

Fostering Innovation and Economic Growth in Brazil

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ABSTRACT

Brazil has been working to strengthen its intellectual property rights (IPR) system for several decades; however, in recent years, these efforts have become more noticeable than ever. This evolution aligns with a growing body of evidence from the European Patent Office (EPO), the Organisation for Economic Co-operation and Development (OECD), and the United States Patent and Trademark Office (USPTO), which consistently demonstrates that robust IPR systems foster innovation, attract investment, and enhance economic growth. Against this backdrop, the National Institute of Industrial Property (INPI) has intensified its actions, implementing measures to streamline patent examination, reduce backlogs, and develop targeted programs to stimulate innovation—particularly within the small and medium enterprise (SME) sector. Consequently, both long-established industrial leaders, such as Petrobras, and emerging SMEs have achieved notable results, capitalizing on the strengthened IPR environment. This dual impact highlights the strategic importance of sustaining ongoing reforms and consolidating an IPR culture capable of positioning Brazil as a competitive, innovation-driven economy in the global arena.

KEYWORDS

Intellectual Property Rights (IPR), Innovation, R&D, Economic Growth, Brazil.

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Introduction

The global technology market, enabled by the communication services industry, generated an impressive \$1.5 trillion in revenue in 2024.² These figures highlight the crucial role of connectivity in driving economic transformation. This dynamic progress relies on robust intellectual property rights (IPR), which form the foundation of economies built on knowledge and innovation.³ For instance, the exclusivity granted by patents guarantees an economic return for the patent owners, incentivizing them to (re)invest in new technologies.⁴ By securing returns on investments and encouraging continuous development, IPR fosters groundbreaking technologies, economic growth, and societal well-being.⁵

Hence, in today's interconnected markets and rapid technological evolution, an efficient IPR system is key to protect innovative ideas. Its proper enforcement against infringement has to become indispensable for safeguarding economic competitiveness.⁶ This paper will demonstrate that, despite its multiple challenges, Brazil has made significant efforts to promote IPR nationwide, particularly in the startup and SME ecosystem.

IPR-intensive industries as drivers of economic growth and welfare.

Empirical studies show the significance of high-quality IPR, particularly patents, in promoting economic growth. For instance, one report examined 36 member countries of the Organisation for Economic Co-operation and Development (OECD) and China between 2000 and 2021. It found a strong correlation between high-quality patents and economic growth.⁷ The study further demonstrates that a 1% rise in the number of issued patents is linked to gross domestic product (GDP) growth of 0.35% to 0.55%. Additionally, groundbreaking inventions introducing novel technological combinations drive up to 28% higher growth than incremental innovations.⁸ These findings reinforce the understanding that stronger patent protection attracts foreign direct

²Sherif, A. (2024b). Technology market revenue worldwide 2024. Statista. <https://www.statista.com/forecasts/1500358/technology-market-segment-revenue-worldwide>.

³ Benefits of IPR at 4iP Council, Why should I care about intellectual property?, <https://www.4ipcouncil.com/smes-corner/why-should-i-care-about-intellectual-property>

⁴ Gambardella, A. (2021) "The Functions of Patents in Our Societies: Innovation, Markets, and New Firms." SSRN Electronic Journal, www.4ipcouncil.com/application/files/8416/3181/1510/SSRN-Alfonso_Gambardella.pdf, <https://doi.org/10.2139/ssrn.3789554>. Accessed 3 Feb. 2025.

⁵ Hoisl, et al., (2024) "Technological Innovation and Economic Growth: A Policy Perspective." 4iP Council, 22 Apr. 2024, www.4ipcouncil.com/research/technological-innovation-and-economic-growth-policy-perspective; Shah, S. Z. (2023). Intellectual Property Rights and Protection: A Comparative Analysis of Pakistan and China. In *Journal of social sciences review* (Vol. 3, Issue 1, p. 118). <https://doi.org/10.54183/jssr.v3i1.137>

⁶ Hoisl, et al., (2024).

⁷ Hoisl, et al., (2024).

⁸ Incremental innovations involve gradual enhancements to existing products, services, or technologies. They improve performance, efficiency, or user experience without creating entirely new solutions or markets.

investment, incentivises research and development (R&D) investment, and drives technological leadership.

In like manner, a joint report by the European Patent Office (EPO) and the European Union Intellectual Property Office reveals that IPR-intensive industries contributed with 47% of the European Union's GDP between 2017 and 2019.⁹ The report defines IPR-intensive industries as those having an above-average ownership of IPRs per employee, as compared with other IPR-using industries.¹⁰ Furthermore, the socioeconomic impact of such industries is further reflected in the higher wages. Workers in IPR-intensive sectors in the EU earned, on average, 41%¹¹ more than those in non-IPR-intensive industries, while in the United States, this figure rose to 60%.¹²

While a strong IPR system is vital for driving development and economic growth, robust enforcement mechanisms are equally important to ensure that IPR are upheld. These mechanisms enable IPR owners to protect and defend their rights by taking legal actions against any unauthorized use of the protected creation. In this sense, empirical evidence shows that countries with strong IPR systems and effective enforcement, such as the USA and Germany, are global leaders in innovation and economic development.¹³ Moreover, OECD research highlights that weak enforcement mechanisms can lead to rampant counterfeiting and piracy. This costs the global economy up to USD 500 billion annually.¹⁴ Additionally, a weak IPR enforcement framework correlates with lower per capita GDP, as economies with lower enforcement mechanisms fail to integrate into global value chains that rely on knowledge-based industries.¹⁵ Nonetheless, beyond these direct financial losses, insufficient IPR enforcement contribute to economic stagnation, particularly in developing nations.¹⁶

Brazil's Innovation Ecosystem: The Role of IPR in Startup and SMEs Growth

As exemplified above, the strategic promotion of IPR-intensive industries is a powerful driver of economic growth and technological advancement in many jurisdictions. Similarly, Brazilian IPR-driven industries also benefit from higher wages. In Brazil, IPR-intensive businesses pay 11% higher wages than sectors with limited IPR focus.¹⁷ Notably, the Brazilian economy

⁹ EPO and EUIPO. (2022). IPR-intensive industries and economic performance in the European Union. https://link.epo.org/web/ipr-intensive_industries_and_economic_performance_in_the_EU_2022_en.pdf

¹⁰ *Ibid.* Page 18, section b.

¹¹ *See item 10.*

¹² USPTO. (2022). Intellectual Property and the U.S. Economy: Third edition. [Www.uspto.gov. https://www.uspto.gov/ip-policy/economic-research/intellectual-property-and-us-economy](https://www.uspto.gov/ip-policy/economic-research/intellectual-property-and-us-economy)

¹³ Santacreu, Ana Maria et al. (2023). Why Intellectual Property Rights Protection Matters for Economic Growth. <https://www.stlouisfed.org/on-the-economy/2019/september/intellectual-property-rights-protection-economic-growth>

¹⁴ OECD/EUIPO (2021), *Global Trade in Fakes: A Worrying Threat*, Illicit Trade, OECD Publishing, Paris, <https://doi.org/10.1787/74c81154-en>.

¹⁵ *See item 14.*

¹⁶ *See item 14.*

¹⁷ INPI. Setores Intensivos Em Direitos de Propriedade Intelectual Na Economia Brasileira. 2021. <https://www.gov.br/propriedade-intelectual/pt-br/publicacoes/arquivos/setores-intensivos-em-direitos-de-propriedade-intelectual.pdf>

stands to benefit significantly from fostering a robust IPR ecosystem, in particular in the startup and small and medium enterprise (SME)¹⁸ context.

Over the past few years, Brazil has recognized the pressing need to strengthen its IPR system, acknowledging its pivotal role in driving innovation and economic development. Several policy initiatives have been introduced to address the inefficiencies in the current framework. Among these measures are the recent updates to legislation such as the Information Technology Law (Law 8.248/1991) and the Innovation Law (Law 10.973/2004), as well as the approval of the Science, Technology, and Innovation Framework (Law 13.243/2016). The purpose of these changes is to stimulate R&D activities in both the public and private domains. In like manner, they aim to facilitate public-private collaborations, especially between private companies and universities. Additionally, the Good Law or “Lei do Bem” (Law 11.196/2005) offers tax benefits for companies actively engaged in R&D. This was designed to encourage collaboration among government, academia, and businesses, through partnerships, investments and tax incentives.

In line with the above, the Brazilian Patent and Trademark Office (INPI) has released its 2025 Action Plan, outlining directives for the third year of its 2023-2026 strategic plan.¹⁹ The plan aims to support 450 innovation projects through mentorship and training programs.²⁰ In addition to domestic efforts, Brazil has strengthened its IPR framework through international partnerships. Notably, the EPO-INPI collaboration has implemented the Patent Prosecution Highway and work-sharing approaches.²¹ This has simplified patent application processes and improved efficiency, all while adhering to international standards.²²

These reforms demonstrate that the Brazilian government is acutely aware of the challenges in its IPR system and their detrimental impact on the country's economic growth. For years, the system's inefficiencies have hindered innovation and deterred foreign investment.²³ Some examples are lengthy patent prosecution process, limited enforcement capabilities, and underutilisation by domestic entities. Therefore, the Brazilian government seems determined to reverse this trajectory through by improving the efficiency of its IPR system. One of the improvements was the implementation by the INPI of critical measures to enhance the quality and efficiency of patent examination and to address the patent backlog issue.²⁴

¹⁸ For the purposes of this article, we consider medium-sized enterprises as SMEs. However, it is important to note that Brazilian law does not provide a standardized definition for medium-sized businesses. There is no harmonized threshold for their classification, meaning that institutions such as BNDES, SEBRAE, and others set their own criteria. As a result, businesses must verify the specific requirements of each institution to determine whether they qualify as medium-sized under a given regulation or program.

¹⁹ Plano de Ação. (2025). INPI. https://www.gov.br/inpi/pt-br/central-de-conteudo/noticias/inpi-divulga-seu-plano-de-acao-2025/PA2025_27.12.2024_v.final.pdf

²⁰ *Ibid.*

²¹ GOV e INPI. (2021). Patent Prosecution Highway. Instituto Nacional Da Propriedade Industrial. <https://www.gov.br/inpi/en/services/patents/pph>.

²² EPO. (2024). EPO and INPI Brazil launch technical and strategic partnership. <https://www.epo.org/de/node/562693>

²³ MACIEL, PROF. V. F. (2021). THE STATUS OF INTELLECTUAL PROPERTY RIGHTS IN BRAZIL . In Mackenzie https://pifazacontecer.com.br/wp-content/uploads/2023/04/IPRI_2021_CaseStudy_Brazil_v1_compressed.pdf.

²⁴ Brito, Julia. (2021). P&D, propriedade intelectual e inovação - Migalhas. <https://www.migalhas.com.br/depeso/351862/p-d-propriedade-intelectual-e-inovacao>

Based on the relevant studies, we can assume that Brazil's focus on strengthening its IPR has played a key role in the success of its leading industries.²⁵ Consequently, companies have relied on patents to foster innovation and sustain their global competitiveness.²⁶ Petrobras, one of Brazil's industrial giants, exemplifies how robust patent portfolios drive corporate success.²⁷ Known for its strong innovation focus and extensive patent portfolio, Petrobras has invested heavily in R&D, leading the development of pioneering deep-sea oil extraction technologies. As a result, Petrobras stands as a global leader in the energy industry.²⁸

Moreover, Brazil is one of the leading forces in agricultural innovation with patented technologies for high-performing plant varieties and sustainable farming methods.²⁹ Organizations like EMBRAPA have been instrumental in translating agricultural research into commercial success.³⁰ EMBRAPA maintains a robust patent portfolio, with a strong focus on agricultural biotechnology and bioinputs for farming. Notably, it is the sole Brazilian institution among the top ten patent filers in this domain within the country. Additionally, in recent years, the organization has emerged as a prominent player in the field of agroenergy. Consequently, EMBRAPA now holds 11 patents related to agroenergy that are registered with INPI.³¹

Within the SMEs and startup ecosystem, particularly, the public and private sectors have implemented various programs to promote innovation and incentivize the utilization of IPR.³² For instance, the Inova Startups program, supported by SEBRAE, is an initiative which aims at fostering the development of startups in Brazil.³³ The program offers a financial investment of up to R\$750.000 (around 120.000 Euros) for selected startups, with a total investment of R\$27 million (around 4,35 million Euros) in its latest edition.³⁴ Besides, public initiatives such as the *Bônus*

²⁵ See item 18.

²⁶ See item 18. - <https://www.gov.br/propriedade-intelectual/pt-br/publicacoes/arquivos/setores-intensivos-em-direitos-de-propriedade-intelectual.pdf>

²⁷ Petrobras. (2024). Patentes: pesquisa que dá resultado. Petrobras. <https://petrobras.com.br/inovacao-e-tecnologia/patentes>

²⁸ ITA. (2023). Brazil - Oil and Gas. International Trade Administration | Trade.gov. https://www.trade.gov/country-commercial-guides/brazil-oil-and-gas?utm_s.

²⁹ Barbosa, et. Al., (2024). Beyond the fields: EMBRAPA'S sustainable technological prospects for Brazilian agribusiness. *Revista de Economia e Sociologia Rural*, 62(3), e270441. <https://doi.org/10.1590/1806-9479.2023.270441en>

³⁰ See item 18.

³¹ Embrapa Agroenergia possui 11 patentes de invenção depositadas junto ao INPI. (2017). Embrapa.br. <https://www.embrapa.br/busca-de-noticias/-/noticia/71709142/embrapa-agroenergia-possui-11-patentes-de-invencao-depositadas-junto-ao-inpi>

³² Institutions like SEBRAE, FUNTEC, FINEP, BNDES, and Embrapii have established programs offering financial support, non-reimbursable funding, and access to research infrastructure.

³³ Inova Startup. (2024). Inova Startups (4a edição) - INOVA STARTUPS. Inova Startups. <https://inovastartups.com.br/>

³⁴ *Ibid.*

Tecnológico,³⁵ *Marco Legal da Inovação*,³⁶ and the *Programa Mais Inovação*,³⁷ attempt to position Brazil as an innovation-driven economy. Moreover, the *Inova Simples*³⁸ program expedites patent requests for startups, safeguarding their IPR, attracting investment, and launching innovative products in competitive markets.³⁹

Brazil's dedicated efforts to strengthen its IPR framework have yielded tangible results. Some Brazilian SMEs and Startups have achieved global recognition for their innovative solutions. For instance, Brazilian SME Linda Lifetech was named the best health-tech startup at the G20 digital innovation summit in 2023.⁴⁰ However, there may be still room for improvement in Brazil's IPR culture. Due to a perceived lack of R&D investment culture, Linda Lifetech decided to move to Canada, where they found a better investment environment.

On the green patent road, Brazil was a pioneer too, being one of the first countries to establish a preferential process for the analysis of green technologies patent requests. A considerable number of Brazilian SMEs are globally renowned for their innovative approaches to sustainable solutions. Solinftec, a 100% Brazilian agtech company, owner of at least eight patents, is one of the top 50 global startups in its industry.⁴¹ Its Alice AI platform collects 3.7 trillion tons of data annually and manages over 11 million hectares in real-time, helping industry growth while driving sustainability.⁴²

Likewise, Biotechnos developed an innovative babaçu coconut processing machine, which enables zero waste utilisation for cosmetics, food, and other applications. This technology enhances efficiency and significantly improves working conditions for coconut breakers, primarily benefiting rural women.⁴³ Other examples of disruptive Brazilian companies creating sustainable solutions are GranBio and AddVolt. The thriving SMEs and startups in Brazil demonstrate the country's potential to leverage its rich biodiversity and sustainable innovation. However, this also

³⁵MCTI. (2016). Bônus Tecnológico. Mctic.gov.br. https://antigo.mctic.gov.br/mctic/opencms/tecnologia/servicos_tecnologicos/bonus_tecnologico/_tecnologico/Bonus_Tecnologico.html

³⁶ Novo Marco Legal da Ciência Tecnologia e Inovação. EC Nº 85/2015. LEI Nº 13. 243, 2016. DECRETO Nº 9.283, 2018.

³⁷ FINEP. (2023). Finep inicia operação do Programa Mais Inovação Brasil com a contratação de 11 projetos no total de R\$ 1 bilhão. Finep.gov.br. <http://finep.gov.br/noticias/todas-noticias/6682-finep-inicia-operacao-do-programa-mais-inovacao-brasil-com-a-contratacao-de-11-projetos-no-total-de-r-1-bilhao>

³⁸ Gov.br. (2022). Inova Simples. Instituto Nacional Da Propriedade Industrial. <https://www.gov.br/inpi/pt-br/projetos-estrategicos/inova-simples>

³⁹ Radar Tecnológico INPI. (2021). Panorama da Utilização do Sistema de Propriedade Industrial por Startups. https://www.gov.br/inpi/pt-br/assuntos/informacao/copy_of_RadarTecnologicoSTARTUPS_psl.pdf

⁴⁰ <https://www.lindalifetech.com/> Linda Lifetech's creation of a novel early detection test for breast cancer driven by artificial intelligence was the reason for the award. Camara de Comercio Brasil-Canada. (2022). P&D representa 1,9% do PIB do Canadá e muitas oportunidades para PMEs brasileiras | Câmara de Comércio Brasil-Canadá. Ccbc.org.br. <https://www.ccbc.org.br/publicacoes/artigos-ccbc/pd-representa-19-do-pib-do-canada-e-muitas-oportunidades-para-pmes-brasileiras/>

⁴¹ Discovery. (2023). Patsnap.com. <https://discovery.patsnap.com/company/solinftec-participacoes/>

⁴² Licks Attorneys. (2024). Green Patents: encouraging sustainable innovation in Brazil. Lickslegal.com. <https://www.lickslegal.com/articles/green-patents-encouraging-sustainable-innovation-in-brazil>

⁴³ WIPO. (2020). Interview: SMEs for a Better World. Ww3.Wipo.int. https://www3.wipo.int/wipogreen/en/news/2020/news_0025.html

stresses the need for Brazil to further strengthen its IPR framework, enabling domestic enterprises to fully capitalize on their innovations and retain homegrown talent. For instance, the case of Linda Lifetech underscores the importance of robust IPR systems in keeping innovative companies and talents within the country.

Also, recent data highlights the critical role of IPR in driving Brazil's innovation and economic growth. According to the latest statistics from the World IP Office (WIPO), patent applications in Brazil increased by 2.5% in 2023, reaching 25,369 filings.⁴⁴ Moreover, applications filed by Brazilian residents grew by 13.1%, rising to 4,973 filings, reflecting an expanding domestic engagement with IPR.⁴⁵ The rise in domestic patent filings is particularly significant given the historical challenges faced by Brazilian innovators. Indeed, the recent 13.1% increase in resident patent filings, coupled with the government's enhanced enforcement measures, signals a promising trajectory for Brazil's innovation landscape.

Conclusion

An efficient IPR framework, based on clear, predictable, and enforceable rules, creates new opportunities for economic and societal advancement. Brazil's recent measures to incentivise and protect intellectual property reflect a growing recognition of IPR's crucial role in fostering economic progress. Hence, sustaining this momentum will be essential for Brazil to fully benefit from the advantages of a knowledge-driven economy.

⁴⁴ WIPO IP Statistics Data Center. Intellectual property statistical country profile 2023 Brazil. https://www.wipo.int/edocs/statistics-country-profile/en/br.pdf?utm_source=chatgpt.com

⁴⁵ See item 46.