR WIRELESS NEWS (Sept. 1, 2021), <https://perma.cc/V3AR-HGL2>; Beijingshi Jiasu Xinxing Jichu Sheshi Jianshe Xingdong Fang'an (2020–2022 Nian) (北京市加快新型基础设施建设行动方案(2020–2022年)) [Beijing Municipality's Action Plan for Accelerating the Construction of New Infrastructure (2020–2022)] (promulgated by the Beijing Municipality People's Gov't, Beijing Municipal Comm. of the Communist Party of China, June 9, 2020, effective June 10, 2020), <https://perma.cc/L3VR-FMV3> (China).

¹¹⁹ Yunnansheng Zhuanli Cujin Yu Baohu Tiaoli (云南省专利促进与保护条例) [Regulations on the Promotion and Protection of Patents in Yunnan Province] (promulgated by the Standing Comm. Yunnan Province People's Cong., Nov. 29, 2012, effective Mar. 1, 2013), art. 11 (China) [hereinafter Yunnan Patent Law].

¹²⁰ Zhimin Li et al., *Towards Green Rural Energy in Yunnan, China*, 30 RENEWABLE ENERGY 99, 104 (2005).

¹²¹ Yunnansheng Xianjin Zhuangbei Zhizaoye Fazhan Guihua (2016–2020 Nian) (云南省先进装备制造制造业发展规划(2016–2020年)) [Yunnan Province's Development Plan for the Advanced Equipment Manufacturing Industry (2016–2020)] (promulgated by the General Office of Yunnan Province People's Gov't, Nov. 16, 2016, effective Dec. 2, 2016) (China).

province is one of the most biodiverse in China, hosting 51.6% of China's high plant species, 54.8% of its vertebrate species, and 72.5% of the country's priority protected wild animals, with 15% of these species endemic to the region.¹²² Rich biodiversity provides a valuable resource base for biotechnology research and development. A semi-decentralized patent legislation model allows local governments to tailor their patent systems in ways that are advantageous to their regions' industries.

2. Adaptation to local development plans.

To promote innovation, attract foreign investment and technology transfer, and experiment with new legal and policy approaches, China's central government has established several distinct zones across the country, including Special Economic Zones,¹²³ Economic and Technological Development Zones,¹²⁴ Independent Innovation Demonstration Zones,¹²⁵ and Pilot Free Trade Zones.¹²⁶ These allow local governments to test new laws and policies. Successful implementations can then potentially spread to other regions and stimulate their economic growth and development.¹²⁷ Local governments often introduce patent law provisions tailored to these zones, enabling patent-related experimentation. Eight administrative regions have incorporated into their patent laws provisions

¹²² Yuming Yang et al., *Biodiversity and Biodiversity Conservation in Yunnan, China*, 13 BIODIVERSITY & CONSERVATION 813, 817 (2004).

¹²³ See generally Sonoko Nishitateno, *China's Special Economic Zones: Experimental Units for Economic Reform*, 32 INT'L & COMP. L.Q. 175 (1983); THOMAS FAROLE & GOKHAN AKINCI, THE WORLD BANK, SPECIAL ECONOMIC ZONES: PROGRESS, EMERGING CHALLENGES, AND FUTURE DIRECTIONS (2011). Typical examples are Shenzhen and Shantou, both of which are Special Economic Zones. They both have local patent laws.

¹²⁴ See generally Zheng Joseph Yan, Peter Zámorský & Hongji Liang, *A Sociological View toward the Economic and Technological Development Zones in China*, 15 CHINESE MGMT. STUD. 598 (2021). Typical examples are Tianjin and Jinan, both of which have Economic and Technological Development Zones. They both have local patent laws addressing patent systems in these zones.

¹²⁵ See generally Zongguo Ma et al., *Understanding the Influencing Factors of Enterprise Transformation and Upgrading Capability: A Case Study of the National Innovation Demonstration Zones, China*, 15 SUSTAINABILITY 2711 (2023). For instance, Anhui, Beijing, Jiangsu, and Xiamen have National Innovation Demonstration Zones, and their local patent laws all make special provisions to address the development of patent systems in these zones.

¹²⁶ Lianghu Wang & Jun Shao, *Can China's Pilot Free Trade Zone Improve Trade Efficiency?*, 13 J. INT'L COM., ECON. & POL'Y 2250006 (2022). Both Shanghai and Hainan have Pilot Free Trade Zones, and their local patent laws have special provisions to address the development of patent systems in these zones.

¹²⁷ For example, the success of the Shenzhen Special Economic Zone led to the establishment of several other Special Economic Zones in other regions of China, including Zhuhai, Shantou, and Xiamen. China's first Pilot Free Trade Zone was established in Shanghai in 2013, and was designed to test new policies related to international trade and investment. The success of the Shanghai Pilot Free Trade Zone led to the establishment of several other Pilot Free Trade Zones in other regions of China, including Guangdong, Tianjin, and Fujian.

related to Pilot Free Trade Zones,¹²⁸ generally aiming to enable,¹²⁹ encourage,¹³⁰ support,¹³¹ or even mandate¹³² the development of innovative patent-related approaches. Examples include Anhui's focus on enhancing patent protection effectiveness,¹³³ Hubei's exploration of integrated patent management and public service systems,¹³⁴ Jiangsu's pilot trials to protect patent rights in cross-border e-commerce,¹³⁵ and Shenzhen's experimentation with new dispute resolution and enforcement mechanisms.¹³⁶

3. Adaptation to local traditions and culture.

Local patent legislation aimed at preserving and protecting intangible assets that derive from regional culture and traditions reflect China's vast and diverse cultural heritage, spanning various regions and ethnic groups. This heritage includes Chinese medicine, traditional knowledge, and the traditional crafts of ethnic minorities.¹³⁷ Local measures generally focus on providing protection¹³⁸ to

¹²⁸ See, e.g., Anhui IP Law, *supra* note 115, art. 13; Beijing IP Law, *supra* note 114, art. 8; Jiangsusheng Zhishi Chanquan Cujin He Baohu Tiaoli (江苏省知识产权促进和保护条例) [Regulations on the Promotion and Protection of Intellectual Property in Jiangsu Province] (promulgated by the Standing Comm. Jiangsu Province People's Cong., Jan. 14, 2022, effective April 26, 2022), art. 24, 2022 Standing Comm. Jiangsu Province People's Cong. Gaz. 76, <https://perma.cc/H98M-WCX5> (China) [hereinafter Jiangsu IP Law]; Shenzhen Jingji Tequ Zhishi Chanquan Baohu Tiaoli (深圳经济特区知识产权保护条例) [Regulations on the Protection of Intellectual Property in the Shenzhen Special Economic Zone] (promulgated by the Standing Comm. Shenzhen City People's Cong., Dec. 27, 2018, effective Mar. 1, 2019), art. 7, 2018 Standing Comm. Shenzhen City People's Cong. Gaz. 124 (China) [hereinafter Shenzhen IP Law].

¹²⁹ Shenzhen IP Law, *supra* note 128, art. 7.

¹³⁰ Anhui IP Law, *supra* note 115, art. 13; Jiangsu IP Law, *supra* note 128, art. 24.

¹³¹ Beijing IP Law, *supra* note 114, art. 8.

¹³² Shandong IP Law, *supra* note 108, art. 6.

¹³³ Anhui IP Law, *supra* note 115, art. 13.

¹³⁴ Hubeisheng Zhuanli Tiaoli (湖北省专利条例) [Hubei Province Patent Regulations] (promulgated by the Standing Comm. Hubei Province People's Cong., May 24, 2017, effective Sept. 1, 2017), art. 42 (China) [hereinafter Hubei Patent Law].

¹³⁵ Jiangsu IP Law, *supra* note 128, art. 24.

¹³⁶ Shenzhen IP Law, *supra* note 128, art. 7.

¹³⁷ See, e.g., Anhui IP law, *supra* note 115, art. 21; Xiamen Jingji Tequ Zhishi Chanquan Cujin He Baohu Tiaoli (厦门经济特区知识产权促进和保护条例) [Regulations on the Promotion and Protection of Patents in Xiamen Special Economic Zone] (promulgated by the Standing Comm. Xiamen City People's Cong., Oct. 30, 2010, effective Dec. 1, 2020), art. 23 (China), Xiamen IP Law, *supra* note 110.

¹³⁸ Anhui IP Law, *supra* note 115, art. 21; Xiamen IP Law, *supra* note 110, art. 23; Hainan Ziyou Maoyigang Zhishi Chanquan Baohu Tiaoli (海南自由贸易港知识产权保护条例) [Regulations on the Protection of Intellectual Property in Hainan Free Trade Port] (promulgated by the Standing Comm. Hainan Province People's Cong. Dec. 1, 2021, effective Jan. 1, 2022), art. 15 (China) [hereinafter Hainan IP Law].

and promoting the utilization of these intangible assets.¹³⁹ For example, Xinjiang is home to Uyghurs and Kazakhs,¹⁴⁰ who excel in traditional crafts such as carpet weaving, musical instrument making, horse gear manufacturing, and metalwork.¹⁴¹ Xinjiang's local patent law encourages innovation in these crafts to generate new techniques, products, and practices.¹⁴² In Hainan, the Li and Miao peoples are known for their textile techniques.¹⁴³ Hainan's local patent law not only promotes innovation in these traditional crafts but also emphasizes their protection. For those engaged in these crafts, the government provides guidance and counseling on how they can use the intellectual property system for their own protection.¹⁴⁴ This focus on preserving and promoting intangible cultural assets showcases the adaptability and importance of local patent legislation in addressing the unique needs and heritage of China's diverse regions.

4. Adaptation to local political functioning.

Localities, notably Fujian, have used their patent laws to promote the reunification of mainland China and Taiwan. Lying just across the Taiwan Strait, Fujian shares close historical and cultural ties with Taiwan. The province also serves as a key area for cross-strait economic exchange and cooperation. In recent years, China's central government has implemented preferential policies to encourage Taiwanese businesses and individuals to invest in and move to Fujian, fostering closer economic ties between the two sides. Notable examples are the Measures for Promoting Cross-Strait Economic and Cultural Exchange and Cooperation that the Taiwan Affairs Office of the State Council and the National Development and Reform Commission introduced in February 2018.¹⁴⁵ These measures introduced thirty-one specific policies to improve the treatment of

¹³⁹ Kunmingshi Zhishi Chanquan Cujin Yu Baohu Tiaoli (昆明市知识产权促进与保护条例) [Regulations on the Promotion and Protection of Intellectual Property in Kunming City] (promulgated by the Standing Comm. Kunming City People's Cong. April 29, 2014, effective Oct. 1, 2014), art. 15 (China) [hereinafter Kunming IP Law].

¹⁴⁰ CHINA STATE COUNCIL INFO. OFFICE, POPULATION DEVELOPMENT IN XINJIANG (2021).

¹⁴¹ See Wu Di (吴迪), *Uighur Handicrafts*, CHINA ETHNIC CULTURE DATABASE (Nov. 15, 2017), <https://perma.cc/MEG8-H2R9>; Guo Hao (郭昊), *Kazakh Folk Crafts*, CHINA ETHNIC CULTURE DATABASE (Nov. 13, 2017), <https://perma.cc/7NW4-EDZ7>.

¹⁴² Xinjiang Patent Law, *supra* note 111, art. 10.

¹⁴³ See Libin Zhang et al., *Island Blues: Indigenous Knowledge of Indigo-Yielding Plant Species Used by Hainan Miao and Li Dyers on Hainan Island, China*, 15 J. ETHNOBIOLOGY & ETHNOMEDICINE 1, 2 (2019); Katharina Massing, *Safeguarding Intangible Cultural Heritage in an Ethnic Theme Park Setting—The Case of Binglanggu in Hainan Province, China*, 24 INT'L J. HERITAGE STUD. 66, 72–73 (2018).

¹⁴⁴ Hainan IP Law, *supra* note 138, art. 15.

¹⁴⁵ Guanyu Cujin Liangan Jingji Wenhua Jiaoliu Hezuo de Ruogan Cuoshi (关于促进两岸经济文化交流合作的若干措施) [Measures for Promoting Cross-Strait Economic and Cultural Exchange and Cooperation] (promulgated by the State Council Taiwan Affairs Office & National Development and Reform Commission, No. 1 [2018] of the State Council Taiwan Affairs Office, Feb. 28, 2018, effective Feb. 28, 2018) (China).

Taiwanese enterprises in the areas of investment and economic cooperation, as well as the conditions for Taiwanese individuals studying, starting businesses, working, and living on the mainland.¹⁴⁶ Fujian's patent law requires local governments above the county level to help patent agencies in Taiwan set up branches in their regions and encourages Taiwanese residents who have obtained mainland patent agent qualifications to intern or practice in local patent agencies.¹⁴⁷ Further, legislators in Xiamen, Fujian's most economically developed city, introduced measures that support private capital and institutions in Taiwan, such as IP fund investment and IP operation.¹⁴⁸ These institutions allow entities that implement Taiwanese IP, including patents, in Xiamen to benefit from the city's incentive policies.¹⁴⁹

B. Local Patent Legislation Can Adjust Levels of Patent Protection

China's innovation economy demonstrates significant regional disparities, with the eastern coastal regions seeing more advantages, even as the central and western regions gradually catch up.¹⁵⁰ The eastern coastal areas, including the Yangtze River Delta, the Pearl River Delta, and the Beijing–Tianjin–Hebei Region, serve as the nation's innovation powerhouses due to their advanced infrastructure, global market access, and skilled labor forces.¹⁵¹ These regions host high-tech industries such as biotechnology, information technology, and advanced manufacturing, as well as renowned universities and research institutions. Meanwhile, the central and western regions, whose development has lagged

¹⁴⁶ *Id.*

¹⁴⁷ Fujiansheng Zhuanli Baohu Tiaoli (福建省专利保护条例) [Fujian Patent Law] (promulgated by the Standing Comm. Fujian Province People's Cong. June 4, 2004, effective Sept. 1, 2004), [hereinafter Fujian Patent Law] art. 26 (China).

¹⁴⁸ Xiamen IP Law, *supra* note 110, art. 8.

¹⁴⁹ *Id.*, art. 26.

¹⁵⁰ See CHINA SCI. AND TECH. DEV. STRATEGY INST., CHINA REGIONAL SCIENTIFIC AND TECHNOLOGICAL INNOVATION EVALUATION REPORT 8–9 (2022) [hereinafter INNOVATION EVALUATION REPORT].

¹⁵¹ *Id.* at 10–12.

historically,¹⁵² are now emerging as innovation centers.¹⁵³ The Chengdu-Chongqing Economic Zone¹⁵⁴ and Wuhan¹⁵⁵ are gaining prominence due to government incentives and investment. The patent protection measures that these regions have adopted show a certain correlation with the geographical distribution of the innovation economy. Broadly speaking, although different regions exhibit local competition in patent protection, regions with strong innovation economies tend to provide stronger patent protection than do regions with weaker innovation economies.

We can see the practice of local competition through strengthened patent protection in programmatic documents or explanatory materials on patent legislation. The southeastern coastal areas of China, such as Guangdong Province and Shanghai, which have advanced innovation economies, are pioneers in local patent legislation. Guangdong has ranked first in terms of GDP among all provinces in China for thirty-four consecutive years,¹⁵⁶ while many have hailed the province's city of Shenzhen as "China's Silicon Valley."¹⁵⁷ In the drafting notes for the Guangdong Intellectual Property Protection Regulations, the Guangdong Provincial Party Committee and the Provincial Government emphasize the importance of intellectual property protection and propose the strategic goal of "building a high-standard intellectual property protection highland."¹⁵⁸ In its

¹⁵² Li Ximin (李喜岷), *Yong Keji Cujin Zhongxibu Jingji Shengteng de Lilun he Zhanlue* (用科技促进中西部经济升腾的理论和战略) [Theories and Strategies for Leveraging Technology to Elevate the Economy of Central and Western China], 3 KEXUE GUANLI YANJIU [Sci. Mgmt. Res.] 1, 1 (1996) (noting that since China's reform and opening up, the growing development gap between its eastern and central-western regions underscores the need for leveraging technology as a key strategy to accelerate economic growth in the latter areas).

¹⁵³ In the China Urban Science and Technology Innovation Development Report (2022) published by the Capital Science and Technology Development Strategy Institute (STDSI) of China, cities (including municipalities) were ranked based on their science and technology innovation development index. Among the cities in the central region, Wuhan, Hefei, and Changsha made it to the top twenty, ranking eighth, eleventh, and twelfth respectively. In the western region, Chengdu and Chongqing were among the top twenty, standing at thirteenth and twentieth respectively. The rankings can be viewed at the webpage of STDSI, CAP. SCI. AND TECH. DEV. STRATEGY INST. OF CHINA, CHINA URBAN SCIENCE AND TECHNOLOGY INNOVATION DEVELOPMENT REPORT (2022), <https://perma.cc/YP7L-SGAU>.

¹⁵⁴ Zou Xuan (邹璇), *Qu Nei Shuang He Hudong Chanye Tongchou Fazhan Yanjiu—Yi Chengyu Jingjiqu Wei Li* (区内双核互动产业统筹发展研究—以成渝经济区为例) [Research on the Coordinated Development of Dual-Core Interactive Industries within the Region: Taking Chengdu-Chongqing Economic Zone as an Example], 10 QIUSUO [Seeking] 32, 35 (2014).

¹⁵⁵ Dept. of Sci. Tech. of Hubei Prov., *The Nation Plans to Build Wuban into a Science and Technology Innovation Center with National Influence*, HUBEI.GOV.CN (Sept. 29, 2022), <https://perma.cc/JNK3-7EWB>.

¹⁵⁶ NAT'L BUREAU OF STATISTICS OF CHINA, NATIONAL DATA, <https://perma.cc/V9M5-A9CM>.

¹⁵⁷ Matt Rivers, *Inside China's Silicon Valley: From Copycats to Innovation*, CNN (Nov. 22, 2018), <https://perma.cc/8GKG-CJLC>.

¹⁵⁸ GUANGDONG MARKET SUPERVISION ADMIN., *supra* note 83, at 1.

Shenzhen Intellectual Property Strategy Outline (2006–2010), Shenzhen also outlined its objective of building a strong intellectual property city, aiming to “enhance the core competitiveness of industry and the city.”¹⁵⁹

Shanghai, as the central city of the Yangtze River Delta, similarly used its Intellectual Property Strategy Outline (2011–2020) to highlight the importance of strengthening local intellectual property protection, and as a means to achieve the goal of “building an Asia-Pacific Intellectual Property Center.”¹⁶⁰ The subsequent Shanghai Intellectual Property Strong City Construction Outline (2021–2035) further emphasized the development direction of building an “international intellectual property protection highland.”¹⁶¹ The use of terms like “highland” and “center” reflects the regional competition to elevate intellectual property protection levels, as they signify the aspiration to create a prominent and leading position in the field of intellectual property protection.

In contrast, while also driven by competition, patent legislation in Central and Western China tends to be responsive to the southeastern coastal regions. For example, the Hunan¹⁶² Intellectual Property Office’s legislative notes on Hunan’s local patent law state that due to the accelerated patent layout of enterprises in developed coastal areas, “the imbalance in regional intellectual property development will further widen the gap in economic and social development.”¹⁶³ Therefore, formulating local patent laws has become an “urgent need” as a way to respond to “domestic competition.”¹⁶⁴

Local patent laws, building upon the foundation of China’s national patent system, have a number of ways to strengthen patent protection. One primary approach is to enable innovators to obtain patent rights more easily by establishing government-funded special programs to subsidize patent applications,¹⁶⁵ extending support and assistance to individual innovators throughout the application process,¹⁶⁶ offering guidance and consultation services to patent applicants,¹⁶⁷ and giving priority to patent applications related to locally-

¹⁵⁹ PEOPLE’S GOV’T OF SHENZHEN CITY, NOTICE ON THE ISSUANCE OF THE SHENZHEN INTELLECTUAL PROPERTY STRATEGY OUTLINE (2006–2010) (2005), <https://perma.cc/B84R-ZVNN>.

¹⁶⁰ PEOPLE’S GOV’T OF SHANGHAI CITY, NOTICE ON THE ISSUANCE OF THE SHANGHAI INTELLECTUAL PROPERTY STRATEGY OUTLINE (2011–2020) (2012), <https://perma.cc/MAA7-ZWKQ>.

¹⁶¹ PEOPLE’S GOV’T OF SHANGHAI CITY, OUTLINE FOR BUILDING SHANGHAI INTO A STRONG CITY IN INTELLECTUAL PROPERTY (2021–2035) (2022).

¹⁶² Hunan is a central province neighboring Guangdong.

¹⁶³ Explanation of Hunan Patent Law, *supra* note 89.

¹⁶⁴ *Id.*

¹⁶⁵ See, e.g. Jiangsu Patent Law, *supra* note 128, art. 10.

¹⁶⁶ *Id.* art. 21.

¹⁶⁷ Hainan IP Law, *supra* note 138, art. 15.

recognized key technologies and essential products.¹⁶⁸ These measures can alleviate the financial burden on applicants during the application process, streamline that process to increase the likelihood of successful applications, and ensure that inventors are better prepared to submit complete applications, ultimately enhancing their chances of obtaining patent protection.

Another category of measures aimed at improving patent protection levels involves strengthening patent enforcement. To this end, administrative law enforcement departments carry out specialized actions in an effort to investigate and crack down on infringement activities.¹⁶⁹ Moreover, administrative departments, such as intellectual property, tourism and culture, public security, and customs can strengthen patent enforcement by pooling their resources.¹⁷⁰ Establishing an information-sharing system between these departments¹⁷¹ can enhance the timeliness of enforcement actions. In places like Shanghai and Beijing, intellectual property administrative departments have adopted cutting-edge technologies, including big data, artificial intelligence, and real-time mobile monitoring, to detect infringement activities.¹⁷² Use of these technologies enables more accurate and timely identification of potential infringement, allowing law enforcement agencies to respond quickly and effectively. Some regions have established an intellectual property protection assessment mechanism that assesses the performance of responsible authorities and relevant departments in fulfilling their legal duties to protect intellectual property rights.¹⁷³ This mechanism ensures accountability and encourages continuous improvement in rights enforcement. Furthermore, there are regions that have implemented an incentive system to recognize and reward collectives and individuals who make outstanding contributions in the realm of intellectual property protection.¹⁷⁴ Some local intellectual property laws require intellectual property administrative departments to establish legal aid mechanisms and accept applications for

¹⁶⁸ Jiangxi Sheng Zhuanli Cujin Tiaoli (江西省专利促进条例) [Jiangxi Province Patent Promotion Regulations] (promulgated by the Standing Comm. Jiangxi Province People's Cong., Nov. 27, 2009, effective Jan. 1, 2010, as amended), art 11 (China) [hereinafter Jiangxi Patent Law].

¹⁶⁹ Guangdong IP Law, *supra* note 109, art. 15; Anhui IP Law, *supra* note 115, art. 23; Jiangsu IP Law, *supra* note 128, art. 28.

¹⁷⁰ Jiangsu IP Law, *supra* note 128, art. 28; Hainan IP Law, *supra* note 138, art. 49.

¹⁷¹ Xiamen IP Law, *supra* note 110, art. 38; Hubei Patent Law, *supra* note 134, art. 48.

¹⁷² Shanghai Shi Zhishi Chanquan Baohu Tiaoli (上海市知识产权保护条例) [Regulations on Intellectual Property Protection in Shanghai City] (promulgated by the Standing Comm. Shanghai City People's Cong., Dec. 30, 2020, effective Mar. 1, 2021), art. 45, <https://perma.cc/RW45-6BX3> (China) [hereinafter Shanghai IP Law]; Beijing IP Law, *supra* note 114, art. 12.

¹⁷³ Guangdong IP Law, *supra* note 109, art. 45.

¹⁷⁴ *Id.*; Anhui IP Law, *supra* note 115, art. 47.

enforcement assistance.¹⁷⁵ These mechanisms help patent holders who lack resources with which to enforce their rights.

The introduction of local preventive measures is another means to strengthen patent protection. Patent laws in some regions require third parties, such as exhibition organizers, professional market operators, major sports and cultural event organizers, and advertising operators, to check whether the entities entering their premises or participating in their activities might infringe upon others' patent rights.¹⁷⁶ Obligating these third parties to perform due diligence reduces the likelihood of patent infringement occurring in such venues or during such activities and deters potential infringers. In contrast, some local patent laws have implemented intellectual property credit evaluation mechanisms for dishonest behavior.¹⁷⁷ When the government carries out administrative activities related to patents—such as approving government investment projects, allowing government procurement and bidding, providing government financial support, and offering awards and recognition—it checks the credit records of the relevant entities. Those with poor histories face negative consequences, such as being banned from undertaking government investment projects, from participating in government procurement, and bidding or being denied access to government financial support and other preferential policies.¹⁷⁸ This mechanism creates a deterrent effect by discouraging entities from engaging in patent infringement, so as to avoid the significant disadvantages to obtaining benefits.

Analyzing local patent laws in various provincial-level administrative regions in China, including the southeast coastal area and the central and western districts, offers insights into the competitive landscape of patent protection and regional differences in the effectiveness of patent protection. To maintain regional competitiveness and establish themselves as a “highland” for intellectual property protection, both Guangdong and Shanghai have adopted measures to strengthen patent protection, including making it easier for innovators to obtain patent rights.¹⁷⁹ Both jurisdictions use advanced technologies, such as artificial

¹⁷⁵ Shenyangshi Zhuanli Cujin Tiaoli (沈阳市专利促进条例) [Regulations on the Promotion of Patents in Shenyang City] (promulgated by the Standing Comm. Shenyang City People's Cong., Jan. 8, 2010, effective Mar. 1, 2010), art. 23 (China).

¹⁷⁶ Guangdong IP Law, *supra* note 109, arts. 31–34; Hainan IP Law, *supra* note 138, art. 32.

¹⁷⁷ Anhui IP Law, *supra* note 115, art. 29; Shanxisheng Zhishi Chanquan Baohu Gongzuo Tiaoli (山西省知识产权保护工作条例) [Regulations on Intellectual Property Rights Protection Work in Shanxi Province] (promulgated by the Standing Comm. Shanxi Province People's Cong., May 28, 2021, effective July 1, 2021), art. 40 (China) [hereinafter Shanxi IP Law].

¹⁷⁸ *Id.*, art. 40.

¹⁷⁹ Guangdongsheng Zhuanli Tiaoli (广东省专利条例) [Guangdong Province Patent Regulations] (promulgated by the Standing Comm. Guangdong Province People's Cong., Sept. 29, 2010, effective Dec. 1, 2010), arts. 16, 26 (China) [hereinafter Guangdong Patent Law].

intelligence¹⁸⁰ and multi-departmental collaborative enforcement mechanisms,¹⁸¹ and provide legal aid to patent rights holders. They also impose obligations on third parties to prevent patent infringement through information review¹⁸² and introduce credit evaluation systems.¹⁸³ Guangdong, unlike Shanghai, incorporates intellectual property protection into administrative personnel assessments.¹⁸⁴ In contrast, Shanghai is gradually establishing a unique public interest litigation system in the field of intellectual property, where the procuratorate, rather than the rights holder, combats infringement through judicial proceedings.¹⁸⁵ So far, none of the public interest litigation has involved patent enforcement,¹⁸⁶ so its impact on patent rights holders is untested. An innovator's choice between Guangdong and Shanghai is not clear-cut, as both regions offer high levels of patent protection.

Hubei, a central province with its capital at Wuhan, is a rising innovation hub. Its provincial patent law is considered an “important pillar” of the local government's implementation of the “Rise of Central China” strategy.¹⁸⁷ This strategy, initiated by the central government, aims to bridge the economic disparity between China's prosperous coastal regions and the less economically developed central regions, furthering balanced growth nationwide.¹⁸⁸ Although Guangdong's legislative process was an important reference point for Hubei's government,¹⁸⁹ it adopted slightly fewer patent protection measures than Guangdong did. Hubei's local patent law offers government-funded patent applications that can assist

¹⁸⁰ Guangdong IP Law, *supra* note 109, arts. 10, 15.

¹⁸¹ *Id.*, arts. 23, 26; Shanghai IP Law, *supra* note 172, arts. 6, 7.

¹⁸² Guangdong IP Law, *supra* note 109, arts. 30, 31, 33; Shanghai IP Law, *supra* note 172, arts. 39, 40.

¹⁸³ Guangdong IP Law, *supra* note 109, art. 46; Shanghai IP Law, *supra* note 172, art. 18.

¹⁸⁴ Guangdong IP Law, *supra* note 109, art. 45.

¹⁸⁵ Shanghai IP Law, *supra* note 172, art. 33.

¹⁸⁶ Although there is currently no public interest litigation in the field of patents, the Shanghai government has passed a local law, which includes a provision to “[s]upport the People's Procuratorate of Pudong New District in exploring the implementation of public interest litigation in the field of intellectual property involving public interests, such as pharmaceutical patents.” If public interest litigation in the field of patents occurs in the future, the technology involved could be the subject of pharmaceutical patents. *See* Shanghai Shi Pudong Xin Qu Jianli Gaoshuiping Zhishi Chanquan Baohu Zhidu Ruogan Guiding (上海市浦东新区建立高水平知识产权保护制度若干规定) [Several Regulations on Establishing a High-Level Intellectual Property Protection System in Pudong New District of Shanghai] (promulgated by the Standing Comm. Shanghai People's Cong., Oct. 28, 2021, effective Dec. 1, 2021), art. 13 (China).

¹⁸⁷ PEOPLE'S GOV'T OF HUBEI PROV., EXPLANATION OF THE HUBEI PROVINCE PATENT REGULATIONS (2017), <https://perma.cc/6KXC-2633>.

¹⁸⁸ CPC Central Committee & State Council, *Guanyu Cujin Zhongbu Diqu Jueqi de Ruogan Yijian* (关于促进中部地区崛起的若干意见) [Several Opinions on Promoting the Rise of Central Region] (promulgated by the CPC Central Committee & State Council, No. 10 [2006] of the Central Committee, Apr. 15, 2006) (China).

¹⁸⁹ PEOPLE'S GOV'T OF HUBEI PROV., *supra* note 187, at 187.

innovators in obtaining patent protection. In terms of strengthening enforcement, it introduces legal aid mechanisms to help creators protect their rights.¹⁹⁰ As for preventive measures, it also imposes review obligations on third parties,¹⁹¹ and it establishes an intellectual property credit evaluation system.¹⁹² Unlike Guangdong's system, Hubei's patent law does not introduce a multi-departmental collaborative enforcement mechanism, nor does it explicitly require administrative departments to incorporate advanced technologies, such as artificial intelligence, into patent enforcement. If innovators were only to consider local patent protection measures when choosing a location, Hubei's slightly lower degree of patent protection might not be significant enough to make an innovator choose Guangdong or Shanghai instead.

Compared to the innovation hubs of Guangdong and Shanghai in the southeast coastal region, and the rising central province of Hubei, Qinghai, in northwestern China, is a less innovative province.¹⁹³ Despite increasing investment and policy support for new energy industries like wind and solar power,¹⁹⁴ Qinghai's overall industry remains relatively undeveloped.¹⁹⁵ Tibet, in southwestern China, ranks even lower in technological innovation.¹⁹⁶ Dominated by agriculture, animal husbandry, construction, and tourism,¹⁹⁷ Qinghai's total innovation expenditure in 2021 ranked second to last among China's provincial-level administrative regions at 2.67 billion yuan (approximately \$421 million), surpassing Tibet's 470 million yuan (approximately \$74 million), but far below

¹⁹⁰ Hubei Patent Law, *supra* note 134, art. 45.

¹⁹¹ *Id.*, art. 35–37.

¹⁹² *Id.*, art. 34.

¹⁹³ In 2022, Qinghai ranks second to last among all provinces in China in various innovation indicators such as regional GDP, the value-added of knowledge-intensive services, the number of high-tech enterprises, the total revenue of high-tech enterprises, R&D funding, and the number of R&D personnel. See INNOVATION EVALUATION REPORT, *supra* note 150, at 208.

¹⁹⁴ Chen Guozhou (陈国洲), *Qinghai to Increase Investment in New Energy Construction Such as Solar and Wind Energy this Year*, XINHUA NEWS AGENCY (May 15, 2011), <https://perma.cc/L9AA-ARUJ>; Luo Xiaofei (骆晓飞) & Xie Tongqiang (解统强), *Qinghai Starts Construction of 10.9 Million Kilowatts Large-Scale Wind and Photovoltaic Base Project*, XINHUA NEWS AGENCY (Oct. 26, 2021), <https://perma.cc/99ED-5HT9>.

¹⁹⁵ Li Xian (鲜丽), *Cong Tongji Shijiao Kan Qinghai Youndian Chanye de Xuanze* (从统计视角看青海优势产业的选择) [From a Statistical Perspective, the Selection of Advantageous Industries in Qinghai], 33 ZHONGGUO SHICHANG (中国市场) [China Market] 27, 27–28 (2019), <https://perma.cc/4GCC-RFMJ> (noting that the greatest proportion of Qinghai's industrial output comes from the service industry, primarily tourism and trade).

¹⁹⁶ In 2022, Tibet ranked last among all provinces in China in various innovation indicators. See INNOVATION EVALUATION REPORT, *supra* note 150, at 194–96.

¹⁹⁷ Liu Yu (刘妤), *Xizang Chanye Jiegou Youhua Yu Quyu Wuli Fazhan Wenti Yanjiu* (西藏产业结构优化与区域物流发展问题研究) [Research on Optimization of Industrial Structure and Regional Logistics Development Problems in Tibet], 39 XIZANG MINZU DAXUE XUEBAO (ZHEXUE SHEHUI KEXUE BAN) [J. Tibet Minzu Univ. (Philosophy and Social Sciences)] 76, 76–77 (2018).

Guangdong's leading 545.61 billion yuan (approximately \$86 billion).¹⁹⁸ In the same year, industrial enterprises in Qinghai filed a total of 1,354 patent applications, more than Tibet's 100, but far fewer than the 340,935 filed in Guangdong, the leading province.¹⁹⁹

Although Qinghai's patent law shares the common goal of augmenting local enterprise competitiveness,²⁰⁰ its content diverges substantially from the patent laws in the previously mentioned regions. Similar to them, Qinghai's patent legislation provides special funds and information retrieval services to aid innovators in applying for patents and safeguarding their rights.²⁰¹ However, it deviates in terms of rights enforcement and infringement prevention, lacking the measures that Guangdong, Shanghai, and Hubei's patent laws offer to bolster enforcement and stave off infringement. Tibet and its cities have yet to formulate local patent laws to enhance patent protection. Looking just at patent protection measures, Qinghai and Tibet appear less enticing than other provinces. This possibly could be one of the factors contributing to their lesser appeal in attracting innovative talent and enterprises. In 2021, Qinghai had 9,438 people engaged in R&D, ranking second to last among all provincial-level administrative regions in China, just above Tibet's 3,219.²⁰² In the same year, only fifty-four industrial enterprises in Qinghai were involved in R&D, more than Tibet's three, but far fewer than Guangdong's 32,938.²⁰³

V. EVALUATING CHINA'S SEMI-DECENTRALIZED PATENT LEGISLATION MODEL BY COMPARING IT WITH THE U.S.' CENTRALIZED MODEL

By extending legislative power to local governments, China's central government has enabled them to establish their own patent laws, thereby creating a semi-decentralized patent system. The coexistence of national and local patent laws represents the fruits of a cooperative endeavor between the central government and local governments in structuring the patent system, where the central government takes the leading role. Local patent laws, while complementary, do not alter the requirements that the central government set forth. Rather, they modulate within the boundaries of the national law, guided by

¹⁹⁸ CHINA STATISTICAL YEARBOOK, *supra* note 117, at 136.

¹⁹⁹ *Id.* at 57.

²⁰⁰ QINGHAI PROV. PEOPLE'S CONG. STANDING COMM., EXPLANATION ON THE DRAFT OF QINGHAI PROVINCE REGULATIONS ON PATENT PROMOTION AND PROTECTION (2010).

²⁰¹ Qinghaisheng Zhuanli Cujin Yu Baohu Tiaoli (青海省专利促进与保护条例) [Qinghai Province Regulations on the Promotion and Protection of Patents] (promulgated by the Standing Comm. Qinghai Province People's Cong., Nov. 30, 2009, effective Mar. 1, 2010), arts. 5, 15 (China).

²⁰² CHINA STATISTICAL YEARBOOK, *supra* note 117, at 4.

²⁰³ *Id.* at 54.

the central government's directives, and adapted to the specific local circumstances.

This section aims to evaluate the benefits and potential challenges of this semi-decentralized patent system by contrasting it with the current centralized patent system of the U.S. It is important to note that determining whether a legal system is suitable for a country requires substantial local information. Making conclusive judgments about the patent systems of China and the U.S. goes beyond the scope of this paper. The purpose of juxtaposing China's model with that of the U.S. is merely to highlight its characteristics and facilitate theoretical analysis, with the hope of providing researchers with some thought-provoking insights and policy makers with potential references for reform. Therefore, the conclusions in this section are preliminary and provisional.

A. Merits

Compared to the centralized U.S. patent legislation model, a significant feature of China's semi-decentralized legislation model is that local governments cooperate in the building of the patent system by making local laws to meet specific regional needs, enhancing the adaptability of the patent system overall.²⁰⁴ Without local governments' input, centralized legislation to maintain uniform patent law across the nation could, as Michael Carroll points out, entail "uniformity costs"—namely, under-protecting costly innovations and over-protecting those with lower innovation needs or alternative appropriability mechanisms.²⁰⁵ And like some other countries, China comprises a range of local development plans, traditions, and cultures.²⁰⁶ Granting legislative authority for patents to the local governments might be the ideal way to adapt to diverse local conditions. Part of the reason for this, as Friedrich Hayek pointed out, lies in the dispersed nature of knowledge.²⁰⁷ Informational deficiencies might keep the laws

²⁰⁴ See Ouellette, *supra* note 11, at 106.

²⁰⁵ Michael W. Carroll, *One for All: The Problem of Uniformity Cost in Intellectual Property Law A Review of Recent Decisions of the United States Court of Appeals for the Federal Circuit*, 55 AM. U. L. REV. 845, 847 (2006). See also *id.* at 852–61 (analyzing the problem of the cost of uniformity in intellectual property law, discussing how uniform rights can impose social costs, and exploring the need for context-sensitive and tailored entitlements to reduce these costs).

²⁰⁶ See Rochelle Cooper Dreyfuss & Andreas F. Lowenfeld, *Two Achievements of the Uruguay Round: Putting TRIPS and Dispute Settlement Together*, 37 VA. J. INT'L L. 275, 296 (1996); Claudio R. Frischtak, *Harmonization Versus Differentiation in Intellectual Property Regimes*, in GLOBAL DIMENSIONS OF INTELLECTUAL PROPERTY RIGHT IN SCIENCE AND TECHNOLOGY 89, 90 (Mitchel B. Wellerstein et al. eds., 1993) (claiming that IP systems should be "differentiated according to the level of technological and productive competence, so as to support a country's ability to absorb, adapt, and generate technology").

²⁰⁷ Friedrich A. Hayek, *The Use of Knowledge in Society*, INDIVIDUALISM AND ECONOMIC ORDER 77, 77–78 (1949). See also Craig Allen Nard & John F. Duffy, *Rethinking Patent Law's Uniformity Principle*, 101

that the central government enacts from being responsive to local conditions.²⁰⁸ The semi-decentralized legislation model encourages participation, allowing provincial or city governments to use their local knowledge to make the legal system more adaptable to local conditions.

Another related benefit pertains to the geographically uneven distribution of industries. The U.S. has regional clusters of innovators in specific sectors, such as agricultural technology in California or orthopedic devices in Indiana,²⁰⁹ and so does China.²¹⁰ Uniform national patents that the central government issues create incentives to develop innovations for broad market protection and monetization, but lack specific incentives for investing in innovations important to specific communities.²¹¹ Local governments can tailor their patent laws to cultivate regional clusters of innovators in specific sectors,²¹² or to encourage the pursuit of projects that directly enhance the well-being and quality of life of local residents,²¹³ such as by providing stronger patent protection and enforcement measures. This approach can enhance investment in new technologies by promoting regional innovation clusters and supporting local public goods.²¹⁴

Viewed from a dynamic perspective, the advantage of giving local governments patent legislative power lies in their ability to experiment with new rules through legislation.²¹⁵ Such experimentation can lead to innovation within the patent system. In fact, according to John Duffy, the history of patent law

NW. U. L. REV. 1619, 1631 (2007) (noting that decentralized decision-making allows for more comprehensive information gathering and utilization, which can lead to superior collective judgments than a centralized institution due to the natural dispersion of knowledge across society); Maxwell L. Stearns, *Appellate Courts Inside and Out*, 101 MICH. L. REV. 1764, 1777 (2003) (“One major benefit of generating information as to value in this decentralized and uncoordinated manner is that countless *subjective* valuation measures—reflected in the individual transactions—produce an objective valuation that can be tested in the marketplace.”).

²⁰⁸ See Duffy, *supra* note 15, at 686.

²⁰⁹ Hrdy, *supra* note 14, at 499 (noting that whether it is the aircraft equipment and design firms stationed in Seattle, or those researching advanced materials in Pittsburgh, it is evident that “clusters” have a significant influence on today’s global economic landscape); see also Michael E. Porter, *Clusters and the New Economics of Competition*, 76 HARV. BUS. REV. 77, 78, 82 (Nov.–Dec. 1998), <https://perma.cc/53YQ-5AWQ>.

²¹⁰ China’s technology industries exhibit a phenomenon of clustering in various regions. For example, the biopharmaceutical industry is concentrated in Jiangsu, Shandong, and Guangdong; equipment manufacturing is centered in Jiangsu, Zhejiang, and Guangdong; and the internet industry is focused in Beijing, Guangdong, and Shanghai. See China Industrial Bank Research, *China Industrial Map*, 1, 23–25 (2021), <https://perma.cc/M9NU-MH4B>.

²¹¹ Hrdy, *supra* note 14, at 492–93.

²¹² *Id.* at 488–89.

²¹³ Hrdy, *supra* note 2, at 95.

²¹⁴ Hrdy, *supra* note 14, at 488–89.

²¹⁵ See Ouellette, *supra* note 11, at 106 (pointing out that as an alternative to the prevailing emphasis on patent uniformity, “experimentalism” might offer a more advantageous approach).

underscores the importance of experiments in law.²¹⁶ Local legislative power can facilitate the simultaneous experimentation of different statutory laws across regions, enhancing its efficiency of and, in turn, boosting innovation in law.²¹⁷ Indeed, the ability to experiment with decentralized law is a characteristic and an advantage of federalism.²¹⁸ As the late Supreme Court Justice Louis Brandeis pointed out, “It is one of the happy incidents of the federal system that a single courageous state may, if its citizens choose, serve as a laboratory; and try novel social and economic experiments without risk to the rest of the country.”²¹⁹ By contrast, centralized patent legislation requires that statutory experiments occur sequentially rather than geographically, leading to slower legal innovation.²²⁰ And when these experiments are not conducted simultaneously, interpreting the data from any innovation is challenging, as the lack of variation means that there is no proper control.²²¹

The semi-decentralized model promotes innovation by enabling the testing of different approaches, generating a wealth of information about institutional reform.²²² Local governments can conduct experiments with the new statutory rules that they create, and the knowledge that such experiments generate can in turn inform the legislation of other local governments as well as the central one. The value of this strategy became clear during China’s period of reform and opening up and continues to this day.²²³ As Deng Xiaoping, the second-generation leader in China, stated: “There are regulations that localities can engage in first, on a trial basis, and then after summing up and improving, [we will be able to] make

²¹⁶ Duffy, *supra* note 15, at 691. Based on John Duffy’s historical examination of the origin of patent law, it is evident that this legal framework, tracing back to fifteenth-century Venice, spread widely in spite of initial resistance. The most notable example of such pushback can be found in Aristotle’s arguments against rewards for innovation, fearing potential disruptions to societal norms and customs. However, individual nations have tailored their patent law and practice to their specific needs and circumstances, prompting other jurisdictions to adapt similar modifications when this proved successful. Nevertheless, there was no universal acceptance of patent law across Europe until the twentieth century. Today, nations continue to experiment and innovate within their patent laws and practices. *Id.* at 710–19.

²¹⁷ Xuan-Thao Nguyen, *Dynamic Federalism and Patent Law Reform*, 85 *IND. L.J.* 449, 451 (2010) (claiming that patent reform should not solely rely on Congress and the Supreme Court but should also involve local-level initiatives that serve as “laboratories for changes” and can have both local and national impacts).

²¹⁸ See Akhil Reed Amar, *Five Views of Federalism: Converse-1983 in Context*, 47 *VAND. L. REV.* 1229, 1233–35 (1994).

²¹⁹ *New State Ice Co. v. Liebmann*, 285 U.S. 262, 311 (1932) (Brandeis, J., dissenting).

²²⁰ Duffy, *supra* note 15, at 691 (explaining that complete uniformity in patent systems forces experiments to occur sequentially rather than geographically, resulting in slower innovation).

²²¹ *Id.* at 691–92.

²²² Nard & Duffy, *supra* note 207 at 1634–35; Duffy, *supra* note 15 at 690.

²²³ See Laura Paler, *China’s Legislation Law and the Making of a More Orderly and Representative Legislative System*, 182 *CHINA Q.* 301, 301 (2005).

laws that are applicable nationwide.”²²⁴ Xuan-Thao Nguyen echoed this view, highlighting the instrumental role of localities as laboratories of change, whose successful experiments in patent-law reform can profoundly influence both local and national legislation.²²⁵

The U.S. patent system faces challenges in fine-tuning patent legislation to meet specific local demands while simultaneously advancing regional trials of laws. However, this does not imply it is rigid. The court system can, to some extent, accommodate diverse local demands within the patent system. When adjudicating cases, judges can exercise discretion, interpreting statutory provisions in light of the unique circumstances of each case, including the regional context and the specific needs of the parties involved. Dan Burk and Mark Lemley have suggested that judges have thirteen “policy levers,” in other words, flexible legal standards within patent law, including the doctrines of utility, experimental use, and the level of skill in the art, that they can adjust to meet the peculiarities of cases, especially when technological differences underlie their uniqueness.²²⁶ These levers empower courts to integrate considerations of economic policy and industry-specific variations when applying overarching patent rules to particular cases. Intrinsicly woven into the system, these policy levers allow judges to acknowledge the diverse features of innovation across various industries, hence contributing to a more customized enforcement of patent law.²²⁷ By harnessing these policy levers, courts gain the ability to adjust the application of patent law to accommodate the unique nuances and demands of a wide array of industries, ranging from chemistry to pharmaceuticals, biotechnology, semiconductors, and software.²²⁸ Moreover, the U.S. Court of Appeals for the Federal Circuit can draw on regional appeals to establish precedents as a way of refining existing rules.

Some may argue that the judiciary alone suffices to enhance the adaptability of the patent system and conduct legal experimentation, thus making local patent legislative power unnecessary. However, it is essential to note that this model comes with several limitations. First, the system itself favors centralization, because the Federal Circuit has exclusive nationwide jurisdiction over patent appeals. Judge Randall Rader has already pointed out that the court’s exclusive jurisdiction creates less opportunity for “experimentation” with legal issues.²²⁹

²²⁴ 2 DENG XIAOPING (邓小平), *SELECTED WRITINGS OF DENG XIAOPING* 147 (1983).

²²⁵ Nguyen, *supra* note 217, at 489. *See also* Hrды, *supra* note 14, at 489 (proposing that state patents can act as testing grounds for patent law reform while complementing U.S. patents and other incentives for encouraging investment in new technologies).

²²⁶ *See* Dan L. Burk & Mark A. Lemley, *Policy Levers in Patent Law*, 89 VA. L. REV. 1575, 1638–95 (2003).

²²⁷ *Id.*

²²⁸ *Id.*

²²⁹ Randall R. Rader, *The United States Court of Appeals for the Federal Circuit: The Promise and Perils of a Court of Limited Jurisdiction*, 5 MARQ. INTELL. PROP. L. REV. 1, 4 (2001).

Echoing this, former Chief Judge Paul R. Michel highlighted the Federal Circuit's tendency to replicate old results based on prior precedents, thereby hindering the law's ability to adapt to changing business and technological landscapes.²³⁰

Faced with the court system's limited ability to engage in legal experimentation due to its centralized nature, Craig Nard and John Duffy have called for the establishment of a polycentric decision-making structure in patent law. It would emphasize the value of competition and diversity in legal systems and offer the potential benefit of such a "moderately decentralized framework," which could allow for incremental innovation and experimentation.²³¹ Echoing this view, Diane P. Wood suggests that perhaps the solution lies in removing the exclusive jurisdiction of the Federal Circuit.²³² Under her proposal, litigants would have the option to submit their appeals to the Federal Circuit or proceed with litigation in the regional circuit where their claims were first presented.²³³ Such an arrangement would grant the Federal Circuit the room to leverage its specialized expertise, yet pave the way for a more expansive evolution of patent law, allowing fresh perspectives to permeate and flourish.²³⁴ This richer jurisprudential landscape would also provide the Supreme Court with a more comprehensive foundation from which to make its decisions.²³⁵

The second limitation is that courts can only address matters that come before them. Thus, statutory law inherently constrains the range of issues. Furthermore, the cases that enter the litigation process might not cover the entire spectrum of local needs or concerns, whereas local legislation can comprehensively and specifically address a wide range of regional issues. From a timing perspective, courts generally address issues retrospectively, as they respond to disputes that have already arisen, while local legislation can proactively tailor patent laws to meet regional needs and prevent those disputes in the first place. Forward-looking rulings, such as those relating to cutting-edge technologies like artificial intelligence, might be difficult for the court system to generate in a timely manner. Legislation, on the other hand, allows local governments to construct forward-looking rules. One additional point is that litigation costs also influence the scope of issues that courts address. The high cost of litigation restricts the range of legal updates as most issues with low individual economic value will not enter litigation. However, when enough disputes involving low-value issues

²³⁰ Nard & Duffy, *supra* note 207, at 1622 (documenting Chief Judge Paul R. Michel's words on this point).

²³¹ *Id.* at 1623–24.

²³² Diane P. Wood, *Is It Time to Abolish the Federal Circuit's Exclusive Jurisdiction in Patent Cases?* 13 CHL-KENT J. INTELL. PROP. 1, 9 (2013).

²³³ *Id.*

²³⁴ *Id.* at 10.

²³⁵ *Id.*

accumulate so that their collective value becomes significant, the courts might not be able to respond in a timely manner.

The third limitation is that legal reforms through the court system can lead to insufficient participation from stakeholders. Local stakeholders, especially those who have not instigated these cases, have limited opportunities to influence judicial interpretation directly. This is because courts base their decisions primarily on the legal arguments that the parties involved in the litigation present. Conversely, stakeholders can offer direct input that helps to shape local legislation, ensuring that patent laws reflect their priorities and needs. Some critics argue that the Federal Circuit's patent jurisprudence has become isolated and disconnected from the technological communities it affects.²³⁶ Comparatively, when local governments have legislative authority, as is the case in China, local citizens can also advocate for legal reforms that are tailored to their specific needs by influencing local legislation through public consultations,²³⁷ expressing views to representatives,²³⁸ and collaborating with NGOs.²³⁹ This approach allows for more informed legislation. Moreover, Article 87 of the Legislative Law of China requires local legislators to make drafts public and to solicit the public's opinions.²⁴⁰ Stakeholders can also influence legislation by providing comments.

²³⁶ See, e.g., Burk and Lemley, *supra* note 226, at 1578 (claiming that within the realms of software and biotechnology industries, the Federal Circuit seems to overlook that the policies reflected in its case law are “precisely backwards”); Rochelle Cooper Dreyfuss, *The Federal Circuit: A Continuing Experiment Specialization*, 54 CASE W. RES. L. REV. 769, 782 (2004) (noting that legal and economic theorists are rigorously examining issues related to the scope of patent rights, yet the court does not reference the extensive body of literature these scholars have produced).

²³⁷ Rongxin Li, *Public Participation and Its Limits in Legislative Consultation: A Case Study on Local Legislation in China*, 7 THEORY & PRAC. LEGIS. 27, 27–29 (2019).

²³⁸ RORY TRUEX, MAKING AUTOCRACY WORK: REPRESENTATION AND RESPONSIVENESS IN MODERN CHINA 75–76 (2016) (presenting a case in which a legislator, Zhou Hongyu, collected opinions for legislation from the public). According to Article 60 of the current *Organic Law of Localities*, the Standing Committee of the People's Congress at or above the county level shall establish grassroots contact points and representative liaison stations to establish close connections with the general public, in order to listen to their opinions and suggestions regarding legislative and oversight work. See *Organic Law of Localities 1979*, *supra* note 65; *Organic Law of Localities 1986*, *supra* note 67.

²³⁹ See generally Chloé Froissart, *From Outsiders to Insiders: The Rise of China ENGOs as New Experts in the Law-making Process and the Building of a Technocratic Representation*, 4 J. CHINESE GOVERNANCE 207 (2019) (investigating the evolution of law-making in China and emphasizing how environmental NGOs transitioned from outsiders to insiders in the legislative process following changes in the Environmental Protection Law).

²⁴⁰ *Legislation Law*, *supra* note 61, art. 40 (“The draft laws included in the agenda of the Standing Committee meeting should be publicly disclosed along with explanations of their drafting and amendments after the meeting, in order to solicit public opinions . . .”); *Id.*, art. 87 (“The procedures for proposing, deliberating, and voting on local regulations, autonomous regulations, and individual regulations are . . . , in accordance with the provisions of Chapter 2, Sections 2, 3, and 5 of this law, as stipulated by the local People's Congress at the corresponding level.”). Article 40 of the *Legislation Law* falls under Chapter 2, Section 3.

B. Challenges

The principle of uniformity, often invoked as a justification for centralization, is widely recognized as desirable in various areas of law in the U.S., including the patent system. As John Duffy notes, “[t]he policy in favor of national uniformity in patent law has . . . ancient roots in the [U.S.] law.”²⁴¹ A uniform patent institution offers simpler rules, enabling businesses to rely on its protections more readily. Indeed, a nationwide uniform patent system obviates the complexities that arise when navigating multiple state patent systems, and so facilitates business investment.²⁴² Uniformity by central government legislation often creates economies of scale, allowing for the application of rules and regulations across a broader area.²⁴³ When compared to the centralized patent law in the U.S., it is easy to see that one challenge, at least in theory, facing the semi-decentralized patent system in China is that the presence of multiple province-level and city-level patent laws that local governments made can lead to inconsistencies and variations in protection, potentially creating confusion and unpredictability for inventors seeking to navigate the complex legal landscape. Inconsistency and unpredictability can increase the cost of operations²⁴⁴ for both administrative agencies and private businesses.²⁴⁵

While concerns about legal inconsistency are understandable, the differences among local patent laws in China have not yet led to significant conflicts. As of this writing, there is no documented case of a dispute arising from inconsistencies in regional patent laws. Additionally, there is a noticeable lack of discourse among China’s legal academics and practitioners regarding the resolution of such potential inconsistencies. We can attribute this lack of conflict to two factors. First, the Chinese central government’s effective legislative oversight has been instrumental in mitigating potential disputes arising from the disparities in local patent laws. We can view local patent legislation in China as a diversity experiment for the patent system, one that the central government promotes and supervises.²⁴⁶ The central government, through the exercise of its legislative supervisory powers, plays a crucial role in eliminating inconsistencies in local legislation.²⁴⁷ Second, variations in local laws do not necessarily predicate disputes. For instance, both

²⁴¹ Duffy, *supra* note 12, at 287.

²⁴² Ford, *supra* note 13, at 569–70.

²⁴³ Nard & Duffy, *supra* note 207, at 1636–37.

²⁴⁴ See Duffy, *supra* note 15, at 700.

²⁴⁵ Ouellette, *supra* note 11, at 69 (noting that “central coordination of patent law is valued due to business costs and the externalities of innovation—jurisdictions do not internalize all the benefits of their innovation laws”).

²⁴⁶ *Cf. id.* at 65.

²⁴⁷ See Legislation Law, *supra* note 61, ch. 5.

the governments in Guangdong and Shanghai have bolstered law enforcement²⁴⁸ and established preventive measures²⁴⁹ against patent infringement.²⁵⁰ Such initiatives are unlikely to cause a clash with patent laws in other regions. They are consistent with national patent laws, and merely stipulate a higher standard within the permitted legal framework.

Despite the legal variations, it is crucial to recognize the inherent complexity resulting from differences among local patent laws, and the possible confusion that this might cause. Businesses, particularly those with operations in multiple locations, might have to bear additional costs to accommodate such legal diversity. Yet accurately quantifying these extra costs poses a significant challenge that goes beyond the scope of this paper. We should not, however, interpret the existence of these extra costs, if any, as an unfavorable outcome. After all, uniformity is not necessarily synonymous with quality or desirability.²⁵¹ The benefits that legal diversity confers could potentially offset the associated increase in costs, although it is premature to draw a definitive conclusion on this point due to the lack of empirical data. Furthermore, given that many cross-regional businesses often rely on specialized legal counsel for guidance,²⁵² the existence of multiple local patent laws might not significantly impede their capacity to innovate or protect their patent rights.

It is worth noting that certain local legislations might potentially enhance, rather than reduce, the consistency of the patent system's operation. Under the guidance of the central government, local governments in China have established mechanisms within their local patent law, or more broadly, local intellectual property law, by which to enhance coordination among local patent departments.²⁵³ To date, thirteen local governments (twelve provinces and one city) have done this. For example, the local laws of Beijing and Hebei incorporate cooperative mechanisms that bolster regional patent rights protection in the

²⁴⁸ Guangdong IP Law, *supra* note 109, arts. 10, 15, 23, 26; Shanghai IP Law, *supra* note 172, arts 6, 7.

²⁴⁹ Guangdong IP Law, *supra* note 109, arts. 30, 31, 33, 46; Shanghai IP Law, *supra* note 172, arts. 18, 39, 40.

²⁵⁰ Guangdong IP Law, *supra* note 109, arts. 10, 15.

²⁵¹ Nard & Duffy, *supra* note 207, at 1620.

²⁵² *Cf.* John Flood & Fabian Sosa, *Lawyers, Law Firms, and the Stabilization of Transnational Business*, 28 *NW. J. INT'L L. & BUS.* 489, 523–25 (2007) (noting that lawyers and law firms play a crucial role in facilitating cross-border transactions for businesses by providing legal expertise and structuring transactions within the framework of the law).

²⁵³ *See* The “14th Five-Year” IP Protection and Utilization Plan, *supra* note 70 (requiring that local governments should “strengthen the intellectual property work coordination mechanism and reinforce departmental cooperation, vertical alignment, and regional collaboration”).

Beijing-Tianjin-Hebei region.²⁵⁴ These mechanisms facilitate the cross-regional transfer of case leads, investigation and evidence collection, and enforcement, thereby streamlining the administrative application of patent rights across a region that spans the jurisdictions of several local governments.²⁵⁵ The establishment of such mechanisms not only signals a commitment to addressing potential discord in the operation of local intellectual property departments but also suggests a reduction in the operational costs of the patent system by fostering an environment conducive to cross-regional collaboration.²⁵⁶

Another concern regarding local patent legislation is that local patent laws might not align with the patent standards of the TRIPS Agreement, which stipulates minimum requirements for member nations of the World Trade Organization.²⁵⁷ Compliance with the TRIPS Agreement under China's semi-decentralized patent system depends on two conditions. First, the national patent laws do not offer a level of patent protection lower than the TRIPS minimum. In terms of legislation, by 2005 China's national patent laws have provided patent protection that meets the requirements of international treaties.²⁵⁸ Second, local patent laws should not degrade the level of patent protection that the national patent laws offer, as these are consistent with the TRIPS standards. The current Legislation Law requires that local laws must "not conflict with the Constitution, laws and administrative regulations."²⁵⁹ Reducing the national patent law's level of protection would constitute such a violation. The law gives the NPC Standing Committee the authority to review local legislation and mandate revisions to or annul local laws that contradict higher-level laws.²⁶⁰ To date, there have been no instances of the Committee abolishing a local patent law for this reason. This Article's findings suggest that local patent laws generally provide protection levels superior to those of the national system. Therefore, at least for now, it seems unlikely that local patent laws in China will violate the TRIPS Agreement.

Another challenge to this semi-decentralized model is the potential for efficiency losses due to local legal experimentation, an issue that is particularly

²⁵⁴ Hebeisheng Zhuanli Tiaoli (河北省专利条例) [Hebei Province Patent Regulations] (promulgated by the Standing Comm. Hebei Province People's Cong., Sept. 28, 2017, effective Nov. 1, 2017), art. 23 (China); Beijing IP Law, *supra* note 114, art. 9.

²⁵⁵ *Id.*

²⁵⁶ See Nard & Duffy, *supra* note 207, at 1674–75.

²⁵⁷ Cf. Hrdy, *supra* note 14, at 522 (noting that state patents may not comply with TRIPS patent standards).

²⁵⁸ Cao Wenzhe (曹文泽) & Wang Qian (王迁), *Zhongguo Zhishi Chanquan Fazhi Sishi Nian: Licheng, Tezheng Yu Zhanwang* (中国知识产权法制四十年: 历程、特征与展望) [Forty Years of China's Intellectual Property Legal System: History, Characteristics, and Prospects], 11 FAXUE (法学) [Legal Studies] 3, 11 (2018), <https://perma.cc/C63V-T3CR>.

²⁵⁹ Legislation Law, *supra* note 61, arts. 80, 81, 85.

²⁶⁰ *Id.*, arts. 108, 109.

relevant in China. In the context of local competition, local patent laws often incorporate two types of measures. Firstly, local governments use their own finances to fund businesses applying for patents. For instance, Article 4 of the Fujian Patent Law stipulates, “The local people’s government should increase funding for the promotion and protection of patents, raise funds through multiple channels, and use them to support patent applications.”²⁶¹ Secondly, local governments make patents a primary consideration when granting financial benefits to businesses, such as government funding, preferential access to government procurement, and tax benefits. For example, Article 12 of the Fujian Patent Law dictates that “government procurement and other purchases using fiscal funds shall give priority to the purchase of patented products under equal conditions.”²⁶² Businesses engaged in innovative activities and keen on obtaining patent protection undoubtedly find these measures attractive, as government financial support at the application stage reduces the cost of patent acquisition, while financial benefits granted on the basis of patents can put companies in a financially advantageous position compared to their competitors.

However, research shows that the implementation of these two types of measures can encourage businesses to engage in rent-seeking behavior. With no or minimal investment required to apply for patents, businesses might apply for patents for non-innovative, low-quality technologies.²⁶³ Some applicants, in order to secure government supportive funding for patent applications, even divide a single application into multiple ones.²⁶⁴ Studies indicate that the practice of local governments subsidizing patent applications has led to a decrease in the patent quality.²⁶⁵ This not only results in a waste of government financial and human resources at the application stage²⁶⁶ but also leads to increased administrative costs

²⁶¹ Jiangsu Patent Law, *supra* note 128, art. 10.

²⁶² Fujian Patent Law, *supra* note 147, art. 12.

²⁶³ Wu Hong (吴红), *Lun Difang Zhengfu Zai Zhuanli Gongzuo Zhong de Juese Dingwei——Cong Difang Zhengfu de Zhuanli Zizhu Zhengce Tanqi* (论地方政府在专利工作中的角色定位——从地方政府的专利资助政策谈起) [On the Role Positioning of Local Governments in Patent Work—Starting the Discussion with the Patent Funding Policy of Local Governments], 29 KE JI GUAN LI YAN JIU [Sci. & Tech. Mgmt. Res.] 243, 243 (2009) (noting that under the funding policy of some local governments, common practices include repetitive applications, breaking up a single invention into several applications, and re-applying for patents for products that have already been publicly disclosed and do not meet patent conditions).

²⁶⁴ *See id.* at 244.

²⁶⁵ Long Xiaoning (龙小宁) & Wang Jun (王俊), *Zhongguo Zhuanli Jizeng de Dongyin Yiji Zhiliang Xiaoying* (中国专利激增的动因及其质量效应) [The Driving Forces Behind the Surge in Chinese Patents and Their Effects on Quality], 38 (6) SHIJI JINGJI [World Economy] 115, 117 (2015).

²⁶⁶ Xu Jinhui (徐金辉), *Dui Zhejiangsheng Difang Zhengfu Zhuanli Zizhu Zhengce de Sikao* (对浙江省地方政府专利资助政策的思考) [Reflection on Zhejiang Provincial Government’s Patent Funding Policy], 4 JIAXING XUEYUAN XUEBAO [Journal of Jiaxing University] 49, 51 (2010).

for subsequent patent management.²⁶⁷ For companies wishing to enter the innovation field, navigating a dense thicket of low-quality patents can also lead to waste of resources that they could otherwise have used for innovation.

The resource wastage caused by government funding for patent applications may be exacerbated by local governments' heavy reliance on patent signals for fiscal resource allocation,²⁶⁸ even when overall patent quality is not high.²⁶⁹ Empirical studies show that local governments focus mainly on the number rather than on the quality of patents to determine tax benefits and financial subsidies.²⁷⁰ But, as Clarisa Long points out, signals from patent numbers are ambiguous, do not necessarily reflect a company's innovative capabilities, and are subject to manipulation.²⁷¹ A local government's overreliance on these signals might cause it to be misled. Moreover, these measures can produce distortion effects. Research shows that firms have overinvested in activities to obtain patents that attract government funding, resulting in the misallocation of resources that should have been directed toward production.²⁷² In addition, these measures might also distort market competition. For example, the Fujian Patent Law requires the government to prioritize the purchase of patented products.²⁷³ However, being covered by a patent does not necessarily mean a product is of high quality. Low-quality products with patents might squeeze out high-quality, unpatented products in the competition for government procurement. In sum, while the involvement of local governments in constructing the patent system can foster institutional experimentation and innovation, institutional innovation is not cost-free. After all, a new rule does not necessarily mean a good rule. The benefits of institutional

²⁶⁷ *Id.*

²⁶⁸ See Clarisa Long, *Patent Signals*, 69 U. CHI. L. REV. 625, 644–45 (2002) (noting that patents can serve as signals to reduce information asymmetry between patentees and observers).

²⁶⁹ DAN PRUD'HOMME, DULLING THE CUTTING EDGE: HOW PATENT-RELATED POLICIES AND PRACTICES HAMPER INNOVATION IN CHINA 1 (2012) (analyzing patent data in China and suggesting that while patent filings in China are likely to continue to grow, patent quality might continue to lag behind); Mark Liang, *Chinese Patent Quality: Running the Numbers and Possible Remedies*, 11 J. MARSHALL REV. INTELL. PROP. L. 480, 522 (2011) (analyzing patent data in China and contending that the quality of Chinese patents is below international standards).

²⁷⁰ Shen Yu et al. (申宇等), *Difang Zhengfu "Chuangxin Chongbai" Yu Qiye Zhuanli Paomo* (地方政府“创新崇拜”与企业专利泡沫) [Local Governments' "Worship for Innovation" and Enterprises' Patent Bubble], 4 KEYAN GUANLI [Research Management] 83, 87 (2018), <https://perma.cc/KJX3-PG4J>.

²⁷¹ Long, *supra* note 268, at 659–62. See *id.* at 655, 676–77.

²⁷² Yan Zhijun (闫志俊) & Yu Jinping (于津平), *Zhengfu Butie Yu Qiye Quanyaosu Shengchanli*——*Jiyu Xinxing ChanYe He Chuantong Zhizhaoye Duibi Fenxi* (政府补贴与企业全要素生产率——基于新兴产业和传统制造业的对比分析) [Government Subsidies and Total Factor Productivity of Firms—A Comparative Analysis Based on Emerging Industries and Traditional Manufacturing Industries], 1 CHANYE JINGJI YANJIU [Industrial Economy Studies] 1, 1–2 (2017).

²⁷³ Fujian Patent Law, *supra* note 147, art. 12.

experimentation and innovation are partially, and hopefully not entirely, offset by the costs of experimentation failures.

Scholars have also voiced concerns that competition among local jurisdictions might lead to the use of local patent legislation for protectionist purposes,²⁷⁴ consequently diminishing social welfare.²⁷⁵ While local competition can stimulate sound legislation, it can also result in wasteful strategic behavior.²⁷⁶ Stakeholders within a locality might seek trade barriers that deter external competitors from penetrating the local market, to the detriment of outside businesses or industries.²⁷⁷ This concern is relevant in China, where local patent laws encourage patent rights holders to align their patents with local technical standards, a practice that could yield anti-competitive effects and result in efficiency losses.

Presently, eight provinces have adopted such measures.²⁷⁸ For example, under their local patent laws, the governments of Jiangsu²⁷⁹ and Guizhou²⁸⁰ offer financial support or incentives for firms to incorporate their patented technologies into local technical standards. The combination of patents and local standards can create barriers to entry for products or services of firms outside the local market.²⁸¹ Those from other regions might find it difficult to penetrate the market if their products and services do not comply with local standards. Even if these firms choose to design their products or services to meet local standards, relevant patentees might use their patent rights to exclude them from the market or impose high licensing fees on them.²⁸² To prevent such anti-competitive situations, the

²⁷⁴ Thomas A. Hemphill & George O. White III, *China's National Champions: The Evolution of a National Industrial Policy—or a New Era of Economic Protectionism?*, 55 THUNDERBIRD INT'L BUS. REV. 193, 195 (2013) (noting that the Chinese government manifests its protectionist policies in government procurement, product standards, and patent law). See also Chong-En Bai et al., *Local Protectionism and Regional Specialization: Evidence from China's Industries*, 63 J. INT'L ECON. 397, 415 (2004) (examining a dataset that covers thirty-two industries in twenty-nine Chinese regions from 1985 to 1997 and finding a significant economic impact of protectionism on regional specialization).

²⁷⁵ John O. McGinnis & Mark L. Movsesian, *The World Trade Constitution*, 114 HARV. L. REV. 511, 524–26 (2000) (reviewing evidence that protectionism reduces social welfare).

²⁷⁶ Cf. Nard & Duffy, *supra* note 207, at 1629–30.

²⁷⁷ See McGinnis & Movsesian, *supra* note 275, at 524–26.

²⁷⁸ Guangdong, Guizhou, Hebei, Hubei, Jiangsu, Liaoning, Shandong, and Shaanxi.

²⁷⁹ Jiangsu IP Law, *supra* note 128, art. 56.

²⁸⁰ Guizhousheng Zhuanli Tiaoli (贵州省专利条例) [Guizhou Province Patent Regulations] (promulgated by the Standing Comm. Guizhou Province People's Cong., Sept. 25, 2020, effective Sept. 25, 2020) (China), art. 13.

²⁸¹ Alison Jones, *Standard-Essential Patents: FRAND Commitments, Injunctions and the Smartphone Wars*, 10 EUR. COMPETITION J. 1, 4 (2014).

²⁸² Mark R. Patterson, *Leveraging Information About Patents: Settlements, Portfolios, and Holdups*, 50 Hous. L. REV. 483, 513 (2012); Joseph Scott Miller, *Standard Setting, Patents, and Access Lock-in: RAND Licensing and the Theory of the Firm*, 40 IND. L. REV. 351, 366 (2007).

thirteenth article of the Provisions on Prohibiting the Abuse of Intellectual Property Rights to Exclude and Restrain Competition, in which China's State Administration for Industry and Commerce explicitly forbids businesses from engaging in exclusionary or restrictive practices via the creation and implementation of technical standards.²⁸³ Whether it is possible to alleviate these concerns will largely hinge on the local government's effectiveness in enforcing this provision of the central government's patent framework.

VI. CONCLUSION

This Article compares the patent legislative power allocation models in China and the U.S. In terms of evolutionary paths, the U.S. transitioned from a decentralized model where patent legislative power resided with the states, to a centralized model which consolidated this power at the federal level. Within the realm of patent legislation, there is no collaboration between the federal and state governments. Conversely, China moved from a centralized model, where patent legislative power was concentrated in the central government, to a semi-decentralized model, with coexistence between the patent legislative power of the central and local governments.

This Article posits that China's semi-decentralized patent legislation model manifests key elements of cooperative federalism, embodying power sharing between central and local governments as they collaboratively address issues related to innovation. However, the nature of the cooperation between China's central and local governments is distinctive. Unlike the U.S. federal system, where states enjoy significant autonomy, China's central government assumes a dominant role, a consequence of its unitary state structure. Local governments supplement the central government's constructed system by further developing it, tailoring it to local conditions under the central government's guidance and supervision.

Compared to the current centralized patent legislation model in the U.S., this Article suggests that the intricate structure of a semi-decentralized patent legislation model might be better equipped to cater to the diverse needs of local industries and inventor communities, and to spur local competition and institutional innovation. It can do this while complying with international treaty requirements, given that national patent laws maintain a level of protection no lower than these treaties necessitate and that local patent laws do not decrease the protection level of the national laws. However, the model also faces challenges regarding potential inconsistency, rent-seeking behaviors, and local protectionism.

²⁸³ Guanyu Jinzhi Lanyong Zhishi Chanquan Paichu, Xianzhi Jingzheng Xingwei de Guiding (关于禁止滥用知识产权排除、限制竞争行为的规定) [Provisions on Prohibiting the Abuse of Intellectual Property Rights to Exclude and Restrain Competition] (promulgated by the State Administration for Market Regulation, Order No. 74, Apr. 7, 2015) (China).

One Click from Conflict: Some Legal Considerations Related to Technology Companies Providing Digital Services in Situations of Armed Conflict

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Abstract

Private technology companies (tech companies) are increasingly providing their digital goods and services to clients living and working in situations of armed conflict. Tech companies may own, operate, or maintain significant portions of the digital infrastructure that allow day-to-day essentials—such as water, medical care, and electricity—to reach civilians living in places affected by armed conflict. They may own communications platforms that people use to call emergency services. They may own social media outlets that organizations rely on to inform communities in need about access to humanitarian services or that families use to maintain contact with each other. Those fighting today’s armed conflicts, including well-resourced militaries, and less-developed non-state armed groups, also undoubtedly rely on hardware, software, and networks manufactured, serviced, and secured by tech companies. They use them to coordinate and carry out a wide array of military operations, including the management of troop movements, military fuel and spare parts, and medical supplies. This paper’s premise is that as tech companies increase their involvement in armed conflict, the legal implications they face under international humanitarian law (IHL)—a body of law that regulates who and what is protected from the hostilities of armed conflict—also rise. Recognizing that cyberspace spans the globe with little concern for geography and borders, Section II discusses how this reality effects the applicability of IHL’s principles and rules relating to tech company employees and properties. From there, Section II explains the protections IHL affords the employees and properties of tech companies operating in situations of armed conflict and when, in exceptional circumstance, those protections might be lost. Section III moves on to discuss how IHL addresses situations where civilians and civilian objects get caught in the “digital crossfire” when they are reliant on, or located in proximity to,

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tech companies involved in armed conflict. Section IV concludes with practical recommendations for companies to take to minimize risks to their employees, property, civilian customers and surrounding civilians and civilian objects, including civilian infrastructure.