Introduction

Global Wealth and the Rise of Intellectual Property

Sources, conceptions, and disputes over wealth pervade and define world history. Ancient sources equate "wealth" with precious metals, "property" in the form of fertile land, garments, tools, spices, weapons, animal hides, ivory, precious woods such as ebony, as well as human possessions like slaves, concubines, and captives.[1] For many centuries, rice in Japan served as a source of tax, currency, and capital as well as a sacred grain.[2] Wealth-in-people anthropologists argue that wealth may be assessed in terms of numbers of dependents, followers, or social affiliations.[3]

However framed, conceptions of wealth fundamentally and essentially structure societies and influence the conditions under which societies interact with one another. "Wealth" at its conceptual core divides society into those with relatively less and those with relatively more, tying distribution to other factors that generate or shape marriage, family, caste, class, hierarchy, patriarchy, empire, and, more generally, power.[4] Aristotle associated wealth, especially landed property, with other characteristics such as responsibility, prudence, and steadfastness, although he acknowledged its pernicious tendency to lead to unvirtuous excess.[5] In the modern industrial context, Thorstein Veblen argued that the drive to make wealth *conspicuous* both reflected and steepened class divisions.[6]

[1] Victor A. Hurwitz, *Two Terms for Wealth in Proverbs VIII in Light of Akkadian*, 50 Vetus Testamentum 252, 256 (2000); Geoffrey Kron, *The Distribution of Wealth at Athens in Comparative Perspective*, 179 Zeitschrift für Papyrologie und Epigraphik 129, 132 (2011); Euripides, The Trojan Women.

[2] Donald Denoon et al., Multicultural Japan from Paleolithic to Postmodern 242 (2001).

[3] Jane Guyer & Samuel M. Eno Belinga, *Wealth in People as Wealth in Knowledge: Accumulation and Composition in Equatorial Africa* 36 J. Afr. Hist. 91–120 (1995).

[4] David Graeber, *Beads and Money: Notes toward a Theory of Wealth and Power*, 23 Amer. Ethnologist, 4, 5 (1996).

[5] Aristotle, The Politics, trans. C. Reeve (1998), 14, 17 [1256b27–33, 1257b16–25].

[6] Thorstein Veblen, A Theory of the Leisure Class: A Study of Economic Institutions (1899).

Wealth not only structures societies internally; it also structures the relationship between them. The acquisition of wealth through expedition and conquest was, until quite recently in human history, a legally valid justification for war. The result was garrison societies, conscription, feudalism, and the general obligation of societies to prepare to attack or defend. Wealth could be grown through trade, and while barter was an ancient form of human interaction, the increasing movement of goods through the expansion of the Islamic Empire and Silk Road networks between the eighth and twelfth centuries prompted the multiplication of legal mechanisms of wealth exchange and transfer that took modern shape in fourteenth- and fifteenth-century European city-states.

These political and economic institutions of wealth, which over time vacillated between and within public and private spheres, forcefully merged as the European arrival in the Americas (and growing commerce across Asia) promised barely imaginable riches from the indigenous civilizations of North and South America and the abundant natural resources that they oversaw. European sovereigns formed royal charter companies with the ability to trade and agree to terms with indigenous rulers; own, manage, and acquire territory; hold monopolies; form banks; and, in several cases, raise and direct armies and navies.[7] The British East India Company, for example, formed in 1600 as an entity to facilitate trade with populations in the Indian subcontinent but gradually added direct acquisition of territory, the formation of alliances with local rulers for purposes of competition with other European chartered companies, and then eventually direct rule over much of the subcontinent until the British Crown assumed control in 1858.[8]

The acquisition and transfer of wealth was established as a fundamental principle shaping the relationship between societies that had, theretofore, never interacted or created either norms or understandings for interaction. The Spanish Requierimento, an oath administered to indigenous peoples in the Americas, read in relevant part that God, through the Pope, had "made donation of these isles and Terra Firma to the aforesaid King and Queen (of Spain) and to their successors, our lords, with all that there are in these territories," and that failing to acknowledge or obey the legal assertion would result in the Spaniards taking "you, and your wives, and your children, [to] make slaves of them, and ... your goods, and shall do you all the mischief and damage that we can."[9] Even theologians who argued for more humane treatment of American indigenous populations accepted Spanish access to the new wealth as an essential principle of their interaction. Francisco de Vitoria argued that the "Indians" were made by the same God, and therefore the taking of

[7] Louis H. Roper & Bertrand van Ruymbeke, eds., Constructing Early Modern Empires: Proprietary Ventures in the Atlantic World, 1500–1750 (2007).
[8] John Keay, The Honourable Company: A History of the English East India Company (1991).
[9] Council of Castile (Spain), Requerimiento, 1510 available at https://nationalhumanitiescenter.org/pds/amerbegin/contact/text7/requirement.pdf.

their property was prohibited unless the Indians had violated the Spaniards' lawful rights that included rights to travel, dwell, establish missions, trade, and exert ownership over common resources such as gold mined from rivers.[10] Violation of these rights justified militarized measures to protect them and, ultimately, resort to war against the "barbarians." Silver, sugar, gold, cacao, cochineal, and indigo flowed in vast quantities to the Iberian Peninsula and from there into Europe.[11]

Coincident with the rise of overseas possessions, the European nation-state became the crucial political unit by which to measure and assess wealth.[12] Mercantilism, an approach to economic policy that emphasized measurable increases in the precious metal holdings (especially gold and silver) of monarchs' treasuries, discouraged free trade between colonies and foreign merchants, prejudiced imports generally, limited exports of precious metals, and encouraged domestic manufacturing, exports, and colonial expansion.[13] Adam Smith's *Wealth of Nations* fundamentally challenged this conception of "national wealth," emphasizing the aggregate output of the nation, "the annual produce of the land and labour of the society," a measure that called for different policies toward imports, exports, and investments in agriculture and manufacturing.[14] To be sure, Smith's arguments were not separable from what he viewed as optimal for British success in international trade, commerce, and strategic supremacy, but his argument caused a major reevaluation of the nature of national wealth and the conditions under which it would flourish.[15]

The eighteenth and nineteenth centuries observed the growing tension between the European nation-state as the fundamental unit of the measure of wealth and the cultural characteristics of the beneficiaries of that wealth. The break of the American colonies from the British Crown was fundamentally caused by the development of a distinctive colonial identity that demanded acknowledgment of that identity in the process of regulating wealth transfer – tax – between the colonies and London.[16] As linguistic, merchant, and administrative classes in the Caribbean and South America began to form an essential but nevertheless marginalized link between

[10] Francisco de Vitoria, *De Indis*, in Anthony Pagden and Jeremy Lawrance, eds., Francisco de Vitoria: Political Writings 231 (1991).

[11] Peter C. Emmer, *The First Global War: The Dutch versus Iberia in Asia, Africa and the New World, 1590–1609*, 1 e-Journal of Portuguese History 2 (2003).

[12] Historians, legal scholars, and political scientists justifiably designate 1648 as the crucial date for the establishment of the sovereign nation-state as the fundamental unit of the international system, but the predicate features long predated that year. Leo Gross, *The Peace of Westphalia 1648–1948*, 42 Am. J. Int'l L. 20, 20–41 (1948).

[13] John J. McCusker, Mercantilism and the Economic History of the Early Modern Atlantic World (2001).

[14] Adam Smith, An Inquiry into the Nature and Causes of the Wealth of Nations, Edwin Cannan ed., I.I.9, 248 (1776, 1904).

[15] Andrew Wyatt Walter, *Adam Smith and the Liberal Tradition in International Relations*, in Ian Clark and Iver B. Neumann (eds), Classical Theories of International Relations 142–72 (1996).

[16] Grover Norquist, *Tea, Taxes, and the Revolution*, Foreign Policy (July 3, 2012) available at http://foreignpolicy.com/2012/07/03/tea-taxes-and-the-revolution/

ruling classes with closer ties to Europe and lower laboring classes that produced the wealth ultimately destined for Europe, the justifications for creation of wealth for increasingly "foreign" beneficiaries and the growing cohesion of local cultural identities came under substantial pressure, resulting in the formation of new decolonized states in the Western Hemisphere from the early 1800s forward.[17] As colonization waned in North and South America, it accelerated in Africa and Asia.

To that point, the beginning of the industrial revolution, wealth – at least so far as the European states increasingly colonizing the world were concerned – was fundamentally material and tangible: gold, silver, gems, agricultural goods and raw materials, along with the weapons, armies, and navies to ensure their continued flow.[18] But the industrial revolution also elevated the relevance to wealth of creative works, inventions, and the associated monopolies that could be ordered by public authorities first for the benefit of national wealth and second for "rights holders" as they came to be understood.[19] The award of patents, it was argued, would provide an incentive for inventors to create new products or processes or improve upon existing ones while disclosing important information on which additional work could be undertaken by others, all of which dovetailed with broader policies aimed at increasing national wealth.[20] Copyrights allowed artists, musicians, writers, and other creators to control the copying, distribution, and adaptation of their works providing an incentive for these constituencies to produce works that would increase the education and understanding of participants in the economy – workers, managers, investors – while also constructing and edifying the cultural fabric in which those participants operated.[21]

These were the explicit purposes behind intellectual property laws adopted toward the beginning of the industrial revolution and the strengthening competition for overseas colonies. Historian Seaborne Davies noted of English patent law (which, like its counterparts in other countries, had covered a broad class of economic monopolies granted by the monarch) that "practically every patent refers in its recitals to the benefit which is expected to accrue to the nation – the commodity of the realm – from the invention."[22] Over the course of the 1780s, the French "royal administration facilitated the issuance of privileges in inventions, while easing procedures of prior expertise. In return, it required of privileges holders

[17] Benedict Anderson, Imagined Communities (1983).
[18] Paul Kennedy, Rise and Fall of the Great Powers (1987).
[19] Christine MacLeod, Inventing the Industrial Revolution: The English Patent System 1660–1800 (1988).
[20] Parliamentary Papers (UK), Report from the Select Committee on the Law Relative to Patents for Inventions (1829) 332, vol III, 415 at 681. The level of specification has increased over time and is now a feature of all patent laws.
[21] Jane Ginsburg, *A Tale of Two Copyrights: Literary Property in Revolutionary France and America*, 64 Tul. L. Rev. 991, 995, 1006 (1990).
[22] D. Seaborne Davies, *Early History of the Patent Specification* (pts. 1–2), 50 L.Q.R. 88–109, 260–74 (1934).

the deposit of their inventions in order to promote the development of industrial knowledge."[23] In 1814, the British Literary Copyright Act provided that where a book was first published in Britain, the owner of copyright was able to bring an action against "any Bookseller or Printer, or other Person whatsoever, in any Part of the United Kingdom of Great Britain and Ireland, in the Isles of Man, Jersey or Guernsey, or in any other part of the British Dominions, [who] shall … print, reprint, or import … any such Book or Books."[24]

The actual relationship between intellectual property rights and wealth – individual and social – is poorly understood, acrimoniously disputed, and capable of multiple, mutually exclusive interpretations.[25] Monopolies over ideas, creative works, and inventions may be justified by the idea of a social contract type of reward system: that a creator or inventor should receive compensation for making something useful for society.[26] The result of creative pursuits and innovation would thereby enrich both the creator and society. Extending a temporary monopoly to the creator or inventor is an administrable way (with long historical precedents) to tailor the benefit.[27] Monopolies given to certain images, combinations of words, logos, sounds, or color schemes – trademarks – are mutually beneficial because they lower the cost to consumers of identifying qualities and characteristics of goods and services they prefer.

Another theory suggests that profits from intellectual property monopolies extend incentives for optimal levels of creation and invention.[28] According to this view, whatever level of creative or inventive activity might occur in society would be far less than what could be achieved through the disproportionate profits given to creators and inventors who enjoyed monopolies. Joseph Schumpeter famously argued that innovation was far more likely to progress under conditions of monopoly, which provides conditions for "long-range planning," "superior methods" – such as experience and financial resources – and that are not available to competitive firms. It also provides for the "insuring or hedging" activities needed for investment.[29]

A third theory applicable to patents is compensation for revealing the secret. Without some kind of incentive, the argument goes, inventors would hoard knowledge or at least not share it as readily. "Patents are said to be the price that must be

[23] Gabriel Galvez-Behar, *Was the French Patent System Democratic? France, 19th Century* (2008), available at https://hal.archives-ouvertes.fr/halshs-00544730/document.
[24] Lionel Bently, *The "Extraordinary Multiplicity" of Intellectual Property Laws in the British Colonies in the Nineteenth Century*, 12 Theor. Inq. Law 161, 172 (2011).
[25] Rachel Brewster, *The Surprising Benefits to Developing Countries of Linking International Trade and Intellectual Property*, 12 Chi. J. Int'l. L. 1, 6 (2011).
[26] Bently, *supra* note 24.
[27] Adam Karbowski & Jacek Prokop, *Controversy over the Economic Justifications for Patent Protection*, 5 Procedia Economics and Finance 393 (2013).
[28] *Id.*
[29] Michael Carrier, *Two Puzzles Resolved: Of the Schumpeter–Arrow Stalemate and Pharmaceutical Innovation Markets*, 93 Iowa L. Rev. 394 (2008).

paid to induce the innovator to disclose the workings of the patented product or process, thus allowing for a more rapid diffusion of the underlying knowledge."[30]

Each of these arguments is rebutted by similarly persuasive evidence and logic. Many of the most important works and inventions that have contributed to human culture, health, and welfare materialized without intellectual property monopolies behind them.[31] As Boldrin and Levine argue,

> The list of industries that were born and grew in the absence of intellectual property protection is almost boundless. In Italy, pharmaceutical products and processes were not covered by patents until 1978; the same was true in Switzerland for processes until 1954, and for products until 1977. Agricultural seeds and plant varieties could not be patented in the United States until 1970, and they still cannot be in most of the world. All kinds of "basic science" from mathematics to physics (and even economics, but no longer finance) cannot be patented. Simultaneously, the copyright on scientific articles enriches a handful of encroached and inefficient publishers instead of the scholars who wrote the articles.[32]

Creative works and inventions are inevitably the result of witting and unwitting collaboration, learning, and influence, rarely an individual author's or inventor's exclusive conception or idea.[33] Intellectual property rights, therefore, limit and cordon off wealth-creating relationships and interactions, perhaps ultimately *reducing* social welfare.[34] Large rewards through monopoly can and do give some creators and inventors disproportionate gains for low-cost creations that may also play a critical role for entire industries.[35] Innovators (now more commonly the firms who employ them) may then become wealthy while slowing innovation to society as a whole.

The level of disclosure communicated by patents may also fail to reach a socially optimal level while still providing a monopoly to a claimant.[36] This occurs when a

[30] Alex Tabarrok, *Patent Theory versus Patent Law*, 1(1) Contributions to Economic Analysis and Policy 1, 20 (2002).

[31] *Id.*

[32] Michele Boldrin & David Levine, Against Intellectual Monopoly (2005).

[33] Mark Lemley, *The Myth of the Sole Inventor*, 110 Mich. L. Rev. 709 (2012); Hyejin Youn, Deborah Strumsky, Luis M. A. Bettencourt, & José Lobo, *Invention as a Combinatorial Process: Evidence from US Patents*, 12 J. Royal Soc. Interface (2015); John M. Golden, *Biotechnology, Technology Policy, and Patentability: Natural Products and Invention in the American System*, 50 Emory L. J. 101, 110–11 (2001).

[34] Michael Heller & Rebecca Eisenberg, *Can Patents Deter Innovation? The Anticommons in Biomedical Research*." 280 (5364) Science 698–701 (1998); James Bessen & Eric Maskin, *Sequential Innovation, Patents, and Imitation*, 40(4) RAND Journal of Economics 611–35 (2009).

[35] Alex Tabarrok, *Patent Theory versus Patent Law*, 1(1) Contributions to Economic Analysis and Policy 1, 3 (2002).

[36] Over the course of history studied in this book, countries maintained different systems for claims related to a patent – some were "first to file," others were "first to invent," and still others were "first to disclose."

patent application fails to reveal, or reveals in an obscured way, adequate information for the patented claims to be used by others.[37] Because challenging patent validity on the basis of disclosure is costly, it creates an opportunity for firms to secure a monopoly while at the same time limiting the ability of others to use the invention for other socially beneficial purposes.

In between or perhaps outside disagreements as to the usefulness and abuse of intellectual property rights are theories that suggest that the orthodox arguments made for or against the intellectual property–monopoly relationship overemphasize the mutual benefit promised and neglect the structural economic game behind the relationship. These theories suggest that the system of monopolies for intellectual property claims works for *society* precisely because it *does not* really work for authors and inventors. Copyrights and patents are costly to enforce, patent infringement claims especially are frequently defeated, and so the huge monopoly profits promised to entrepreneurs are rarely realized while society benefits from knockoffs and proliferation of inventions that fail to obtain patent protection.[38]

Whether or not intellectual property protections *actually* promote aggregate wealth creation for society is (somewhat curiously) beside the point. As Albert Hu and I. P. L. Png pithily phrased it, "while empirical support for the hypothesis that stronger IP rights lead to greater innovation is sparse, pressure to strengthen IP rights has been unrelenting."[39] That pressure has largely been mounted by "transnational firms in knowledge-intensive sectors" that can move into and exploit new markets with greater ease than firms in other industries.[40] Those firms in knowledge-intensive sectors lobby for changes to strengthen intellectual property laws in most countries as part of the normal legislative process, as well as their home or sponsor governments through trade and investment agreements those countries negotiate with others.[41] To be sure, the latter governments are fundamentally convinced as to the relationship between *national wealth* and strong intellectual property protection. As Daniel Marti, the US Intellectual Property Enforcement Coordinator, declared, "the protection of intellectual property rights is about promoting economic prosperity and supporting jobs; opening new markets for U.S. goods and services; and fostering innovation and investments in research and development," notwithstanding the possibility that

[37] Nathaniel B Lipkus, Jocelyn E Mackie, & Peter A Singer, *Guidance for Reconciling Patent Rights and Disclosure of Findings at Scientific Meetings*, 8 Health Res. Pol. Syst. 15 (2010).

[38] Kal Raustiala & Chris Sprigman, The Knockoff Economy: How Imitation Sparks Innovation (2012); Mariano Zukerfeld, *On the Link between the English Patent System and the Industrial Revolution: Economic, Legal, and Sociological Issues*, 8(1) Intersect (2014).

[39] Albert G. Z. Hu & I. P. L. Png, *Patent Rights and Economic Growth: Evidence from Cross-Country Panels of Manufacturing Industries*, 65(3) Oxford Econ. Papers 675–98 (2013).

[40] Susan Sell, Private Power, Public Law: The Globalization of Intellectual Property Rights 19 (2003).

[41] Margot Kaminski, *The Capture of International Intellectual Property Law through the U.S. Trade Regime*, 87 S. Cal. L. Rev. 977 (2014).

expanding intellectual property rights may actually do none of those or only some combination of them depending on the industry involved.[42]

For the countries that emerged from European colonization, by contrast, the relationship between intellectual property and wealth was and is fundamentally different.[43] Intellectual property laws in Europe and North America adapted as those economies developed. For example, the United States was largely hostile to extending copyright protections to foreign works for much of the nineteenth century, based in significant part on the desire to have its growing population enjoy access to literature and educational materials. Yet, as this book emphasizes (in line with earlier scholars), the current global pressure to strengthen intellectual property rights applies regardless of the effect on economies in which stronger intellectual property protections may be, and likely are, at best benign and at worst wealth destroying.

In a 1997 study, Walter Park and Juan Carlos Ginarte examined the effects of intellectual property rights on growth in both wealthy and poor countries.[44] Their study analyzed intellectual property index values (comprised of coverage of specific intellectual property rights membership in international patent agreements, provisions for loss of protection, enforcement mechanisms, and the duration of rights protection) in sixty countries between 1960 and 1990.[45] They determined that intellectual property rights do not appear to have a direct impact on growing national wealth but may, under certain circumstances, encourage investment and risk taking within the research sector.[46]

Their study found that a 1 percent increase in a country's intellectual property rights index raised the capital investment rate by 0.26 percent and the research investment rate by 0.77 percent.[47] But this impact was *much larger* in the wealthier thirty countries in their study. *Non–intellectual property market liberalization measures* had a much larger impact in poorer countries. Comparably, physical capital was less significant in the richer nations while human capital was found to be more valuable and impactful in poorer ones. Ultimately, intellectual property rights "explained only the physical and research capital investment behavior of the top 30 economies."[48]

Indeed, to the extent developing countries must cultivate human capital in order to grow, robust enforcement of intellectual property may harm more than help.

[42] Daniel Marti, *Supporting, Innovation, Creativity, and Enterprise: Charting a Path Ahead* 5 (2016), available at https://www.whitehouse.gov/sites/whitehouse.gov/files/omb/IPEC/2016jointstrategicplan.pdf.

[43] Kal Raustiala, *International Rights Approaches to Intellectual Property* 40 U.C. Davis L. Rev. 1021, 1032–33 (2007).

[44] Walter Park & Juan Carlos, *Intellectual Property Rights and Economic Growth*, 15 Contemporary Economic Policy 51 (1997).

[45] *Id.* at 52.

[46] *Id.* at 51.

[47] *Id.* at 59.

[48] The authors explain this by noting that richer nations have "accumulated larger stocks of tangible capital," resulting in "greater diminishing returns to physical capital." *Id.* at 59.

Because intellectual property protections authorize monopolies to their proprietors, they undermine many of the policies that are necessary for the development of human capital in developing countries, especially healthy and literate working populations. For example, before 1995, intellectual property rights on drugs were generally recognized in wealthier countries, but developing countries viewed such rights as antithetical to development objectives. A study undertaken by World Intellectual Property Organization (WIPO) in 1988 for the negotiating group that was dealing with TRIPS in the Uruguay Round revealed that of the ninety-eight Members of the Paris Convention for the Protection of Industrial Property (Paris Convention), forty-nine excluded pharmaceutical products from protection, forty-five excluded animal varieties, forty-four excluded methods of treatment, forty-four excluded plant varieties, forty-two excluded biological processes for producing animal or plant varieties, thirty-five excluded food products, thirty-two excluded computer programs, and twenty-two excluded chemical products.[49]

Some developing countries that had inherited European and North American intellectual property laws through colonization and empire revisited and revised those laws to fit their economic circumstances:

> After World War II, many developing countries became independent States. Some of them began to review the operation of the intellectual property systems that had been left to them by their colonizers. So, for example, after India's independence, two expert committees conducted a review of the Indian patent system. They concluded that the Indian system had failed "to stimulate inventions among Indians and to encourage the development and exploitation of new inventions". Interestingly, India did not choose to abandon patent law as a tool of regulatory policy but instead to redesign it to suit her own national circumstances-a country with a low research-and-development (R&D) base, a large population of poor people and some of the highest drug prices in the world. Passed in 1970, India's new patent law followed the German system of allowing the patenting of methods or processes that led to drugs but not allowing the patenting of the drugs themselves. Patent protection for pharmaceuticals was only granted for seven years, as opposed to fourteen years for other inventions. This law became the foundation stone for a highly successful Indian generics industry.[50]

While limited to a relatively few developing countries, the decisions to selectively advantage certain intellectual property sectors appears prudent given subsequent analyses. Economists Yongmin Chen and Thitima Puttitanun have hypothesized that there may exist an optimal level of intellectual property rights protection that balances incentives for domestic innovation with "imitation of northern advanced

[49] World Intellectual Property Organization, *Existence, Scope and Form of Generally Internationally Accepted and Applied Standards/Norms for the Protection of Intellectual Property*, wo/INF/ Sep. 29, 1988, issued as GATT Document MTN.GNG/NG~ 1/W/ 24/REV. 1.

[50] Peter Drahos, *Developing Countries and International Intellectual Property Standard-Setting* 5 (5) J. WIPO 765–89 (2002).

technologies."[51] Examining sixty-four developing countries between 1975 and 2000, their study utilized a model for a small developing country with an import sector and a domestic sector.[52] Using Park and Ginarte's index, they found that strengthened intellectual property rights protection made imitation more difficult in both sectors but increased the incentive to innovate in the domestic firms of both the local and import sectors.[53] They concluded that a developing country's ideal level of intellectual property protection "exhibits a U-shaped curve with respect to its level of economic development."[54] As a country's technological capabilities exceed a specific threshold, innovation overtakes imitation, and the optimal intellectual property protection strength increases in correlation with the levels of development. Thus strong intellectual property protection regimes make sense after a certain point in economic development.[55] This demonstrated that increasing intellectual property rights protection had "a greater impact on innovations in countries with higher levels of economic development."[56]

Indeed, that is precisely the experience of now middle- or high-income countries that achieved substantial growth in relatively short time periods. Yee Kim, Kuen Lee, Walter Park, and Kineung Choo studied South Korea's experience with intellectual property protections tailored to given points in development.[57] They sought to establish "not only the *strength* of [intellectual property rights] but also the different *types* of [intellectual property rights] that would be appropriate for countries at different stages of economic development."[58] Their study analyzed a large data set of more than seventy nations in addition to a focused case study on the impact of varied forms of intellectual property protections to South Korea's economic development and growth.

They observed that patent protection contributes to innovation and growth in developed nations, but not necessarily in the developing world. Conversely, utility model protection – which encourages local modifications of patented inventions by requiring less stringent criteria, imposing simpler procedures, and offering shorter term of protection – affords developing countries opportunities to "build up their indigenous innovative capacities."[59] They concluded that "different types of

[51] Yongmin Chen & Thitima Puttitanun, *Intellectual Property Rights and Innovation in Developing Countries*, 78 J. Dev. Econ. 474 (2005).
[52] The import sector is comprised of a northern foreign firm and a domestic firm, while the local sector consists of two domestic firms. *Id.* at 476.
[53] *Id.*
[54] *Id.*
[55] *Id.* at 488.
[56] *Id.*
[57] Yee Kyoung Kim, Keun Lee, Walter G. Park & Kineung Choo, *Appropriate Intellectual Property Protection and Economic Growth in Countries at Different Levels of Development*, 41 Research Policy 358 (2012).
[58] *Id.*
[59] Stephen Ladas, National and International Protection of Patents, Trademarks and Related Rights (1975). At the time of his writing, only Brazil, Germany, Italy, Japan, the

intellectual property rights are more appropriate for countries at different stages of economic development."[60] They highlighted that what matters in innovation and growth is not simply the strength of intellectual property protection, but also the types of protection employed.

With its focus on protection of innovation with relatively low inventiveness, few developed countries feature the utility model in their intellectual property framework, but many developing economies use it to encourage domestic technological capacity.[61] Utility model adoption is, however, tied primarily to the historical legal traditions of a country, rather than conscientious planning.[62]

Their analysis explains why South Korea, which shared many characteristics with poor developing countries in the 1950s (its per capita GDP in 1960 was lower than several sub-Saharan countries), became the eleventh largest economy in the world by 2017.[63] Before the mid-1980s, South Korea was a nation of "limited technological capability" that relied primarily on "reverse engineering, importation of technology, and imitation" to innovate and satisfy its technological needs.[64] By the late 1990s, the country had become "one of the leading patenting nations," increasing the number of US patents granted to Koreans from 14 in 1982 to 3,562 in 1999.[65] Similarly, the number of utility model applications in the country exceeded the number of patent applications until the early 1990s, the period immediately after South Korea strengthened its intellectual property laws.[66] By 1995, the number of patent applications had exceeded the number of utility model applications. This demonstrated that utility model innovation is more appropriate for "companies that are resource-poor or below the technological frontier."[67] Patents, on the other hand, are "more conducive to innovation" in companies that have "reached some critical technological capability" that allows them to "produce innovations with sufficient inventive steps to qualify for patent protection."[68]

Philippines, Poland, Portugal, South Korea, Spain, and Taiwan had official protections for utility models.

[60] Kim, Lee, Park & Choo, *supra* note 57, at 368.

[61] For example, South Korea, Taiwan, China, and Malaysia. *Id.*

[62] Daron Acemoglu, Simon Johnson & James A. Robinson, *The Colonial Origins of Comparative Development: An Empirical Investigation*, 91 Am. Econ. Rev. 1369 (2001); Rafael La Porta, Florencio Lopez-de-Silanes & Andrei Shleifer, *The Economic Consequences of Legal Origins*, 46 J. Econ. Lit. 285 (2008).

[63] OECD, Korea, available at http://www.oecd.org/korea/.

[64] Kim, Lee, Park & Choo, *supra* note 57, at 359.

[65] The share of US patents granted to Koreans increased from 0.01% to 2.32%. *Id.*

[66] The aggregate R&D/GDP ratio went from less than 1% to more than 2.5%, and the share of private R&D in the national R&D grew from less than 50% in the early 1980s to 80% by the end of the same decade. The number of corporate R&D centers by the mid-1980s was five times greater than the forty-five that existed in 1981. *Id.*

[67] *Id.*

[68] *Id.*

Moreover, the strength of patent protection has a "significant, positive association" with innovations in high-income countries, but a "statistically insignificant coefficient" in middle and low-income nations.[69] The study further indicated that patenting intensity in middle- to low-income countries had a "negative but statistically insignificant association with GDP per capita growth" in all economic models, unlike the "much larger" impact that patenting intensity had for high-income countries.[70] Patents raise business costs in middle- to low-income countries via royalties and fees, which in turn increase the production cost of technological innovation. Regarding utility models in the developing world, however, their results demonstrated a positive and statistically significant association with growth in all economic models, indicating innovative value "specific to middle and low income countries."[71]

Some evidence even suggests that stronger intellectual property protections in poorer countries not only make firms in those countries worse off but firms in wealthy countries as well. In a 1999 study, Amy Glass and Kamal Saggi sought to determine the effect that stronger intellectual property rights in developing countries exerted on innovation, imitation, and foreign direct investment (FDI).[72] They hypothesized that multinational corporations in wealthy countries tended to develop high-value products through innovation while poorer countries tended to develop high-value products through imitation.[73] They determined that not only did stronger intellectual property rights in poorer countries make firms "no more secure from imitation"; they also raised the cost of imitation, such that poorer countries simply had to expend more resources to achieve the same level of imitation.[74] This, in turn, left fewer resources for production, negatively impacting foreign direct investment in those countries.[75] The adverse impact on foreign direct investment, in turn, raised costs for innovation for firms in wealthy countries.[76] The reduced imitation efficiency created by stronger intellectual property rights was "equivalent to a tax on imitation combined with a reduction in [poorer countries'] resources."[77] Regardless of the model employed, "stronger [intellectual property protection in poor countries] reduces FDI and innovation."[78] Conversely, when intellectual property

[69] *Id.* at 365.
[70] *Id.*
[71] *Id.* at 368.
[72] Amy Jocelyn Glass & Kamal Saggi, *Intellectual Property and Foreign Direct Investment*, 56 J. Int'l Econ. 387, 387 (2002).
[73] *Id.* at 389.
[74] *Id.*
[75] The authors termed this a "resources wasting effect" that served to reduce the Southern labor supply. *Id.*
[76] As more labor is expended on imitation in the South, FDI is "crowd[ed] out" of these nations, reducing innovations in Northern countries as they must employ resources to account for the reduction in FDI. *Id.*
[77] *Id.* at 399.
[78] *Id.*

protection was weakest "all products [were] produced by multinationals in [poorer countries]."[79]

Moreover, most evidence suggests that the impact of patent protection "varies from industry to industry," and that the pharmaceutical and chemical industries benefit the most from the protection patents afford.[80] Sixty-five percent of pharmaceutical inventions and 30 percent of chemical industry inventions "would not have taken place but for patent protection."[81] In other industries, however, such strong intellectual property protection "was not found to be essential."[82] For many high technology industries, like the aerospace industry, the complexity of inventions and innovations make any attempts at reverse engineering particularly challenging and costly, even without the obstacle of intellectual property protection.[83] Another study exploring the effect of strengthened pharmaceutical patent protection in 1970s Italy concluded that the changes "had little or no impact" on research and development expenditures or the "introduction of new chemical entities."[84] Overall, evidence that intellectual property rights can correlate with development and innovative activity "is quite weak."[85] In fact, the World Bank has noted that stronger intellectual property protections may instead instead limit "follow-up innovations" in both the developed and developing world, since so many of these innovations "draw on inventions whose patents have not yet expired."[86]

The competing perspectives, evidence, and intellectual property policies adopted along the global rich–poor fault line are the subject of the following chapters. Over the course of the 1960s, 1970s, and 1980s, the relationship between wealth, intellectual property, and development began to foment tensions in bilateral and multilateral fora.[87] Over the course of the 1960s and especially the 1970s, global firms became influential intermediaries between rich and poor countries, increasingly powerful in national and international bodies traditionally comprised of nation-states, and ultimately the subject of direct regulation in international legal areas where poor countries held sway.[88] More importantly, multinational firms – which

[79] *Id.* at 408.
[80] Nagesh Kumar, *Intellectual Property Rights, Technology and Economic Development: Experiences of Asian Countries*, 38 Econ. Pol. Weekly 209, 210 (2003).
[81] *Id.*
[82] *Id.*
[83] *Id.*
[84] *Id.*
[85] *Id.* at 212.
[86] *Id.* at 212.
[87] D. M. Mills, *Patents and the Exploitation of Technology Transferred to Developing Countries (in particular those of Africa)* 24 Industrial Property (1985); Pfizer, *Protecting Intellectual Property in a Global Marketplace*, Harvard Business School (1992); J. Braithwaite & P. Drahos, Global Business Regulation (2000).
[88] S. K. Sell, *Intellectual Property Protection and Antitrust in the Developing World: Crisis, Coercion, and Choice*, 49 Int'l Org. 315 (1995); C. F. Johnson, *The Origins of the Stockholm Protocol*, 18 Bulletin of the Copyright Society of the U.S.A. 91 (1970–71).

became gradually more dependent on intangible intellectual property assets for their value – transformed in the eyes of developing countries from recalcitrant and sometimes disloyal partners on the path to wealth to the chief enemy of their human development goals.[89] Intellectual property became metaphorically and to some extent literally an extension of policies originally adopted during the period of global colonization and implemented through firms largely established during that period.

Developing countries from the 1960s began to advocate and construct global mechanisms by which multinational firms' behavior might be constrained. In contrast to laws used in Europe and North America, which focused on competition and, in the utilities context, price regulation, developing countries began to focus on access to firms' knowledge and products. The model of regulation they developed deeply influenced international agreements formed around the mid-1990s.

[89] P. Drahos, *Global Property Rights in Information: The Story TRIPS at the GATT*, 13 Prometheus 6 (1995).