

## THICKETS PLEASE: ANALYZING THE INTERPLAY OF PATENT THICKETS AND ANTITRUST LAWS

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### *Abstract*

*In the wake of the recent American case involving AbbVie Inc. 's extensive patent portfolio for their arthritis drug Humira, the concept of 'patent thickets' has sparked intense debates among patent attorneys and antitrust lawyers. This paper explores patent thickets, their origins, implications, and potential solutions from an Indian perspective, addressing the country's critical issue of intellectual property and competition law. It most specifically delves into the antitrust implications of patent thickets. It also offers a global outlook, recognizing the evolving nature of jurisprudence in India concerning this topic. Further, the paper tackles the problems associated with patent thickets, emphasizing their adverse effects on competition and market access, particularly in sectors like healthcare. The paper subsequently presents strategies to mitigate anti-competitive practices linked with patent thickets. It highlights the potential of patent pooling while considering both its pro-competitive and anti-competitive aspects. It outlines methods for effectively evaluating these arrangements and suggests ways to modernize and revamp patent pools. Lastly, this paper underscores the pressing need to reform patent practices to foster innovation and economic growth while curbing the negative consequences of patent thickets. It emphasizes the importance of balancing intellectual property rights and fair competition to advance technology and promote economic prosperity within India 's evolving intellectual property and competition law landscape.*

*Keywords: Patent Thickets, Antitrust, Competition, Intellectual Property, Patent Pooling, Cross Licensing*

## 1 INTRODUCTION

*“What’s wrong with having lots of patents?”*

The above statement is a remark by the United States (“US”) Circuit Judge Frank Easterbrook in the recent case of *Mayor and City Council of Baltimore v. AbbVie Inc.*<sup>1</sup> This American Intellectual Property (“IP”) law decision, delivered on August 1, 2022, has re-ignited discussions centering around the concept of ‘patent thickets’ among patent attorneys and antitrust lawyers alike.

This case revolved around AbbVie Inc.’s 132 patents on their blockbuster arthritis drug, Humira. Despite the original patent on Humira expiring in 2016, the last of these 132 patents was not set to expire until 2034.<sup>2</sup> This raised concerns about potential antitrust violations, with claims that AbbVie’s patent stronghold unfairly prevented generic competitors from entering the market.<sup>3</sup>

Post the Chicago Court’s dismissal of the matter,<sup>4</sup> Judge Easterbrook’s ruling re-affirmed that AbbVie’s patent strategy did not breach antitrust laws. He rejected the argument that “*132 patents are just too many for anyone to hold,*” pointing out that major tech companies possess even more extensive patent portfolios, and he mentioned that “*Thomas Edison alone held 1,093 U.S. patents.*”<sup>5</sup>

Furthermore, the court dismissed claims that AbbVie’s patents were too weak to monopolize such a crucial drug market. Easterbrook emphasized, “*Weak patents are valid; to say they are weak is to say that their scope is limited, not that they are illegitimate.*”<sup>6</sup> Additionally, the court ruled that

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<sup>1</sup> *Mayor and City Council of Baltimore v. AbbVie Inc.* 7th U.S. Circuit Court of Appeals, No. 20-2402, <<https://tmsnrt.rs/3zRrfVO>> accessed 1 October 2023.

<sup>2</sup> *Ibid.*

<sup>3</sup> Brittain B, ‘U.S. senators ask regulators to clear drug patent ‘thickets’ (*Reuters*, 9 June 2022) <[www.reuters.com/legal/litigation/us-senators-ask-regulators-clear-drug-patent-thickets-2022-06-08/](http://www.reuters.com/legal/litigation/us-senators-ask-regulators-clear-drug-patent-thickets-2022-06-08/)> accessed 27 September 2023.

<sup>4</sup> Pierson B, ‘Judge dismisses antitrust lawsuit against AbbVie over Humira ‘patent thicket’ (*U.S.*, 8 June 2020) <[www.reuters.com/article/health-abbvie/judge-dismisses-antitrust-lawsuit-against-abbvie-over-humira-patent-thicket-idUSL1N2DL2IT](http://www.reuters.com/article/health-abbvie/judge-dismisses-antitrust-lawsuit-against-abbvie-over-humira-patent-thicket-idUSL1N2DL2IT)> accessed 2 October 2023.

<sup>5</sup> *Mayor* (n. 1).

<sup>6</sup> A Berneman B, ‘A Thicket of Patents is Not Antitrust - Golan Christie Taglia’ (*Golan Christie Taglia - Chicago Attorneys, Business Lawyers*, 20 September 2022) <<https://gct.law/blog/A-Thicket-of-Patents-is-Not-Antitrust>> accessed 2 October 2023.

AbbVie’s patent-litigation settlements were not unlawful “*pay-for-delay*” agreements, reinforcing their legality.<sup>7</sup>

This case has brought vital patent thickets fundamentals to the forefront,<sup>8</sup> sparking the needs for a reevaluation of the Indian perspective on patent thickets. Given the limited jurisprudence on this subject in India, it is imperative to analyze and anticipate this concept’s implications from an Indian perspective. This paper addresses patent thickets from the Indian antitrust and IP outlook in five parts. Part II delves into the origin and meaning of patent thickets and explores their antitrust implications. In Part III, the article offers a global perspective on patent thickets. Part IV addresses the antitrust problems associated with patent thickets, while Part V seeks solutions and alternatives to tackle this issue, acknowledging the preliminary nature of jurisprudence on this topic in India. It particularly focuses on patent pooling, examining both its pro-competitive and anti-competitive effects, and outlines methods for evaluating these arrangements effectively. The article also suggests ways to modernize and revamp patent pools. It also suggests alternative strategies in addition to patent pooling. Finally, the article concludes in Part VI, summarizing its findings and insights regarding patent thickets in the ever-evolving landscape of IP and competition law.

## **2 INTO THE THICKET: UNDERSTANDING PATENTS THICKETS AND THEIR IMPLICATIONS**

### **2.1 Tracing the Origin of Patent Thickets**

In 1856, a pivotal moment in innovation history occurred when a coalition of firms seized control of sewing machine patents, birthing the world’s first patent pool, which lasted until 1877.<sup>9</sup> Concurrently, Draper carved its own patent empire in loom temples,<sup>10</sup> setting a precedent for the

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<sup>7</sup> Ibid.

<sup>8</sup> Brittain B, ‘AbbVie wins appeal in antitrust case over Humira ‘patent thicket’ (Reuters, 2 August 2022) <[www.reuters.com/legal/litigation/abbvie-wins-appeal-antitrust-case-over-humira-patent-thicket-2022-08-02/](http://www.reuters.com/legal/litigation/abbvie-wins-appeal-antitrust-case-over-humira-patent-thicket-2022-08-02/)> accessed 1 October 2023.

<sup>9</sup> Lampe R and Moser P, ‘Do Patent Pools Encourage Innovation? Evidence from the 19th-Century Sewing Machine Industry’ [2010] SSRN Electronic Journal <<http://dx.doi.org/10.2139/ssrn.1308997>> accessed 2 October 2023.

<sup>10</sup> Ibid.

enduring practice of patent thickets over the next 150 years.<sup>11</sup> This strategic approach, marked by a “mutual non-aggression” philosophy, thrived in industries like semiconductors and computers, resulting in the accumulation of “defensive” patents by software companies.<sup>12</sup> The term ‘patent thicket’ gained prominence in the 1970s when Xerox dominated the photocopier industry.<sup>13</sup> While these defensive thickets offered advantages to those within, they unintentionally deterred new innovators from investing in research and development (“**R&D**”), ultimately leading to reduced incentives and the formation of vertical monopolies, reshaping the innovation landscape significantly.<sup>14</sup>

## 2.2 Analyzing the Underlying Conceptual Ambiguities

The debate surrounding the impact of patent thickets on innovation has persisted for as long as the term itself. Hussinger emphasized in 2006 that the increasing value of patents in their ability to link with others led to a complex network of patents referred to as a “patent thicket.”<sup>15</sup> The United Kingdom (“**UK**”) Intellectual Property Office (“**IPO**”), in its 2011 document ‘Patent Thickets: an Overview,’<sup>16</sup> has borrowed Shapiro’s definition<sup>17</sup> to express patent thickets as “*a dense web of overlapping IP rights that a company must hack its way through in order to actually commercialise new technology*”. However, Shapiro also highlighted that such dense patent landscapes can paradoxically stifle innovation rather than foster it.<sup>18</sup> This definition also has other critics, like Gwilym, who argue that it carries a negative connotation, stating that it implies these thickets are

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<sup>11</sup> G. Clarkson, 'Objective Identification of Patent Thickets: A Network Analytic Approach' 4(4) CiteSeer p. 2, <<https://citeseerx.ist.psu.edu/document?repid=rep1&type=pdf&doi=92e60c66e3b74dbfe1ca7df6f420a7ad7ec59f31>> accessed 25 August 2023.

<sup>12</sup> Ibid.

<sup>13</sup> *SCM Corp. v. Xerox Corp.* 645 F.2d 1195 (2d Cir.1981); *In re Xerox Corp.* 86 F.T.C. 364 (1975).

<sup>14</sup> Chadha & Chadha IP Attorneys, ‘Untangling The Patent Thickets - Patent - India’ (*Mondaq*, 11 August 2016) <[www.mondaq.com/india/patent/518368/untangling-the-patent-thickets](http://www.mondaq.com/india/patent/518368/untangling-the-patent-thickets)> accessed 20 September 2023.

<sup>15</sup> E.J. Egan & D.J. Teece, 'Untangling the Patent Thicket Literature' (2015) Tusher Center for Management of Intellectual Capital p.16, <<https://haas.berkeley.edu/wp-content/uploads/Tusher-Center-Working-Paper-7.pdf>> accessed 12 September 2023.

<sup>16</sup> IPO, ‘Patent Thickets: An Overview’ (*UK IPO*, November 2011) <<https://assets.publishing.service.gov.uk/media/5a75aa4340f0b67f59fcea7d/informatic-thickets.pdf>> accessed 20 September 2023.

<sup>17</sup> C Shapiro, ‘Navigating the Patent Thicket: Cross Licenses, Patent Pools and Standard Licensing’ *Innovation Policy and the Economy*, MIT Press, pp. 118-150 <<https://faculty.haas.berkeley.edu/shapiro/thicket.pdf>> accessed 25 September 2023.

<sup>18</sup> Ibid.

inherently problematic.<sup>19</sup> He said that: “*Perhaps the biggest problem of this overview is the use of the term “thicket” itself: the report says it is descriptive but adopts the definition: “a dense web of overlapping IP rights that a company must hack its way through in order to actually commercialise new technology”.* This isn’t descriptive, it’s pejorative, and we don’t need an informatics team to tell us such things are bad.”<sup>20</sup> Hence, the term ‘patent thicket’ remains fluid, lacking a single authoritative definition.<sup>21</sup> It essentially reflects the challenges newcomers face in navigating a technology space laden with existing IP rights,<sup>22</sup> particularly patents safeguarding components of complex technologies.<sup>23</sup>

The UK IPO broadly categorizes patent thickets into three types: (i) when multiple organizations own patents collectively necessary for a specific technology, (ii) when overlapping property rights exist in fragmented technology markets, and (iii) when numerous patents covering individual product components are owned separately.<sup>24</sup> Various technology sectors, including semiconductors, biotechnology, computer software, e-commerce, nanotechnology, telecommunications, and pharmaceuticals, have experienced the challenges posed by patent thickets.<sup>25</sup> These challenges extend to problems like stifling innovation, complicating licensing agreements, and raising concerns about antitrust implications.<sup>26</sup> Patent thickets remain a complex and evolving issue with far-reaching consequences in the world of innovation and intellectual property.

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<sup>19</sup> Jeremy Phillips, ‘Gwilym and the thicket collectors, or why life isn’t as bad, and is more interesting, than one might think ...’ (*IP Kitten*, November 29, 2011) <<https://ipkitten.blogspot.com/2011/11/gwilym-and-thicket-collectors-or-why.html>> accessed 15 September 2023.

<sup>20</sup> *Ibid.*

<sup>21</sup> IPO, ‘Patent thickets, an overview subject to peer review’ (*IPO*, 25 November 2011) <[https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/312540/informatic-thickets.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/312540/informatic-thickets.pdf)> accessed 01 September, 2023.

<sup>22</sup> *Ibid.*

<sup>23</sup> B. Hall, C. Helmers, G.V. Graevenitz, C. R. – Bondibene, ‘A Study of Patent Thickets’ (*UKIPO*, October 29, 2012), p. 2, <[https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/311234/ipresearch-thickets.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/311234/ipresearch-thickets.pdf)> accessed 11 September, 2023.

<sup>24</sup> *Ibid.*

<sup>25</sup> IPO (n. 21).

<sup>26</sup> J.Bessen, ‘Patent Thickets: Strategic Patenting of Complex Technologies’ (2003) Boston University p. 12 <[https://scholarship.law.bu.edu/cgi/viewcontent.cgi?article=4173&context=faculty\\_scholarship](https://scholarship.law.bu.edu/cgi/viewcontent.cgi?article=4173&context=faculty_scholarship)> accessed 27 August 2023.

### 2.3 The Antitrust Angle of Patent Thickets

*“[T]hickets are a bit like nuclear weapons – the problem isn’t so much the fact of their existence; it’s what happens when you start using them.”<sup>27</sup>*

The analogy comparing patent thickets to nuclear weapons is rather fitting – the real issue lies not in their mere existence but in the consequences when they come into play. This ‘patent thicket’ phenomenon has caught the attention of scholars, primarily due to its impact on the pace of modern innovation, which often ends up stalling the commercialization of new inventions.<sup>28</sup> The rise of modern inventions has introduced intricate complexities surrounding the rights of patent holders.<sup>29</sup> Producing a final product often necessitates the use of various technologies, some foundational and others cutting-edge, all protected by multiple patents.<sup>30</sup>

Granting a patent inherently leans toward anti-competitive territory as it establishes a form of exclusivity tantamount to a monopoly.<sup>31</sup> However, patent thickets take this to the next level, creating a broader monopoly that extends beyond what a single patent could offer its owner.<sup>32</sup> The potential for patent thickets to hinder innovation hinges on how much they drive up costs for other innovators.<sup>33</sup> This ‘hold-up’ potential can render thickets anti-competitive, diminishing innovation and competition within a specific market.<sup>34</sup> Patents held by one organization impose costs on other innovators, including R&D expenses and licensing fees to access patented technology, which in extreme cases may entirely block inventors from crucial technologies.<sup>35</sup>

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<sup>27</sup> Chahdha & Chandha IP Attorneys (n. 14).

<sup>28</sup> I.M. Cockburn, M.J. MacGarvie and E. Muller 'Patent Thickets, Licensing and Innovative Performance' Discussion Paper No.08-101 (ZEW Discussion Paper, October 29, 2009) p. 2 <<ftp://ftp.zew.de/pub/zew-docs/dp/dp08101.pdf>> accessed on 01 September 2023.

<sup>29</sup> Ibid.

<sup>30</sup> I.M. Cockburn (n. 28).

<sup>31</sup> OECD, ‘Competition Policy And Intellectual Property Rights’ (*Organisation For Economic Co-Operation And Development*, 1989) <<https://www.oecd.org/regreform/sectors/2376247.pdf>> accessed on 21 September 2023.

<sup>32</sup> Ibid.

<sup>33</sup> OECD (n.31).

<sup>34</sup> OECD (n.31).

<sup>35</sup> B.H. Hall, C. Helmers, G.V. Graevenitz, 'Technology Entry in the Presence of Patent Thickets' (IFS Working Paper, January 16, 2016) at page 19 (<http://www.ifs.org.uk/uploads/publications/wps/wp201602.pdf>) accessed 06 March, 2016

The proliferation of multiple blocking patents often arises from intensely cumulative innovations or the development of highly complex products.<sup>36</sup> Securing all the necessary licenses can reduce an innovator's remaining profits to an unacceptable level.<sup>37</sup> The growth of patent thickets is largely attributed to the broadening and strengthening of patent rights, coupled with advancements in technology and innovation sectors.<sup>38</sup> While those who can afford thickets may not be overly concerned about their costs, it's the third parties, such as licensees and assignees, who bear the brunt of these expenses, making it a significant cause for concern.<sup>39</sup>

### 3 GLOBAL PERSPECTIVES ON REGULATING PATENT THICKETS

#### 3.1 The United States of America

The US has seen a significant surge in pending patent applications, skyrocketing from 270,000 to a staggering 1.1 million.<sup>40</sup> The primary driver behind this exponential increase can be attributed to the rise of patent trolling and a doubling of patent infringement lawsuits, accounting for nearly ninety percent of this spike.<sup>41</sup> This heightened litigation risk is particularly prevalent in industries like pharmaceuticals and biotechnology, where the likelihood of facing six cases per hundred patents in biotech has been estimated.<sup>42</sup>

Consequently, organizations have found themselves grappling with substantial challenges when attempting to develop and commercialize technology within the intricate landscape of patent thickets.<sup>43</sup> In response, there has been a notable uptick in post-grant opposition, although its

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<sup>36</sup> Ibid

<sup>37</sup> B.H. Hall (n. 35).

<sup>38</sup> D. Harhoff, G.v. Graevenitz, S.Wagner, 'Conflict Resolution, Public Goods and Patent Thickets' (2016) 62(2) *Management Science*, p. 7 <<https://www.jstor.org/stable/24740301>> accessed 04 September, 2023.

<sup>39</sup> IPKat, 'It's not just copyright: further thoughts on the UK government's further thoughts' (*IPKat*, 04 August, 2011) <<http://ipkitten.blogspot.in/2011/08/its-not-just-copyright-further-thoughts.html>> accessed on 12 September 2023.

<sup>40</sup> J. Pethokoukis, 'How the US patent system is strangling US innovation' (*American Enterprise Institute*, November 24, 2014), <<https://www.aei.org/publication/us-patent-system-strangling-us-innovation/>> accessed on 17 September 2023.

<sup>41</sup> Ibid.

<sup>42</sup> Jeffrey Wu & Claire W. Cheng, 'Into the Woods: A Biologic Patent Thicket Analysis', (2020) 19 *Chi. -Kent J. Intell.*

Prop. p. 93, <<https://scholarship.kentlaw.iit.edu/ckjip/vol19/iss1/12>> accessed on 23 September 2023.

<sup>43</sup> Wagner S, 'Are 'Patent Thickets' Smothering Innovation?' (*Yale Insights*, 22 April 2015) <<https://insights.som.yale.edu/insights/are-patent-thickets-smothering-innovation>> accessed 1 October 2023.

effectiveness in dismantling patent thickets remains limited due to relatively low patent protection standards.<sup>44</sup>

Amid these challenges, a glimmer of hope stems from the America Invents Act, 2011.<sup>45</sup> This legislation has created opportunities for collective action and is regarded as a potential means to prevent weak patents from cluttering the patent register, offering a ray of optimism for those navigating the complex terrain of patent thickets.

### 3.2 The United Kingdom

In the UK, there has been a steady rise in the number of international patent applications.<sup>46</sup> However, unlike the US, there has not been a significant uptick in patent thicket cases. Surprisingly, there is a dearth of empirical evidence on how patent thickets impact UK organizations. Nevertheless, the uncertainty stemming from patent thickets is driven not only by granted patents but also by those still pending. This issue has particularly surfaced in the computer technology sector and is slowly becoming a concern that might disproportionately affect smaller businesses.<sup>47</sup>

Recognizing the potential challenges posed by patent thickets, Ian Hargreaves, in his May 2011 report titled “Digital Opportunity: A Review of Intellectual Property and Growth,” foresaw the hindrance they might pose to market entry and innovation.<sup>48</sup> He put forth a set of recommendations, including taking a lead in international efforts to streamline patent application

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<sup>44</sup> B.H. Hall (n. 35).

<sup>45</sup> Leahy-Smith America Invents Act, 125 Stat. 284 Public Law 112–29—Sept. 16, 2011, <[https://www.uspto.gov/sites/default/files/aia\\_implementation/20110916-pub-1112-29.pdf](https://www.uspto.gov/sites/default/files/aia_implementation/20110916-pub-1112-29.pdf)> accessed on 27 September 2023.

<sup>46</sup> IPO, ‘Analysing the global filing activities of UK patent applicants’ (*UK IPO*, 2021) <[https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/1009465/Analysing-the-global-filing-activities-of-UK-patent-applicants.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1009465/Analysing-the-global-filing-activities-of-UK-patent-applicants.pdf)> accessed 05 September, 2023.

<sup>47</sup> C Waelde, G Laurie, A Brown, S Kheria, J Cornwell ‘Contemporary Intellectual Property’, p. 392 <[https://books.google.co.in/books?id=PaicAQAQBAJ&pg=PA392&lpg=PA392&dq=patent+thickets+in+the+UK&source=bl&ots=fr87\\_WE9n3&sig=y1XXdIuwoCALQGVW15X5b0KXD3A&hl=en&sa=X&ved=0ahUKEwiblsfIgK7LAhWDv44KHSOZDHIQ6AEIWDAl#v=onepage&q=patent%20thickets%20in%20the%20UK&f=false](https://books.google.co.in/books?id=PaicAQAQBAJ&pg=PA392&lpg=PA392&dq=patent+thickets+in+the+UK&source=bl&ots=fr87_WE9n3&sig=y1XXdIuwoCALQGVW15X5b0KXD3A&hl=en&sa=X&ved=0ahUKEwiblsfIgK7LAhWDv44KHSOZDHIQ6AEIWDAl#v=onepage&q=patent%20thickets%20in%20the%20UK&f=false)> accessed 05 September, 2023.

<sup>48</sup> Ian Hargreaves, ‘Digital Opportunity: A Review of Intellectual Property and Growth’, Independent Report (May 2011) p. 9, <[https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/32563/ipreview-finalreport.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/32563/ipreview-finalreport.pdf)> accessed 05 September, 2023.



backlogs through enhanced “work sharing” with foreign patent offices.<sup>49</sup> Hargreaves also urged caution in extending patents into sectors like non-technical computer programs and business methods without clear evidence of their benefit.<sup>50</sup> Moreover, he called for exploring ways to mitigate the adverse effects of patent thickets, possibly by adjusting patent renewal fees to encourage a more careful evaluation of the value of maintaining lower-value patents, thus reducing the density of patent thickets.<sup>51</sup>

The implementation of these proposed changes into UK legislation and established patent application procedures remains a matter to watch closely.

## **4 IN THE THICK[ET] OF THINGS: SCRUTINIZING THE ANTITRUST CHALLENGES OF PATENT THICKETS**

### **4.1 Negative Concept Nature**

*“...[C]omplex web of patents which may stunts invention and discourages research and development.”*

The above was rightly commented Andrew Gowers while discussing patent thickets, since the notion of patent thickets paints a rather negative picture in the realm of innovation.<sup>52</sup> It is fundamentally a complex web of patents that can stifle invention and discourage R&D efforts. These thickets serve as barriers, intentionally designed to block organizations and individuals from venturing into specific technology domains.<sup>53</sup> The sheer density of patents and aggressive filing tactics have given rise to numerous “no-go” zones for those involved in R&D, effectively hampering their access to various technology areas.<sup>54</sup>

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<sup>49</sup> Ibid.

<sup>50</sup> Ian Hargreaves (n. 48).

<sup>51</sup> Ian Hargreaves (n. 48).

<sup>52</sup> Andrew Gowers, 'Andrew Gowers Quotes' <<http://www.worldofquotes.com/author/Andrew+Gowers/1/index.html>> accessed 12 September, 2023.

<sup>53</sup> E.J. Egan (n. 15).

<sup>54</sup> Wagner S (n. 43).

Furthermore, patent thickets can be strategically employed to secure design freedom.<sup>55</sup> This tactic involves amassing a multitude of patents, not only for protection but also as a means of gaining leverage in negotiations with other patent holders. Hall and Ziedonis coined the term “strategic patenting” in the context of patent thickets, explaining it as a method to acquire the rights to infringe patents held by external parties.<sup>56</sup> Unfortunately, empirical research has indicated that the presence of patent thickets has a detrimental impact on entry into these industries, ultimately stifling innovation and creativity.<sup>57</sup> Thus, it is aptly labeled as a negative concept, casting an adverse shadow over the IP innovation landscape.

## 4.2 Granting Monopoly Power

Granting a patent inherently bestows a degree of monopoly power, but the scope can be considerably any broader when it comes to patent thickets.<sup>58</sup> These patent thickets are fundamentally intricate networks of overlapping patent rights.<sup>59</sup> What sets them apart is their capacity to block the production of innovations through the interplay of these multiple patents.<sup>60</sup> In simpler terms, they create a complex and interwoven web of complementary patent rights, where at least one patent has the potential to obstruct innovation.<sup>61</sup>

Moreover, Hemphill’s perspective, established in 2003, sheds light on why organizations actively cultivate patent thickets. They do so to bolster their patent rights and, more importantly, to anticipate and deter imitation.<sup>62</sup> Thickets serve as a strategic tool to fortify a company’s patent position, creating a robust defense against potential competitors.<sup>63</sup> However, it is crucial to recognize that while patent thickets offer advantages, they also come with costs. These costs are

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<sup>55</sup> E.J. Egan (n. 15).

<sup>56</sup> Hall BH and Ziedonis RH, ‘The Patent Paradox Revisited: An Empirical Study of Patenting in the U.S. Semiconductor Industry, 1979-1995’ (2001) 32(1) The RAND Journal of Economics 101 <<http://dx.doi.org/10.2307/2696400>> accessed 2 October 2023.

<sup>57</sup> Wagner S (n. 43).

<sup>58</sup> OECD (n. 31).

<sup>59</sup> IPO (n. 16).

<sup>60</sup> Wagner S (n. 43).

<sup>61</sup> IPO (n. 16).

<sup>62</sup> Hemphill TA, ‘Preemptive patenting, human genomics, and the US biotechnology sector: balancing intellectual property rights with societal welfare’ (2003) 25(3) Technology in Society 337 <[http://dx.doi.org/10.1016/s0160-791x\(03\)00050-2](http://dx.doi.org/10.1016/s0160-791x(03)00050-2)> accessed 1 October 2023.

<sup>63</sup> G. Clarkson (n. 11).

incurred not only by the firms whose patents form part of the thicket but also by those contemplating future inventions.<sup>64</sup>

### 4.3 Barriers to Entry

Patent thickets can extend their influence to the extent of becoming a barrier to entry for others in the patenting arena.<sup>65</sup> This occurs when the costs associated with entering the market or obtaining licenses for these patent rights become prohibitively high.<sup>66</sup> Hence, patent thickets not only shape the competitive landscape but also have broader implications for innovation and market access.<sup>67</sup>

### 4.4 A Burden on the Commoners

The burden of patent thickets falls heavily on the commoners, particularly when it comes to essential medications.<sup>68</sup> For instance, among the top ten selling drugs in the United States, including Humira, Enbrel, Keytruda, Revlimid, and Imbruvica, a staggering total of 584 patent applications have been secured post their initial Food and Drug Administration (FDA) approval.<sup>69</sup> To illustrate, even a drug like Humira, widely used for its autoinjector device, boasts additional patents for specific components like the ‘firing button.’<sup>70</sup> This exemplifies a classic case of patent thicketing.

The repercussions of such practices are far-reaching and directly affect the affordability of medical assistance for the average person.<sup>71</sup> The elevated costs resulting from these transactions obstruct

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<sup>64</sup> G. Clarkson (n. 11).

<sup>65</sup> OECD (n. 31).

<sup>66</sup> OECD (n. 31).

<sup>67</sup> Rodriguez V, ‘Patent Pools: Intellectual Property Rights and Competition’ (2010) 4(1) *The Open AIDS Journal* 62 <<http://dx.doi.org/10.2174/1874613601004010062>> accessed 2 October 2023.

<sup>68</sup> ‘Latest I-MAK report again slams profound burden of “patent thickets”’ (*The Pharma Letter*, 23 September 2023) <[www.thepharmaletter.com/article/latest-i-mak-report-again-slams-profound-burden-of-patent-thickets](http://www.thepharmaletter.com/article/latest-i-mak-report-again-slams-profound-burden-of-patent-thickets)> accessed 23 September 2023.

<sup>69</sup> Committee on Oversight and Reform, ‘Drug Pricing Investigation Majority Staff Report’ (*U.S. House of Representatives*, 10 December 2021), <<https://oversightdemocrats.house.gov/sites/democrats.oversight.house.gov/files/DRUG%20PRICING%20REPORT%20WITH%20APPENDIX%20v3.pdf>> accessed 19 September 2023.

<sup>70</sup> ‘Automatic injection device’ (Taiwan patent TWI527603B, 2014) <<https://patents.google.com/patent/TWI527603B/en>> accessed 26 September 2023

<sup>71</sup> Latest (n. 68).

access to essential medications at reasonable prices, paving the way for anti-competitive practices that hinder negotiation capabilities.<sup>72</sup>

#### 4.5 The Evergreening Paradox

Patent thickets contribute to a phenomenon known as ‘evergreening,’ where companies extend the life of their patents, effectively maintaining a monopoly grip on crucial drugs.<sup>73</sup> For instance, take Humira, as discussed before. Although the patent covering the drug itself expired in 2016, the other 132 patents encompassing it remain in force until 2034, encompassing biosimilars and generics as well.<sup>74</sup> This legal landscape has the potential to limit competition significantly. In the *AbbVie Inc.* case, the patent thickets were held not to impede competition, further underscoring the intricate legal complexities surrounding this issue and its implications for accessible healthcare.<sup>75</sup>

#### 4.6 Patent Trolls

Patent Assertion Entities (“**PAEs**”), often referred to as ‘Patent trolls,’ are entities that do not engage in the production of tangible products or services.<sup>76</sup> Instead, they operate in what can be perceived as the secondary markets of patents filed by others.<sup>77</sup> Their primary motive is to file lawsuits against large multinational corporations, seeking substantial monetary settlements.<sup>78</sup> The actions of PAEs are not inherently illegal, and they operate within the bounds of established intellectual property rights in patents.<sup>79</sup>

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<sup>72</sup> Latest (n. 68).

<sup>73</sup> Collier R, ‘Drug patents: the evergreening problem’ (2013) 185(9) Canadian Medical Association Journal E385 <<http://dx.doi.org/10.1503/cmaj.109-4466>> accessed 2 October 2023.

<sup>74</sup> Brittain B (n. 3).

<sup>75</sup> A Berneman B (n. 6).

<sup>76</sup> Joshua D. Wright and Douglas H. Ginsburg, ‘Patent Assertion Entities And Antitrust: A Competition Cure For A Litigation Disease?’ (2014) 79(2) Antitrust Law Journal pp. 501-526 <[www.jstor.org/stable/43486914](http://www.jstor.org/stable/43486914)> accessed 30 September 2023.

<sup>77</sup> Ibid.

<sup>78</sup> Joshua D. Wright (n. 76).

<sup>79</sup> Joshua D. Wright (n. 76).

There has been a significant increase in patent infringement cases initiated by PAEs in the US. High-profile cases like *NTP vs. RIM*<sup>80</sup> and *Eolas vs. Microsoft*<sup>81</sup> serve as prominent examples. However, this surge in patent litigation by PAEs has raised concerns about its impact on innovation.<sup>82</sup> The practice of PAEs targeting large corporations for monetary gain has the potential to deter innovation and stifle the development of new technologies.<sup>83</sup>

## 5 THROUGH THICK[ET] AND THIN: FIGURING OUT SOLUTIONS TO AVOID ANTI-COMPETITIVENESS

### 5.1 Using Patent Pools to Allay the Anti-competitive Repercussions

#### 5.1.1 Understanding Patent Pooling

Patent pools have long been regarded as a strategic approach to address the potential anti-competitiveness that can arise from patent thickets.<sup>84</sup> Principally, a patent pool involves an agreement among two or more patent owners to consolidate their patents and collectively license them, either among themselves or third parties, based on predefined licensing terms.<sup>85</sup> This concept has been in play for over a century and a half, with prominent instances like the Sewing Machine Combination emerging in the 1850s to address the complexity of sewing machine patents.<sup>86</sup>

A pivotal example in the 1990s was the DVD pools, featuring collaborations between Philips & Sony and Hitachi, Matsushita, Mitsubishi, Time Warner, Toshiba, and JVC.<sup>87</sup> Successful patent pools are built on pro-competitive principles, ensuring that they do not facilitate practices like

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<sup>80</sup> *NTP, Inc. v. Research in Motion, Ltd.*, 418 F.3d 1282.

<sup>81</sup> *Eolas Technologies Inc. v. Microsoft Corp.*, 399 F.3d 1325.

<sup>82</sup> H Tabakovic, 'Essays on Innovation, Strategy and Competition' (*Harvard Business School*, 2015) <<https://dash.harvard.edu/bitstream/handle/1/25752983/TABAKOVIC-DISSERTATION-2015.pdf?sequence=1&isAllowed=y>> accessed 20 September 2023.

<sup>83</sup> H Tabakovic (n. 82).

<sup>84</sup> Rodriguez V (n. 67).

<sup>85</sup> I Barpujari, 'Facilitating Access or Monopoly: Patent Pools at the Interface of Patent and Competition Regimes' (2010) 15 *Journal of Intellectual Property Rights* pp. 345-346 <<http://docs.manupatra.in/newslines/articles/Upload/785584B5-22AD-4D58-B027-849D9037BE7D.pdf>> accessed 1 October 2023.

<sup>86</sup> Lampe R (n. 9).

<sup>87</sup> Larouche P and Van Overwalle G, 'Interoperability Standards, Patents and Competition Policy' [2014] *SSRN Electronic Journal* <<http://dx.doi.org/10.2139/ssrn.2539964>> accessed 2 September 2023.

price-fixing, collective output restrictions, or exclusionary behaviors, which would violate competition laws, i.e., the Competition Act, 2002, in the Indian context.<sup>88</sup>

These patent pools have been deemed potent tools to counter patent thickets, especially in developing countries and fields like pharmaceuticals, biotechnology, nanotechnology, and clean energy technologies.<sup>89</sup> To maximize their effectiveness, it is crucial that all patents can be licensed at a single price.<sup>90</sup>

While patent pools offer pro-competitive benefits, they are not without their risks. Beyond concerns about fostering monopolies and limiting competition, the gravest threat comes in the form of a cartel.<sup>91</sup> Cartels involve agreements between organizations at the same stage of the supply chain, aiming to fix prices, allocate customers, restrict outputs, or manipulate bids.<sup>92</sup> Cartels are considered highly anti-competitive and face severe penalties in most jurisdictions.<sup>93</sup>

For instance, section 3 of the Competition Act, 2002, in India defines a cartel as an association of producers, sellers, distributors, traders, or service providers who conspire to limit or control the production, distribution, sale, or price of goods or services.<sup>94</sup> Penalties for engaging in cartel activities can include fines of up to three times the profits for each year of the agreement's existence or ten percent of the average turnover of the cartel over the preceding three financial years, whichever is higher.<sup>95</sup>

The US Supreme Court has also weighed in on patent pools, emphasizing their potential importance in preventing litigation that could stifle technical advancements.<sup>96</sup> The key principle

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<sup>88</sup> I Barpujari (n. 85).

<sup>89</sup> V Visha Kumari R Kalpana Sastry, M A Sarath Chandrana, and T K Srivastava, 'Managing Intellectual Property in Collaborative Way to Meet the Agricultural Challenges in India' (2017) 22 Journal of Intellectual Property Rights 55 <<https://docs.manupatra.in/newsline/articles/Upload/0CF368BB-B0A6-4E7A-A2E7-B54C6CE1BCA2.pdf>> accessed 1 October 2023.

<sup>90</sup> Ibid.

<sup>91</sup> I Barpujari (n. 85).

<sup>92</sup> Competition Act, 2002, s 2 (c).

<sup>93</sup> ICN Working Group on Cartels, 'Defining Hard Core Cartel Conduct Effective Institutions Effective Penalties' (Jun 2005) 1 International Competition Network <[https://www.internationalcompetitionnetwork.org/wp-content/uploads/2018/05/CWG\\_BuildingBlocks.pdf](https://www.internationalcompetitionnetwork.org/wp-content/uploads/2018/05/CWG_BuildingBlocks.pdf)> accessed 1 September 2023.

<sup>94</sup> Competition Act, 2002, s 3(3),

<sup>95</sup> Competition Act, 2002, s 27(b).

<sup>96</sup> C Shapiro (n. 17).

in the US is that “*blocking (essential) or complementary patents belong in a pool, while substitute or competing patents are to remain separate.*”<sup>97</sup> This approach helps strike a balance between promoting competition and safeguarding innovation.

### ***5.1.2 The Indian Take on Patent Pooling***

Although not explicitly defined by law, patent pools can be described as collaborative arrangements where multiple patent holders aggregate their rights: “*In a patent pool patent rights are aggregated amongst multiple patent holders. Then, the pooled patents are made available to member and non-member licensees and typically the pool allocates a portion of the licensing fees it collects to each member in proportion to each patent’s value.*”<sup>98</sup> While the Indian Patent Act of 1970 does not contain specific provisions governing patent pools, it also does not prohibit their formation.<sup>99</sup> Instead, they are governed by various sections of the Act.

Section 68 of the Patent Act stipulates that any patent transfer through assignment or license must be formally documented in writing, including all terms and conditions. This requirement ensures transparency in patent agreements.<sup>100</sup> Section 69 further mandates that such agreements be registered and entered into the register of patents, enhancing legal clarity and protection.<sup>101</sup>

Furthermore, Section 84 of the Act allows for compulsory licensing of patents in specific situations, providing a mechanism to ensure that goods of necessity, including pharmaceuticals, remain accessible to the public even if the patent holder is unwilling or unable to provide them.<sup>102</sup>

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<sup>97</sup> C Shapiro (n. 17).

<sup>98</sup> Robert P. Merges, ‘Institutions for Intellectual Property Transactions: The Case of Patent Pools,’ in *Expanding the Boundaries of Intellectual Property, Innovation Policy for the Knowledge Society*, 123, 129 (Rochelle Cooper Dreyfuss ed., 2001), <[https://www.researchgate.net/publication/246482548\\_Institutions\\_for\\_Intellectual\\_Property\\_Transactions\\_The\\_Case\\_of\\_Patent\\_Pools](https://www.researchgate.net/publication/246482548_Institutions_for_Intellectual_Property_Transactions_The_Case_of_Patent_Pools)> accessed 03 September 2023 .

<sup>99</sup> Bloomberg Business, ‘Cutting Through the Patent Thicket’ (*Bloomberg Business*, 19 December, 2005) (<http://www.bloomberg.com/bw/stories/2005-12-19/cutting-through-the-patent-thicket>) accessed 13 September 2023.

<sup>100</sup> Patents Act, 1970, s 68.

<sup>101</sup> Patents Act, 1970, s 69.

<sup>102</sup> Patents Act, 1970, s 84.

Section 102 of the Act empowers the central government to acquire patents for public purposes, reinforcing the principle that public interest takes precedence when necessary.<sup>103</sup>

Section 140 of the Act is significant as it sets forth restrictions on certain conditions that cannot be included in a patent license or contract.<sup>104</sup> These restrictions prevent practices that could potentially stifle competition, such as:<sup>105</sup>

1. Forcing the purchaser, lessee, or licensee to exclusively acquire the patented article from the licensor or their nominees.
2. Restricting the use of non-patented articles that are not supplied by the licensor.
3. Limiting the use of processes other than the patented one.
4. Imposing exclusive grant-back provisions, preventing challenges to patent validity, or coercive package licensing.

In conjunction with the Patent Act, the Competition Act, 2002, addresses anti-competitive practices which ensure that patent pools in India adhere to stringent regulations and maintain a balance between innovation and fair competition.<sup>106</sup>

Given these legal provisions and India's commitment to preventing anti-competitive practices, patent pools serve as a strategic approach to navigating the intricate patent landscape, particularly in sectors vital to public health and welfare.<sup>107</sup>

### ***5.1.3 Impact of Patent Pools on Competitive Dynamics***

Patent pools exist in a legal gray area, not inherently illegal but subject to scrutiny based on their impact.<sup>108</sup> These arrangements are evaluated under the 'rule of reason' to determine their

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<sup>103</sup> Patents Act, 1970, s 102.

<sup>104</sup> Patents Act, 1970, s 140(1)(iii).

<sup>105</sup> Ibid.

<sup>106</sup> 'Competitive Ramifications and Re-Tooling Patent Pools in India - Intepat IP' (*Intepat IP*, 24 September 2020) <[www.intepat.com/blog/competitive-ramifications-and-re-tooling-patent-pools-in-india/](http://www.intepat.com/blog/competitive-ramifications-and-re-tooling-patent-pools-in-india/)> accessed 1 October 2023.

<sup>107</sup> Ibid.

<sup>108</sup> Jha A, 'Competition Act Vis-À-Vis Intellectual Property Rights: Critical Analysis Of Its Convergence, Divergence And Combination' (2023) 3(1) Vishwakarma University Law Journal pp. 1-15 <<https://vulj.vupune.ac.in/archives4/3.COMPETITION%20ACT%20vis-a->



legitimate implications. Patent holders have the right to form pools, but this can hinder market competition as those outside the pool may face hefty royalties to enter. The Competition Commission of India (“CCI”) labels such agreements as ‘restrictive trade practices’ due to the potential adverse effects on market competition.<sup>109</sup>

As discussed before, parties are prohibited from entering agreements that are anti-competitive under Section 3 of the Competition Act, 2002.<sup>110</sup> These pool arrangements can lead to horizontal or vertical agreements, restricting new market entrants and potentially raising prices due to reduced competition.<sup>111</sup>

Moreover, parties in a pool can engage in collusive practices by sharing sensitive information, such as pricing or R&D details.<sup>112</sup> This can discourage R&D efforts as pool members grant each other nominal-cost exploitation rights, reducing incentives for innovation.<sup>113</sup>

While the Competition Law recognizes IP rights under Section 3(5), it also places reasonable restrictions on IP holders to prevent anti-competitive behavior.<sup>114</sup> If a patent pool arrangement negatively impacts prices, quality, quantities, or access to goods and services, it falls under the purview of competition law, primarily Sections 3 and 4.<sup>115</sup> To qualify for exemption under Section 3(5), restrictions must be reasonable, though the term’s definition varies by context.<sup>116</sup>

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vis%20INTELLECTUAL%20PROPERTY%20RIGHTS%20CRITICAL%20ANALYSIS%20OF%20ITS%20CONVERGENCE,%20DIVERGENCE%20AND%20COMBINATION.pdf> accessed 9 September 2023.

<sup>109</sup> Pai Y and Daryanani N, ‘Patents and Competition Law in India: CCI’s Reductionist Approach in Evaluating Competitive Harm’ [2016] SSRN Electronic Journal <<http://dx.doi.org/10.2139/ssrn.2859546>> accessed 2 October 2023

<sup>110</sup> Competition Act, 2002, s 3.

<sup>111</sup> Ibid.

<sup>112</sup> Kolosha V and Borysenko O, ‘Intellectual Property Rights And Competition Policy’ (2017) (195) Bulletin of Taras Shevchenko National University of Kyiv Economics 6 <<http://dx.doi.org/10.17721/1728-2667.2017/195-6/1>> accessed 2 October 2023.

<sup>113</sup> Ibid.

<sup>114</sup> Competition Act, 2002, s 3(5).

<sup>115</sup> Competition Act, 2002, ss 3(4), 3(5).

<sup>116</sup> Competition (n. 114).

The CCI provides some clarity on unreasonable restrictions.<sup>117</sup> It is deemed to include licensing arrangements affecting prices and market division among firms using different technologies.<sup>118</sup> Exclusive licensing, grant-backs, and acquisitions of IP rights by entities with market power are also considered unreasonable.<sup>119</sup>

Despite their monopolistic nature, patent pools offer social and economic benefits, such as reducing transaction costs, allocating risk among members, and improving information exchange.<sup>120</sup> They provide a tool to organize complementary patents efficiently, enhancing production and service delivery.<sup>121</sup>

However, patent pools can be expensive to negotiate, exclude smaller patent holders, or enable dominant players to form cartels and block new competition. They become anti-competitive when they hinder market entry, protect invalid patents, or involve non-complementary patents.

Hence, patent pooling agreements may appear pro-competitive at first glance. However, they can discourage outside firms from investing in R&D, redirect innovation towards less valuable technologies, and facilitate anti-competitive practices.<sup>122</sup> Evaluating whether a pool arrangement is pro-competitive or anti-competitive hinges on these complex dynamics.

#### ***5.1.4 Revitalizing Patent Pools for Modern Innovation***

In today's landscape, patent pools most often emerge within the context of industry standard-setting efforts. With a growing prevalence of patent pools in India, it's imperative to establish dedicated regulations and measures to address potential anti-competitive consequences. Here are two avenues for revamping these patent pools:

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<sup>117</sup> *Telefonaktiebolaget LM Ericsson (PUBL) v. Competition Commission of India and Anr.* Case No, 04/2015; *Monsanto Holdings Pvt. Ltd. & Ors. vs. CCI & Ors.* 272(2020) DLT61.

<sup>118</sup> *Ibid.*

<sup>119</sup> *Telefonaktiebolaget* (n. 117).

<sup>120</sup> Singh A, 'Patents And Competition Policies: What Is The Degree Of Compatibility? - Patent - India' (*Mondaq*, 27 November 2018) <[www.mondaq.com/india/patent/758870/patents-and-competition-policies-what-is-the-degree-of-compatibility](http://www.mondaq.com/india/patent/758870/patents-and-competition-policies-what-is-the-degree-of-compatibility)> accessed 27 August 2023.

<sup>121</sup> *Ibid.*

<sup>122</sup> *Kolosha V* (n. 112).

#### 5.1.4.1 Avoiding Exclusive Agreements

Section 3(4)(c) of the Competition Act, 2002 governs exclusive agreements encompassing supply and distribution. In the context of patent pools, exclusivity can manifest in four ways:<sup>123</sup>

1. **Members' Licensing Freedom:** Pool members can freely license to third parties.
2. **Third-Party Inclusion:** The pool can accept offers from third parties to join.
3. **Third-Party Licensing:** The pool, as a licensor, can grant licenses to third parties.
4. **Restrictions on Licensees:** Pool members can impose restrictions on licensees, such as defining the field of use.

Individually or in combination, these forms of exclusivity can harm competition significantly. It is advisable to mandate non-exclusivity within patent pools to address these concerns.<sup>124</sup> For instance, if a pool exclusively licenses among its members and denies entry to a third party, it can stifle innovation and competition. However, with non-exclusivity, the third party could obtain individual licenses, fostering greater competition in the market.<sup>125</sup> Promoting non-exclusivity within patent pools can help mitigate potential anti-competitive effects and encourage a more competitive marketplace.<sup>126</sup>

#### 5.1.4.2 Pooling Substitute Technologies

The 'essential product doctrine,' also known as the 'essential facilities doctrine,' prevents a dominant player from colluding with others to unfairly exclude competitors from the market.<sup>127</sup> It is typically applied to products with unique qualities that can establish a market monopoly.<sup>128</sup> In

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<sup>123</sup> Competition Act, 2002, s 3(4)(c).

<sup>124</sup> 'Intellectual Property & Patent Reform' (*Association for Accessible Medicines*) <<https://accessiblemeds.org/advocacy/intellectual-property-patent-reform>> accessed 7 September 2023.

<sup>125</sup> *Ibid.*

<sup>126</sup> 'Promoting access to medical technologies and innovation Intersections between public health, intellectual property and trade' (*World Trade Organization - Home page - Global trade*) <[www.wto.org/english/tratop\\_e/trips\\_e/trilatweb\\_e/ch3d\\_trilat\\_web\\_13\\_e.htm](http://www.wto.org/english/tratop_e/trips_e/trilatweb_e/ch3d_trilat_web_13_e.htm)> accessed 1 October 2023.

<sup>127</sup> OECD, 'The Essential Facilities Concept' (1996) OCDE/GD(96)113, <<https://www.oecd.org/competition/abuse/1920021.pdf>> accessed 1 September 2023.

<sup>128</sup> *Ibid.*

the context of patent pools, this doctrine is used to assess whether a pool is formed to create a monopoly and stifle competition.<sup>129</sup>

When evaluating a patent pool, the key factor is the nature of the relevant product.<sup>130</sup> If this product can exist independently outside the pool, the pool may be considered unreasonable and not exempted under Section 3(5) of the Competition Act, 2002.<sup>131</sup> However, if the product is deemed entirely essential, it can lead to anti-competitive practices like price-fixing.<sup>132</sup>

Modifying the standard for patent pooling can be a helpful means to solve this issue.<sup>133</sup> This could involve allowing the inclusion of essential patents, even if they have potential substitutes.<sup>134</sup> Such a change would strike a balance between promoting innovation and preventing anti-competitive behavior in patent pools.<sup>135</sup>

## **5.2 Other Pro-Competitive Measures of Interest**

### ***5.2.1 Judicial Contribution to the Preserving Competition***

In India, the legal landscape for patent law has seen significant developments, with courts taking strong measures to protect intellectual property rights. However, there has been limited attention when it comes to adjudicating patent pool and patent thickets disputes. This may be due to a lack of understanding or awareness about these concepts in the country.

In the future, if the need arises, involving PAEs and patent trolls in litigation could potentially reduce the prevalence of certain patenting strategies and limit the density of patents and potential thickets.<sup>136</sup> The high costs associated with litigation, the enactment of laws imposing substantial

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<sup>129</sup> OECD (n. 127).

<sup>130</sup> OECD (n. 127).

<sup>131</sup> Competition (n. 114).

<sup>132</sup> Promoting (n. 126).

<sup>133</sup> Santore R, McKee M and Bjornstad D, 'Patent Pools as a Solution to Efficient Licensing of Complementary Patents? Some Experimental Evidence' (2010) 53(1) The Journal of Law and Economics 167 <<http://dx.doi.org/10.1086/600078>> accessed 1 October 2023.

<sup>134</sup> Ibid.

<sup>135</sup> Santore R (n. 133).

<sup>136</sup> Chadha & Chadha IP Attorneys (n. 14).

damages, and the need for specialized expertise to determine the inventiveness and non-obviousness of an invention may discourage many patent trolls from infringing on the patent rights of multinational corporations.<sup>137</sup>

It's evident that the way courts interpret patent claims and their willingness to grant injunctions play a pivotal role in incentivizing firms to pursue aggressive legal strategies. The courts must act decisively to curtail the surge in litigation in high technology markets and ensure that a party can establish its right to relief clearly and convincingly.

### 5.2.2 *Cross-licensing of Patents*

Cross-licensing serves as a strategic solution for navigating patent thickets, offering a pathway to escape patent blockades.<sup>138</sup> In this approach, two organizations engage in mutual patent exchanges, granting each other the freedom to use patented technologies held by the other.<sup>139</sup> Such agreements, which encompass both current portfolios and future inventions, help reduce transaction costs.<sup>140</sup> Some high-profile examples include Intel's extensive cross-licenses with companies like IBM,<sup>141</sup> Microsoft's agreement with JVC from 2008,<sup>142</sup> and the settlement of patent disputes between Hewlett-Packard and Xerox.<sup>143</sup>

Traditionally, concerns about cross-licensing have centered on potential price hikes and the formation of cartels, given the scrutiny of competition laws.<sup>144</sup> Additionally, organizations may worry about losing the incentive to innovate, fearing that rivals could readily replicate their

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<sup>137</sup> 'IP Litigation Costs,' 1 WIPO Magazine (2010), <[https://www.wipo.int/wipo\\_magazine/en/pdf/2010/wipo\\_pub\\_121\\_2010\\_01.pdf](https://www.wipo.int/wipo_magazine/en/pdf/2010/wipo_pub_121_2010_01.pdf)> accessed 1 September 2023.

<sup>138</sup> C Shapiro (n. 17).

<sup>139</sup> C Shapiro (n. 17).

<sup>140</sup> Jeon D-S and Lefouili Y, 'Cross-Licensing and Competition' [2013] SSRN Electronic Journal <<http://dx.doi.org/10.2139/ssrn.2335724>> accessed 2 September 2023.

<sup>141</sup> C Shapiro, 'Technology Cross-Licensing Practices: FTC v. Intel (1999),' OUP <[https://global.oup.com/us/companion.websites/fdscontent/uscompanion/us/pdf/kwoka/9780195322972\\_14.pdf](https://global.oup.com/us/companion.websites/fdscontent/uscompanion/us/pdf/kwoka/9780195322972_14.pdf)> accessed 12 September 2023.

<sup>142</sup> 'Microsoft, JVC agree to cross-license patents' (*BetaNews*, 16 January 2008) <<https://betanews.com/2008/01/16/microsoft-jvc-agree-to-cross-license-patents/>> accessed 31 August 2023.

<sup>143</sup> Times NY, 'Xerox, Hewlett-Packard Settle Litigation (Published 2000)' (*The New York Times*, 21 March 2000) <[www.nytimes.com/2000/03/21/technology/xerox-hewlett-packard-settle-litigation.html](http://www.nytimes.com/2000/03/21/technology/xerox-hewlett-packard-settle-litigation.html)> accessed 24 August 2023.

<sup>144</sup> Jeon D-S (n. 140).

advancements.<sup>145</sup> However, empirical evidence suggests that cross-licenses actually foster innovation.<sup>146</sup> IBM's and Intel's engagement in forward-looking cross-licenses incorporated clauses that promoted innovation in their agreements.<sup>147</sup>

Policies such as 'IP for IP' and the 'patentability of essential patents' encourage large companies to enter into bilateral agreements, helping to dismantle patent thickets and the accompanying monopolistic tendencies.<sup>148</sup>

### 5.2.3 *International Systems and Treaties on Patents*

Businesses continually seek the freedom to operate, and a streamlined approach to global patent protection can be a game-changer. Instead of pursuing ten separate patents in various countries, a single global patent, albeit at a higher cost, can offer substantial benefits.<sup>149</sup> It not only reduces transaction expenses but also amplifies the economic value of patents.<sup>150</sup>

The World Intellectual Property Organization (WIPO) administers pivotal patent-related treaties like the Patent Cooperation Treaty<sup>151</sup> and the Budapest Treaty,<sup>152</sup> which provide international frameworks for patent filing and deposits. These treaties are catalysts for the long-term success of organizations, offering them a competitive edge.<sup>153</sup>

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<sup>145</sup> Cohen U, 'The impact of patent thickets on R&D innovation' (*Similari*, 24 June 2023) <<https://similari.com/the-impact-of-patent-thickets-on-rampd-innovation/>> accessed 2 October 2023.

<sup>146</sup> *Ibid.*

<sup>147</sup> C Shapiro(n. 141).

<sup>148</sup> W, 'Collaboration in intellectual property: an overview' (*World Intellectual Property Organization*, November 2012) <[www.wipo.int/wipo\\_magazine/en/2012/06/article\\_0008.html](http://www.wipo.int/wipo_magazine/en/2012/06/article_0008.html)> accessed 17 November 2023.

<sup>149</sup> Rassenfosse GD and others, 'International Patent Protection and Trade: Transaction-Level Evidence' [2020] SSRN Electronic Journal <<http://dx.doi.org/10.2139/ssrn.3562618>> accessed 13 September 2023.

<sup>150</sup> *Ibid.*

<sup>151</sup> 'Patent Cooperation Treaty (PCT)' (*WIPO - World Intellectual Property Organization*) <[www.wipo.int/treaties/en/registration/pct/](http://www.wipo.int/treaties/en/registration/pct/)> accessed 16 September 2023.

<sup>152</sup> 'Budapest Treaty on the International Recognition of the Deposit of Microorganisms for the Purposes of Patent Procedure' (*WIPO - World Intellectual Property Organization*) <[www.wipo.int/treaties/en/registration/budapest/](http://www.wipo.int/treaties/en/registration/budapest/)> accessed 2 October 2023

<sup>153</sup> WIPO, 'Patent-related Treaties administered by WIPO,' *World Intellectual Property Organization*, <<http://www.wipo.int/patent-law/en/treaties.html>> accessed 7 September 2023.

Moreover, securing patent rights in multiple countries opens doors to potential licensing agreements with global corporations, enhancing the reach and impact of a business's innovations on a global scale.<sup>154</sup>

#### ***5.2.4 Imposing Stringent Criteria for Patent Approval***

The patent system was originally designed to incentivize innovation by granting a limited-time monopoly in exchange for groundbreaking ideas.<sup>155</sup> However, the ease of granting patents for trivial concepts has created a discouraging environment for true innovation.<sup>156</sup>

To address this issue, the Registrar of Patents must ensure that patents are granted only when they meet the condition of not being obvious to experts in the field. Patents should not become tools for companies to stifle competition. This requires implementing stringent requirements for patent approval and conducting thorough screening of patent applications. The standards for patent applications need to be elevated. Seeking input from third parties and experts, as well as making patent filings public, can contribute to a more effective and discerning patent application process.

#### ***5.2.5 Re-Assessing Renewal Fees***

Patent thickets become barriers to entry when the potential social benefits of their components outweigh the social costs linked to reduced market entry rates.<sup>157</sup> Consider this hypothetical scenario: if a company faces exponentially rising renewal charges for securing multiple patents, it significantly escalates the transaction costs associated with patent protection. Consequently, this situation may lead organizations to rethink their strategies of blocking competition and monopolizing markets as doubts about feasibility and cost-effectiveness arise.<sup>158</sup> Therefore,

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<sup>154</sup> Rassenfosse GD (n. 149).

<sup>155</sup> Thomas Cheng, 'Putting Innovation Incentives Back in the Patent-Antitrust Interface,' (2013) 11(5) Nw. J. Tech. & Intell. Prop. 385 <<https://scholarlycommons.law.northwestern.edu/njtip/vol11/iss5/5>> accessed 17 September 2023.

<sup>156</sup> Ibid.

<sup>157</sup> Latest (n. 68).

<sup>158</sup> F Spulber Daniel, 'Antitrust and Innovation Competition' (*OUP Academic*, 27 May 2022) <<https://academic.oup.com/antitrust/article/11/1/5/6593929>> accessed 6 September 2023.

renewal fees should be reviewed and adjusted accordingly, taking into account the specific sectors and domains of patents to adequately address such situations.

## 6 CONCLUSION

Thickets, characterized by an influx of patent filings, reduced patent quality, and increasing technological complexity, pose significant challenges for organizations. Simplifying and expediting the patent granting process, as outlined above, has the potential to enhance innovation and economic growth while curbing litigation. Hence, while the patent system generally favors patentees, there is room for improvement. Legislation should ensure that the patent system remains a driver of innovation rather than an impediment. Stringent regulation of thickets can facilitate the effective utilization of innovative breakthroughs, further advancing the technological landscape and bolstering economic prosperity. Given the contemporary focus of thickets on areas like smartphones, semiconductors, nanotechnology, and genetics, it will be intriguing to observe how history unfolds.