# Innovation DA 2.0 3:25

## NC Materials

### Suggested NC Shell - Bioterror

#### The pharma industry is strong now but patents are key for continued economic growth. Batell and PhRMA 14:

Batell and PhRMA {Battelle is the world’s largest nonprofit independent research and development organization, providing innovative solutions to the world’s most pressing needs through its four global businesses: Laboratory Management, National Security, Energy, Environment and Material Sciences, and Health and Life Sciences. The Pharmaceutical Research and Manufacturers of America (PhRMA) represents the country’s leading pharmaceutical research and biotechnology companies, which are devoted to inventing medicines that allow patients to live longer, healthier, and more productive lives.}, 14 – “The U.S. Biopharmaceutical Industry: Perspectives on Future Growth and The Factors That Will Drive It,” http://phrma-docs.phrma.org/sites/default/files/pdf/2014-economic-futures-report.pdf//marlborough-wr//

Compared to other capital-intensive, advanced manufacturing industries in the U.S., the biopharmaceutical industry is a leader in R&D investment, IP generation, venture capital investment, and R&D employment. Policies and infrastructure that helped foster these innovative activities have allowed the U.S. to seize global leadership in biopharmaceutical R&D over the past 30 years. However, as this report details, other countries are seeking to compete with the U.S. by borrowing and building upon some of these pro-innovation policies to improve their own operating environment and become more favorable to biopharmaceutical companies making decisions about where to locate their R&D and manufacturing activities. A unique contribution of this report was the inclusion of the perspective of senior-level strategic planning executives of biopharmaceutical companies regarding what policy areas they see as most likely to impact the favorability of the U.S. business operating environment. The executives cited the following factors as having the most impact on the favorability of the operating environment and hence, potential growth of the innovative biopharmaceutical industry in the U.S.: • Coverage and payment policies that support and encourage medical innovation • A well-functioning, science-based regulatory system • Strong IP protection and enforcement in the U.S. and abroad The top sub-attribute identified as driving future biopharmaceutical industry growth in the U.S. cited by executives was a domestic IP system that provides adequate patent rights and data protection. Collectively, these factors underscore the need to reduce uncertainties and ensure adequate incentives for the lengthy, costly, and risky R&D investments necessary to develop new treatments needed by patients and society to address our most costly and challenging diseases. With more than 300,000 jobs at stake between the two scenarios, the continued growth and leadership of the U.S. innovative biopharmaceutical industry cannot be taken for granted. Continued innovation is fundamental to U.S. economic well-being and the nation’s ability to compete effectively in a globalized economy and to take advantage of the expected growth in demand for new medicines around the world. Just as other countries have drawn lessons from the growth of the U.S. biopharmaceutical sector, the U.S. needs to assess how it can improve the environment for innovation and continue to boost job creation by increasing R&D investment, fostering a robust talent pool, enhancing economic growth and sustainability, and continuing to bring new medicines to patients.

#### COVID has kept patents and innovation strong, but continued protection is key to innovation by incentivizing biomedical research – it’s also crucial to preventing counterfeit medicines, economic collapse, and fatal diseases, which turns case. Macdole and Ezell 4-29:

Jaci Mcdole and Stephen Ezell {Jaci McDole is a senior policy analyst covering intellectual property (IP) and innovation policy at the Information Technology and Innovation Foundation (ITIF). She focuses on IP and its correlations to global innovation and trade. McDole holds a double BA in Music Business and Radio-Television with a minor in Marketing, an MS in Education, and a JD with a specialization in intellectual property (Southern Illinois University Carbondale). McDole comes to ITIF from the Institute for Intellectual Property Research, an organization she co-founded to study and further robust global IP policies. Stephen Ezell is vice president, global innovation policy, at the Information Technology and Innovation Foundation (ITIF). He comes to ITIF from Peer Insight, an innovation research and consulting firm he cofounded in 2003 to study the practice of innovation in service industries. At Peer Insight, Ezell led the Global Service Innovation Consortium, published multiple research papers on service innovation, and researched national service innovation policies being implemented by governments worldwide. Prior to forming Peer Insight, Ezell worked in the New Service Development group at the NASDAQ Stock Market, where he spearheaded the creation of the NASDAQ Market Intelligence Desk and the NASDAQ Corporate Services Network, services for NASDAQ-listed corporations. Previously, Ezell cofounded two successful innovation ventures, the high-tech services firm Brivo Systems and Lynx Capital, a boutique investment bank. Ezell holds a B.S. from the School of Foreign Service at Georgetown University, with an honors certificate from Georgetown’s Landegger International Business Diplomacy program.}, 21 - ("Ten Ways Ip Has Enabled Innovations That Have Helped Sustain The World Through The Pandemic," Information Technology & Innovation Foundation, 4-29-2021, https://itif.org/publications/2021/04/29/ten-ways-ip-has-enabled-innovations-have-helped-sustain-world-through)//marlborough-wr/

To better understand the role of IP in enabling solutions related to COVID-19 challenges, this report relies on 10 case studies drawn from a variety of nations, technical fields, and firm sizes. This is but a handful of the thousands of IP-enabled innovations that have sprung forth over the past year in an effort to meet the tremendous challenges brought on by COVID-19 globally. From a paramedic in Mexico to a veteran vaccine manufacturing company in India and a tech start-up in Estonia to a U.S.-based company offering workplace Internet of Things (IoT) services, small and large organizations alike are working to combat the pandemic. Some have adapted existing innovations, while others have developed novel solutions. All are working to take the world out of the pandemic and into the future. The case studies are: Bharat Biotech: Covaxin Gilead: Remdesivir LumiraDX: SARS-COV-2 Antigen POC Test Teal Bio: Teal Bio Respirator XE Ingeniería Médica: CápsulaXE Surgical Theater: Precision VR Tombot: Jennie Starship Technologies: Autonomous Delivery Robots Triax Technologies: Proximity Trace Zoom: Video Conferencing As the case studies show, IP is critical to enabling innovation. Policymakers around the world need to ensure robust IP protections are—and remain—in place if they wish their citizens to have safe and innovative solutions to health care, workplace, and societal challenges in the future. THE ROLE OF INTELLECTUAL PROPERTY IN R&D-INTENSIVE INDUSTRIES Intangible assets, such as IP rights, comprised approximately 84 percent of the corporate value of S&P 500 companies in 2018.4 For start-ups, this means much of the capital needed to operate is directly related to IP (see Teal Bio case study for more on this). IP also plays an especially important role for R&D-intensive industries.5 To take the example of the biopharmaceutical industry, it is characterized by high-risk, time-consuming, and expensive processes including basic research, drug discovery, pre-clinical trials, three stages of human clinical trials, regulatory review, and post-approval research and safety monitoring. The drug development process spans an average of 11.5 to 15 years.6 For every 5,000 to 10,000 compounds screened on average during the basic research and drug discovery phases, approximately 250 molecular compounds, or 2.5 to 5 percent, make it to preclinical testing. Out of those 250 molecular compounds, approximately 5 make it to clinical testing. That is, 0.05 to 0.1 percent of drugs make it from basic research into clinical trials. Of those rare few which make it to clinical testing, less than 12 percent are ultimately approved for use by the U.S. Food and Drug Administration (FDA).7 In addition to high risks, drug development is costly, and the expenses associated with it are increasing. A 2019 report by the Deloitte Center for Health Solutions concluded that since 2010 the average cost of bringing a new drug to market increased by 67 percent.8 Numerous studies have examined the substantial cost of biopharmaceutical R&D, and most confirm investing in new drug development requires $1.7 billion to $3.2 billion up front on average.9 A 2018 study by the Coalition for Epidemic Preparedness found similar risks and figures for vaccines, stating, “In general, vaccine development from discovery to licensure can cost billions of dollars, can take over 10 years to complete, and has an average 94 percent chance of failure.”10 Yet, a 2010 study found that 80 percent of new drugs—that is, the less than 12 percent ultimately approved by the FDA—made less than their capitalized R&D costs.11 Another study found that only 1 percent (maybe three new drugs each year) of the most successful 10 percent of FDA approved drugs generate half of the profits of the entire drug industry.12 To say the least, biopharmaceutical R&D represents a high-stakes, long-term endeavor with precarious returns. Without IP protection, biopharmaceutical manufacturers have little incentive to take the risks necessary to engage in the R&D process because they would be unable to recoup even a fraction of the costs incurred. Diminished revenues also result in reduced investments in R&D which means less research into cancer drugs, Alzheimer cures, vaccines, and more. IP rights give life-sciences enterprises the confidence needed to undertake the difficult, risky, and expensive process of life-sciences innovation secure in the knowledge they can capture a share of the gains from their innovations, which is indispensable not only to recouping the up-front R&D costs of a given drug, but which can generate sufficient profits to enable investment in future generations of biomedical innovation and thus perpetuate the enterprises into the future.13 THE IMPORTANCE OF INTELLECTUAL PROPERTY TO INNOVATION Although anti-IP proponents have attacked biopharmaceutical manufacturers particularly hard, the reality is all IP-protected innovations are at risk if these rights are ignored, or vitiated. Certain arguments have shown a desire for the term “COVID-19 innovations” to include everything from vaccines, therapeutics, diagnostics, and PPE to biotechnology, AI-related data, and educational materials.14 This could potentially open the floodgates to invalidate IP protection on many of the innovations highlighted in this report. However, much of the current discussion concerning IP focuses almost entirely on litigation fears or R&D incentives. Although R&D is an important aspect of IP, as previously mentioned, these discussions ignore the fact that IP protection can be—and often is—used for other purposes, including generating initial capital to create a company and begin manufacturing and, more importantly, using licensing agreements and IP to track the supply chain and ensure quality control of products. This report highlights but a handful of the thousands of IP-enabled innovations that have sprung forth over the past year in an effort to meet the tremendous challenges brought on by COVID-19 globally. In 2018, Forbes identified counterfeiting as the largest criminal enterprise in the world.15 The global struggle against counterfeit and non-regulated products, which has hit Latin America particularly hard during the pandemic, proves the need for safety and quality assurance in supply chains.16 Some communities already ravaged by COVID-19 are seeing higher mortality rates related to counterfeit vaccines, therapeutics, PPE, and cleaning and sanitizing products.17 Polish authorities discovered vials of antiwrinkle treatment labeled as COVID-19 vaccines. 18 In Mexico, fake vaccines sold for approximately $1,000 per dose.19 Chinese and South African police seized thousands of counterfeit vaccine doses from warehouses and manufacturing plants.20 Meanwhile, dozens of websites worldwide claiming to sell vaccines or be affiliated with vaccine manufacturers have been taken down.21 But the problem is not limited to biopharmaceuticals. The National Intellectual Property Rights Coordination Center has recovered $48 million worth of counterfeit PPE and other products.22 Collaborative efforts between law enforcement and manufacturers have kept numerous counterfeits from reaching the population. In countries with strong IP protection, the chances of counterfeit products reaching the market are significantly lower. This is largely because counterfeiting tends to be an IP-related issue, and these countries generally provide superior means of tracking the supply chain through trademarks, trade secrets, and licensing agreements. This enables greater quality control and helps manufacturers maintain a level of public confidence in their products. By controlling the flow of knowledge associated with IP, voluntary licensing agreements provide innovators with opportunities to collaborate, while ensuring their partners are properly equipped and capable of producing quality products. Throughout this difficult time, the world has seen unexpected collaborations, especially between biopharmaceutical companies worldwide such as Gilead and Eva Pharma or Bharat Biotech and Ocugen, Inc. Throughout history, and most significantly in the nineteenth century through the widespread development of patent systems and the ensuing Industrial Revolution, IP has contributed toward greater economic growth.23 This is promising news as the world struggles for economic recovery. A 2021 joint study by the EU Intellectual Property Office (EUIPO) and European Patent Office (EPO) shows a strong, positive correlation between IP rights and economic performance.24 It states that “IP-owning firms represent a significantly larger proportion of economic activity and employment across Europe,” with IP-intensive industries contributing to 45 percent of gross domestic product (GDP) (€6.6 trillion; US$7.9 trillion).25 The study also shows 38.9 percent of employment is directly or indirectly attributed to IP-intensive industries, and IP generates higher wages and greater revenue per employee, especially for small-to-medium-sized enterprises.26 That concords with the United States, where the Department of Commerce estimated that IP-intensive industries support at least 45 million jobs and contribute more than $6 trillion dollars to, or 38.2 percent of, GDP.27 In 2020, global patent filings through the World Intellectual Property Organization’s (WIPO) Patent Cooperation Treaty (PCT) system reached a record 275,900 filings amidst the pandemic, growing 4 percent from 2019.28 The top-four nations, which accounted for 180,530 of the patent applications, were China, the United States, Japan, and Korea, respectively.29 While several countries saw an increase in patent filings, Saudi Arabia and Malaysia both saw significant increases in the number of annual applications, with the top two filing growths of 73 percent and 26 percent, respectively.30 The COVID-19 pandemic slowed a lot of things, but it certainly couldn’t stop innovation. There are at least five principal benefits strong IP rights can generate, for both developing and developed countries alike.31 First, stronger IP protection spurs the virtuous cycle of innovation by increasing the appropriability of returns, enabling economic gain and catalyzing economic growth. Second, through patents—which require innovators to disclose certain knowledge as a condition of protection—knowledge spillovers build a platform of knowledge that enables other innovators. For instance, studies have found that the rate of return to society from corporate R&D and innovation activities is at least twice the estimated returns that each company itself receives.32 Third, countries with robust IP can operate more efficiently and productively by using IP to determine product quality and reduce transaction costs. Fourth, trade and foreign direct investment enabled and encouraged by strong IP protection offered to enterprises from foreign countries facilitates an accumulation of knowledge capital within the destination economy. That matters when foreign sources of technology account for over 90 percent of productivity growth in most countries.33 There’s also evidence suggesting that developing nations with stronger IP protections enjoy the earlier introduction of innovative new medicines.34 And fifth, strong IP boosts exports, including in developing countries.35 Research shows a positive correlation between stronger IP protection and exports from developing countries as well as faster growth rates of certain industries.36 The following case studies illustrate these benefits of IP and how they’ve enabled innovative solutions to help global society navigate the COVID-19 pandemic.

#### Pharmaceutical innovation is key to protecting against future pandemics, bioterrorism, and antibiotic resistance.

Marjanovic and Fejiao ‘20 Marjanovic, Sonja, and Carolina Feijao. Sonja Marjanovic, Ph.D., Judge Business School, University of Cambridge. Carolina Feijao, Ph.D. in biochemistry, University of Cambridge; M.Sc. in quantitive biology, Imperial College London; B.Sc. in biology, University of Lisbon. "Pharmaceutical Innovation for Infectious Disease Management: From Troubleshooting to Sustainable Models of Engagement." (2020). [Quality Control]

As key actors in the healthcare innovation landscape, pharmaceutical and life sci-ences companies have been called on to develop medicines, vaccines and diagnostics for pressing public health challenges. The COVID-19 crisis is one such challenge, but there are many others. For example, MERS, SARS, Ebola, Zika and avian and swine flu are also infectious diseases that represent public health threats. Infectious agents such as anthrax, smallpox and tularemia could present threats in a **bioterrorism con-text**.1 The general threat to public health that is posed by **antimicrobial resistance** is also **well-recognised** as an area **in need of pharmaceutical innovation**. Innovating in response to these challenges does not always align well with pharmaceutical industry commercial models, shareholder expectations and compe-tition within the industry. However, the expertise, networks and infrastructure that industry has within its reach, as well as public expectations and the moral imperative, make pharmaceutical companies and the wider life sciences sector an **indispensable** partner in the search for solutions that save lives. This perspective argues for the need to establish more sustainable and scalable ways of incentivising pharmaceu-tical innovation in response to infectious disease threats to public health. It considers both past and current examples of efforts to mobilise pharmaceutical innovation in high commercial risk areas, including in the context of current efforts to respond to the COVID-19 pandemic. In global pandemic crises like COVID-19, the urgency and scale of the crisis – as well as the spotlight placed on pharmaceutical companies – mean that contributing to the search for effective medicines, vaccines or diagnostics is **essential** for socially responsible companies in the sec-tor.2 It is therefore unsurprising that we are seeing indus-try-wide efforts unfold at unprecedented scale and pace. Whereas there is always scope for more activity, industry is currently contributing in a variety of ways. Examples include pharmaceutical companies donating existing com-pounds to assess their utility in the fight against COVID-19; screening existing compound libraries in-house or with partners to see if they can be repurposed; accelerating tri-als for potentially effective medicine or vaccine candidates; and in some cases rapidly accelerating in-house research and development to discover new treatments or vaccine agents and develop diagnostics tests.3,4 Pharmaceutical companies are collaborating with each other in some of these efforts and participating in global R&D partnerships (such as the Innovative Medicines Initiative effort to accel-erate the development of potential therapies for COVID-19) and supporting national efforts to expand diagnosis and testing capacity and ensure affordable and ready access to potential solutions.3,5,6 The primary purpose of such innovation is to **benefit patients** and wider **population health**. Although there are also reputational benefits from involvement that can be realised across the industry, there are likely to be rela-tively few companies that are ‘commercial’ winners. Those who might gain substantial revenues will be under pres-sure not to be seen as profiting from the pandemic. In the United Kingdom for example, GSK has stated that it does not expect to profit from its COVID-19 related activities and that any gains will be invested in supporting research and long-term pandemic preparedness, as well as in developing products that would be affordable in the world’s poorest countries.7 Similarly, in the United States AbbVie has waived intellectual property rights for an existing com-bination product that is being tested for therapeutic poten-tial against COVID-19, which would support affordability and allow for a supply of generics.8,9 Johnson & Johnson has stated that its potential vaccine – which is expected to begin trials – will be available on a not-for-profit basis during the pandemic.10 Pharma is mobilising substantial efforts to rise to the COVID-19 challenge at hand. However, we need to consider how pharmaceutical innovation for responding to emerging infectious diseases can best be enabled beyond the current crisis. Many public health threats (including those associated with other **infectious diseases**, **bioterror-ism** agents **and antimicrobial resistance**) are **urgently in need of pharmaceutical innovation**, **even if their impacts are not as visible** to society **as COVID**-19 is in the imme-diate term. The pharmaceutical industry has responded to previous public health emergencies associated with infec-tious disease in recent times – for example those associated with Ebola and Zika outbreaks.11 However, it has done so to a lesser scale than for COVID-19 and with contribu-tions from fewer companies. Similarly, levels of activity in response to the threat of antimicrobial resistance are still **low**.12 There are important policy questions as to whether – and how – industry could engage with such public health threats to an even greater extent under improved innova-tion conditions.

#### Bioterror causes extinction---early response key

Farmer 17 (“Bioterrorism could kill more people than nuclear war, Bill Gates to warn world leaders” http://www.telegraph.co.uk/news/2017/02/17/biological-terrorism-could-kill-people-nuclear-attacks-bill/)

Bioterrorists could one day kill hundreds of millions of people in an attack more deadly than nuclear war, Bill Gates will warn world leaders. Rapid advances in genetic engineering have opened the door for small terrorism groups to tailor and easily turn biological viruses into weapons. A resulting disease pandemic is currently one of the most deadly threats faced by the world, he believes, yet governments are complacent about the scale of the risk. Speaking ahead of an address to the Munich Security Conference, the richest man in the world said that while governments are concerned with the proliferation of nuclear and chemical weapons, they are overlooking the threat of biological warfare. Mr Gates, whose charitable foundationis funding research into quickly spotting outbreaks and speeding up vaccine production, said the defence and security establishment “have not been following biology and I’m here to bring them a little bit of bad news”. Mr Gates will today (Saturday) tell an audience of international leaders and senior officers that the world’s next deadly pandemic “could originate on the computer screen of a terrorist”. He told the Telegraph: “Natural epidemics can be extremely large. Intentionally caused epidemics, bioterrorism, would be the largest of all. “With nuclear weapons, you’d think you would probably stop after killing 100million. Smallpox won’t stop. Because the population is naïve, and there are no real preparations. That, if it got out and spread, would be a larger number.” He said developments in genetic engineering were proceeding at a “mind-blowing rate”. Biological warfare ambitions once limited to a handful of nation states are now open to small groups with limited resources and skills. He said: “They make it much easier for a non-state person. It doesn’t take much biology expertise nowadays to assemble a smallpox virus. Biology is making it way easier to create these things.” The increasingly common use of gene editing technology would make it difficult to spot any potential terrorist conspiracy. Technologies which have made it easy to read DNA sequences and tinker with them to rewrite or tweak genes have many legitimate uses. He said: “It’s not like when someone says, ‘Hey I’d like some Plutonium’ and you start saying ‘Hmmm.. I wonder why he wants Plutonium?’” Mr Gates said the potential death toll from a disease outbreak could be higher than other threats such as climate change or nuclear war. He said: “This is like earthquakes, you should think in order of magnitudes. If you can kill 10 people that’s a one, 100 people that’s a two... Bioterrorism is the thing that can give you not just sixes, but sevens, eights and nines. “With nuclear war, once you have got a six, or a seven, or eight, you’d think it would probably stop. [With bioterrorism] it’s just unbounded if you are not there to stop the spread of it.” By tailoring the genes of a virus, it would be possible to manipulate its ability to spread and its ability to harm people. Mr Gates said one of the most potentially deadly outbreaks could involve the humble flu virus. It would be relatively easy to engineer a new flu strain combining qualities from varieties that spread like wildfire with varieties that were deadly. The last time that happened naturally was the 1918 Spanish Influenza pandemic, which went on to kill more than 50 million people – or nearly three times the death toll from the First World War. By comparison, the recent Ebola outbreak in West Africa which killed just over 11,000 was “a Richter Scale three, it’s a nothing,” he said. But despite the potential, the founder of Microsoft said that world leaders and their militaries could not see beyond the more recognised risks. He said: “Should the world be serious about this? It is somewhat serious about normal classic warfare and nuclear warfare, but today it is not very serious about bio-defence or natural epidemics.” He went on: “They do tend to say ‘How easy is it to get fissile material and how accurate are the plans out on the internet for dirty bombs, plutonium bombs and hydrogen bombs?’ “They have some people that do that. What I am suggesting is that the number of people that look at bio-defence is worth increasing.” Whether naturally occurring, or deliberately started, it is almost certain that a highly lethal global pandemic will occur within our lifetimes, he believes. But the good news for those contemplating the potential damage is that the same biotechnology can prevent epidemics spreading out of control. Mr Gates will say in his speech that most of the things needed to protect against a naturally occurring pandemic are the same things needed to prepare for an intentional biological attack. Nations must amass an arsenal of new weapons to fight such a disease outbreak, including vaccines, drugs and diagnostic techniques. Being able to develop a vaccine as soon as possible against a new outbreak is particularly important and could save huge numbers of lives, scientists working at his foundation believe.

# Dollar Dominance 2:00

## Short

#### IPR is key for U.S Dollar Centrality – it allows US firms near if not complete monopolies pushing dollars into international markets and stabilizing US financial influence

Schwartz ‘19

Schwartz, Herman Mark (2019). American hegemony: intellectual property rights, dollar centrality, and infrastructural power. Review of International Political Economy, (), 1–30. doi:10.1080/09692290.2019.1597754 // Phoenix

Mechanism one relates to Strange’s (1989) financial power: US current account deficits generate the dollar centrality that network analyses reveal through self-reinforcing dynamics prior to the network. US current account deficits result from deep seated domestic institutional arrangements in current account surplus economies that produce chronic domestic demand shortfalls. The more those export-led economies run surpluses with the United States, the more dollars they accumulate; the more dollars they accumulate, the more dollars flow through their banking systems back into dollar assets and liabilities; the more dollar assets and liabilities those banks hold on their balance sheets, the more those banks both rely on the Federal Reserve Bank (FED) as a lender of last resort or a supplier of outside money during (the inevitable) crises, and the more their staff develop habitus (Bourdieu, 1977) or the routinized behaviors at the heart of infrastructural power (Mann, 1986) that support continued use of the dollar in non-crisis times; the more those banks lend in dollars, the more counterparty debtor economies are drawn into use of the dollar; a parallel habitus emerges among export firms that reinforces use of the dollar in a Hirschman (1945)-like dynamic. If suppliers (or debtors) are borrowing those recycled dollars, they will demand payment in dollars to meet their liabilities. Contemporary late developers similarly need export markets to grow, and the United States constitutes both the biggest import market and biggest net importer in the global economy (netting intra-EU trade). This mechanism originates from institutional responses to the problem of late development and not, via lower transaction costs, the emergent network of dollar claims and liabilities itself. That said, surely dollar acceptability faces limits set by persistent US current account deficits? Prudent actors might well balk at accepting more assets denominated in a currency at risk of sustained depreciation (Bergsten & Williamson, 2004). Indeed, the 1960s Triffin dilemma pitted declining confidence about the dollar as a store of value given rising US inflation rates and a declining productivity gap between the United States and its main competitors against the need for global liquidity supplied by a US current account deficit. Today, as Eichengreen (2010) has argued, centrality for the dollar faces a similar collective action problem among holders of dollar-denominated assets – why do US current account deficits not motivate individual countries with relatively smaller dollar holdings to defect for fear of depreciation or capital losses? In today’s flexible exchange rate world, only above average US economic growth and/or profits for the firms constituting the bulk of equity market capitalization validates confidence in dollar assets. Because economic activity is organized through capitalist markets, the critical issue for differential growth (Nitzan, 1998) and asset validation is always: ‘who gets the profits and in what proportion’? Mechanism two is thus about profits, which corresponds to Strange’s (1989) productive power. US firms capture a disproportionate share of global profits, and within this firms with robust intellectual property rights (IPRs – patent, copyright brand and trademark) capture a disproportionate share of US and global profits. Here compliance with international trade treaties protecting IPRs is the focal point or center of gravity for this disproportionality. IPRs give some US firms monopoly or near monopoly power in the global (and local) commodity chains they construct. The extension of US IPR law through various trade treaties (Drahos & Braithwaite, 2003; Sell, 2003; Sell & Prakash, 2004) allows US IPR firms to capture a disproportionate share of global profits via that monopoly power. This shifts claims on value added towards those firms, concentrating profits into a small number of US firms. Though we explore this below in more depth, US firms account for a disproportionate 33.9% of cumulative profits generated by any firm appearing on the Forbes Global 2000 list from 2006 to 2018 and firms in sectors characterized by robust IPRs account for a disproportionate 26.6% of those profits. Profitability thus also rests on infrastructural power, via compliance with trade treaties and enmeshment in global value chains orchestrated by US firms. As with bank behavior, this compliance is not purely voluntary (Gruber, 2000), but rather reflects a gradient in which mutually beneficial cooperation shades into coercion as the proportion of local firms benefiting from those treaties declines. US firms are not the only ones that possess marketable intellectual property. Non-US firms that also benefit from robust global IPRs broaden the global political coalition for creating and expanding those IPRs. Yet US firms tend to control the commodity chains in which those foreign firms participate. These two mechanisms are connected: the first explains why non-US actors receive dollars (more precisely, dollar-denominated assets) and the second explains why they opt to hold those assets; put differently, the supply of and demand for dollars. The two mechanisms transform the exorbitant burden – current account deficits associated with use of the dollar as the international reserve currency – back into an exorbitant privilege. They represent a transfer of real resources back to the US economy in exchange for promises to pay back something in the future. Finally, though we will not explore this in depth, these two mechanisms are also linked to the military side of US power, where a similar logic of dominance over potential peer rivals has driven science policy and technological innovation. Put bluntly, a military-innovation complex (c.f. Eisenhower’s military-industrial complex (Hozic, 1999; Hurt, 2010; Mazzucato, 2015; Weiss, 2014)) is the research foundation for the high profit US IPR firms that in turn feed a substantial portion of cash back into the IMS. As with all such systems of power, these structural strengths contain endogenously generated weaknesses and face on-going challenges from the less powerful. Financialization and profit strategies built on IPRs endogenously produce income inequality among firms and people, which erodes compliance, potentially slows growth and destabilizes the global financial system. Domestically, the current account deficits necessary for a dollar-centric IMS (Germain & Schwartz, 2014) generated part of the anger motivating the populist voting bloc that elected Trump. In turn, the Trump Administration’s erratic trade policy, its assaults on parts of the military-innovation complex, and, most significantly, its efforts to eviscerate financial regulation simultaneously threaten the dollar’s role in the IMS and US firms’ ability to capture global profits.3 The Trump administration is one logical consequence of current account deficits that have hollowed out manufacturing employment and limited upward mobility to a narrow slice of the US population. The paper thus has four sections corresponding to the issues: Why does infrastructural power matter? Why the IMS? Why IPRs? The conclusion considers critical endogenous sources of decay.

**Collapse of dollar centrality decks the US economy, prevents stimulus, and undermines security spending which emboldens China aggression.**

**Zoffer 12** - Josh Zoffer (Legal Intern at the IMF, Yale Law), "Future of Dollar Hegemony", Harvard International Review, July 7, 2012. [http://hir.harvard.edu/article/?a=2951] DM

Despite the dollar’s long history as the international reserve currency, the past few years have seen a growing number of calls for the end of dollar hegemony. Countries as diverse as France, Russia, and China have decried the dollar’s monopoly in foreign exchange markets, while in 2009 reports of a shift away from dollar-based oil trading surfaced in the Middle East. Reported plans to move away from the dollar reflected international frustration at a system fueling the United States’ “exorbitant privilege,” as the French have called it, one that rests its stability on the financial conditions of a country mired in debt and facing a financial meltdown. **The implications of a** true **end to dollar hegemony, a shift away from the dollar as** a reserve currency and **pricing** standard **for oil** transactions**, could be catastrophic** for the United States. In the worst case scenario, **a drastic drop in demand for dollar-denominated assets**

## Earth Bio-Genome Project CP

#### Plan Text: States should support and fund the Earth Bio-Genome Project as described in the Mathuros 18 card

#### The Earth Bio-Genome Project stops biopiracy while helping indigenous people profit from their genetic resources. Mathuros 18

Fon Mathuros [Head of Media, World Economic Forum], 18 - ("New Partnership Aims to Sequence Genomes of All Life on Earth, Unlock Nature’s Value, Tackle Bio-Piracy and Habitat Loss," World Economic Forum, 1-23-2018, accessed 7-1-2021, https://www.weforum.org/press/2018/01/new-partnership-aims-to-sequence-genomes-of-all-life-on-earth-unlock-nature-s-value-tackle-bio-piracy-and-habitat-loss/)//ML

· Initiative launched today could replicate success of Human Genome Project, which delivered huge scientific and medical advances and at least $65 to the US economy for every public dollar spent¶ · By creating an open-source database for all plants, animals and single-cell organisms, it could provide the commercial incentive to preserve Earth’s biodiversity¶ · So far, only 0.1% of animal and plant species’ DNA has been sequenced, yet this drives multi-billion dollar agriculture and bio-based industries¶ · New techniques harnessing the Fourth Industrial Revolution are unlocking economic value from biodiversity such as [self-driving car algorithms inspired by ants](https://www.facebook.com/worldeconomicforum/videos/10154926329821479/)¶ · Read [the report](http://www3.weforum.org/docs/WEF_Harnessing_4IR_Life_on_Land.pdf), watch the session [Bio-Inspired Innovation Unleashed](https://www.weforum.org/events/world-economic-forum-annual-meeting-2018/sessions/from-bugs-to-robotics-what-dna-can-teach-us).¶ Davos, Switzerland, 23 January 2018 – The World Economic Forum announced today an ambitious partnership to sequence the DNA of all life on Earth and create an inclusive bio-economy, as part of its [Fourth Industrial Revolution for the Earth Initiative](https://www.weforum.org/projects/fourth-industrial-revolution-and-environment-the-stanford-dialogues).¶ The [Earth Bio-Genome Project](http://www.earthbiogenome.org/) (EBP) will sequence all the plants, animals and single-cell organisms on Earth – the eukaryotic species – now possible due to the exponential drop in costs of genomic sequencing.¶ Meanwhile, the [Earth Bank of Codes](http://www.earthbankofcodes.org/) (EBC) aims to make nature’s biological and biomimetic assets accessible to innovators around the world, while tackling bio-piracy and ensuring equitable sharing of the commercial benefits.¶ Today’s announcement follows warnings by scientists in a paper last year that a [“sixth mass extinction” is under way](http://www.pnas.org/content/114/30/E6089) in which 20,000 species are in danger – a “biological annihilation” that represents a “frightening assault on the foundations of human civilization.”¶ The EBC part of the partnership will boost the economic incentives for local communities and global businesses to preserve the environment. It aims to unlock the potential of the planet’s biodiversity and boost the global marketplace for bio-inspired chemicals, materials, processes and innovations that solve human challenges by emulating nature’s time-tested strategies.¶ Such advances include harvesting the next generation of antibiotics from Amazonian frogs to combat the antimicrobial resistance threat, and pioneering self-driving car algorithms using inspiration from Amazonian ants – see [video](https://www.facebook.com/worldeconomicforum/videos/10154926329821479/).¶ Only 14% of the estimated species of plants and land animals have been classified and less than 0.1% have had their DNA thoroughly sequenced, meaning there is a huge gap in our knowledge of the vast scientific, economic, social and environmental potential of our biodiversity.¶ Yet, this tiny percentage has delivered all of our modern knowledge of biology and the life sciences.¶ Like the Human Genome Project, which delivered at least $65 to the US economy for every public dollar spent as well as myriad benefits for human health, molecular medicine and scientific understanding, the EBP aims to create an inclusive bio-economy and enable the conservation and regeneration of biodiversity.¶ “The rate of biodiversity loss is sobering. Those born since 2012 have inherited a planet with fewer than half the number of animals on land and below water than those born before 1970. There is an urgent need for innovations that can quickly make natural habitats worth more intact for local people than cutting them down for other land uses. The Fourth Industrial Revolution in biology could offer such innovations if linked to new models for biodiversity management. This is why this partnership could be very exciting,” said Dominic Waughray, Head of Public-Private Partnership and Member of the Executive Committee at the World Economic Forum.¶ The partnership will take 10 years and cost an estimated $4.7 billion – now possible due to the drop in costs of genomic sequencing. The Human Genome Project, by comparison, took more than a decade and cost $4.8 billion in 2017 to sequence the first human genome.¶ Putting the plan into action¶ The EBC will work by providing an open, global, public-good and digital platform that registers and maps the biological IP assets on the blockchain. This code bank will record the provenance, rights and obligations associated with nature’s assets – their intellectual property – to track their provenance and use. When value is created from accessing these assets, smart contracts would facilitate equitable sharing of benefits to the custodians of nature and to the bio-diverse nations of origin.¶ An important proof of concept for the EBP and EBC will be located in the Amazon basin in light of its rich biodiversity.¶ The pilot – known as the Amazon Bank of Codes – can be seen as an initiative that offers practical means to indigenous and traditional communities and local actors in the Amazon basin, and the Convention on Biodiversity at the international level, to eliminate bio-piracy. Bio-innovators in the Amazon and worldwide would tap into a store of data that accelerates the likelihood of scientific breakthroughs with a one-stop shop for nature’s assets. A fair share of the economic value created from such breakthroughs would automatically be returned to the custodians of the various components of nature’s assets in the Amazon.¶ For indigenous and local communities, the value could be immense. At the same time, it helps shift local incentives away from short-term forest clearance towards longer-term preservation.¶ This platform would help support national regulators in the Amazon and implement the fair and equitable sharing of benefits as intended by the 2017 Nagoya Protocol, which governs access to genetic resources.¶ Following this proof of concept, the EBC, in partnership with the EBP, would facilitate a similar approach in other areas rich in biodiversity on land and in the oceans.¶ The World Economic Forum System Initiative on Shaping the Future of Environment and Natural Resource Security will offer its platform and networks to help advance the development of the EBC as a discrete project in its wider partnership with the EBP. This will form an associated workstream of the System Initiative’s Fourth Industrial Revolution for the Earth Initiative. By providing a platform for the partnership between the EBP and the EBC, the World Economic Forum’s Fourth Industrial Revolution for the Earth Initiative will enable experts from across the public, private and research sectors to work together on developing guidelines that maximize the opportunities and minimize the risks to society from such an innovation.¶ “Scientists and entrepreneurs are now able to tap into a new source of knowledge that could be the driver behind the next generation of novel technologies. If the dividends are shared equitably, an inclusive bio-economy could be created that provides a significant new funding stream for conservation and sustainable development efforts centred on the custodians of nature,” said Juan Carlos Castilla-Rubio, Founder and Chairman of Space Time Ventures, Founder of the Earth Bank of Codes and member of the World Economic Forum Global Future Council on the Environment and Natural Resource Security.¶ "The partnership will construct a global biology infrastructure project to sequence life on the planet to enable solutions for preserving Earth's biodiversity, managing ecosystems, spawning bio-based industries and sustaining human societies,” said Harris Lewin, Distinguished Professor of Evolution and Ecology, Robert and Rosabel Osborne Endowed Chair, University of California, Davis, member of the United States National Academy of Science and Chair of the Earth BioGenome Project.¶ There is still work to be done. For example, the additional $4.7 billion needed for ongoing scientific research has still to be raised. Also, the regulatory framework, governance and data-sharing principles and protocols will need to be developed alongside the research to ensure that the risks to society are minimized, the opportunities for societal benefit are maximized, and the fair and equitable sharing of benefits is operationalized.

## AT Innovation

#### Patents are good---key to innovation

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The Role of Patents Firms that manufacture antibiotics face conflicting incentives with respect to resistance. On the one hand, bacterial resistance to a product can reduce the demand for that product. On the other hand, the resistance makes old drugs obsolete and can therefore encourage investment in new antibiotics. Pharmaceutical firms are driven to maximize profits during the course of the drug’s effective patent life—the period of time between obtaining regulatory approval for the antibiotic and the expiration of product and process patents to manufacture the drug. Given the paucity of tools at the policymaker’s disposal, the use of **patents** to influence antibiotic use may be worth considering. A longer effective patent life could increase incentives for a company to **minimize** **resistance**, since the company would enjoy a longer period of monopoly benefits from its antibiotic’s effectiveness. Patent breadth is another critical consideration. When resistance is significant, other things being equal, it may be prudent to assign **broad patents** that cover an entire class of antibiotics rather than a single antibiotic. In such a situation, the benefits of preserving effectiveness could outweigh the cost to society of greater monopoly power associated with broader patents. Broad patents may prevent many firms from competing inefficiently for the same pool of effectiveness embodied in a class of antibiotics, while providing an incentive to develop new antibiotics.

#### Longer patents are net-good, downsides aren’t outweighed by the benefits

David Abrams 9, Assistant Professor of Law, University of Pennsylvania Law School, “Did TRIPS Spur Innovation? An Empirical Analysis of Patent Duration and Incentives to Innovate,” <https://scholarship.law.upenn.edu/faculty_scholarship/274/>

Let us consider the increase in value of innovation due to a one– standard-deviation increase in patent-term extension. The standard deviation of the term extension (by class) is 114 days (see Figure 6 for the full distribution). Multiplying this by the coefficient above, we find that a one-standard-deviation increase in patent term extension is associated with an increase of about seven monthly patents. From a mean of approximately thirty-four, in percentage terms, this comes to a twenty-one percent increase in value of innovation—a very substantial increase. It seems unlikely that the deadweight loss due to exclusive rights would be enough to offset this considerable gain, suggesting that an increase in pat

## AT WTO

#### No link. Conflict has happened before. The EU. Conteols an enourmous part of the WTO, the WTO fill follow the EU. The WTO is not a private entity. It is a bunch of states deciding to make treaties. Unless they can provide conclusive ev that says that individual countries don’t like the EU, then they shouldn’t win a klink

#### Cx they said that they don’t spec actor so we default to the plan text. The meber nations each enact the plan individually which there is no lnik to strengthening wto for.