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Capitalizing Health

The Struggle over Value and Treatment Access

> It is crystal clear to me that the body is an accumulation strategy in the deepest sense.
>
> —DONNA HARAWAY[1]

> As soon as the drugs appeared, they've been snatched from our grasp.
>
> —BRIAN EDLIN, INFECTIOUS DISEASE PHYSICIAN[2]

In the winter of 2015, I accompanied a liver specialist in the United Kingdom's National Health Service as he counseled a patient with hepatitis C on the new sofosbuvir-based treatment. After reviewing the printed dosing instructions, the physician closed with a sobering piece of advice: "Guard these medicines with your life."

His words struck me. Life, in this formulation, needed to guard the medicine—rather than the other way around. Indeed, many health systems, including the National Health Service, were paying a significant sum for each bottle of pills. Gilead Sciences, and the pharmaceutical industry at large, had told health systems that paying high prices upfront for these medicines would mean billions in economic value for society, thanks both to improved quality of health and to downstream savings from averted liver transplants and hospitalizations. Health itself, it appeared, could be capitalized—framed as the financial value of future healthiness—and flowing as a stream of earnings to a pharmaceutical company.

This chapter traces Gilead's attempt to capitalize health from two angles. First, we follow how in setting its prices, Gilead not only used its coercive political power and gatekeeping role over intellectual property but also sought to establish a hegemonic influence over the very definition of "value" in drug pricing debates. A crisis of treatment access ensued as Gilead charged "value prices" in financially valuable territories such as the US and many other high- and middle-income countries. But the company also licensed access to sofosbuvir-based medicines in a specific set of less financially valuable territories where public health programs could be a

possibility. This strategy engendered political contestation in various forms, from patent disputes to government action to reduce drug prices. Analyzing the struggle over Gilead's pricing and patent licensing strategy reveals the ways in which the logics of value in financialized capital colonize debates over public health policy, and also the shape of resistance to the prevailing political economy of biomedicine.

Second, we trace Wall Street's response to the tenuous status of sofosbuvir as a financial asset. Because they cured the disease, sofosbuvir-based regimens would, over time, shrink the "market" of hepatitis C patients. Thus the treatment threatened the future growth on which its value as an asset in financial markets depended. As Wall Street soured on Gilead's declining growth prospects, the company responded with a series of financial machinations to generate accumulation for shareholders. These moves would echo strategies described in chapter 2, including price increases, patent extensions, and drug acquisitions. Taken together, these two areas of analysis—Gilead's pricing strategy and Wall Street's response to a curative asset—take us into the extractive strategies that underpin financialized drug development, as well as the system's multiple pitfalls and vulnerabilities.

HEALTH AS A FINANCIAL ASSET: SETTING AND JUSTIFYING A $1,000-A-DAY PRICE FOR A CURE

As sofosbuvir-based treatments advanced in clinical trials, Gilead turned to the looming question of the treatment's price tag. Because of the Senate Finance Committee's investigation, which reproduced hundreds of pages of internal corporate documents, we are offered a window into the company's approach to drug pricing. Gilead's pricing strategy was tethered to the financial market expectations that had driven the chain of speculative capital behind sofosbuvir. Internal documents show how Gilead set prices for sofosbuvir by adding a "value premium" to the prices of existing standards of care, anticipating that health systems could be compelled to pay more for better treatment.

As Gilead encountered political resistance to these high prices, it used not only its coercive political power but also its hegemonic influence to shape the definition of "value" in drug pricing debates. Along with its industry allies and even many health policy experts, Gilead pitched the notion of paying high prices for the "value" of better future health as a commonsensical, taken-for-granted idea. Drawing on a combination of moral-economic discourses and valuation practices, Gilead sought to shift the responsibility to governments: if public officials valued the health of patients with hepatitis C—and the improvement that future cures could bring—they should be willing to pay the price for that value. Yet this configuration of "value" was a kind of veil, hiding the dynamics of financialization which enabled significant *value extraction*. In sum, Gilead's strategy for setting prices and framing "value" illustrates how the speculative and extractive logics of financialized drug development shape drug pricing and public health policy.

Setting a Price for a Cure: Floors, Ceilings, and the Value Logics of Financialized Capital

The Senate Finance Committee's report describes how, as clinical trials for sofosbuvir-based medicines proceeded in 2013, a senior leadership group within Gilead called the Global Pricing Committee met with IMS, a healthcare consulting group, to set the prices for these new medicines. These deliberations give insight into Gilead's "value pricing" strategy in the US and other high-income countries—a strategy which involved assessing the upper bounds of what health systems could be compelled to pay.

To seize the opportunity it had seen in hepatitis C, Gilead based its pricing strategy on the premise that new treatments would be easier for patients to take and lead to better health outcomes than previous medicines. This improvement would carry significant "value" for health systems that could be translated into a price point. To perform this translation, the company considered two primary factors: the prices of existing medications, which served as a kind of pricing *floor*; and estimates of the upper limits of what health systems could bear, which offered a kind of pricing *ceiling*. These factors pointed Gilead to an eventual price of $94,500 for their sofosbuvir-based combination therapy.[3] As is typical practice, this would become the US "list" price, from which Gilead would derive mandated or voluntarily discounted "net" prices, depending on the specific health system.

From the outset, Gilead used the prices of the existing standards of care as a *pricing floor* for its sofosbuvir-based regimens.[4] One example from Gilead's deliberations highlights this approach. In a March 2013 briefing presentation with senior vice presidents, Gilead reviewed the pricing landscape of the standard-of-care therapies. Two "first-generation" antiviral therapies had been launched in 2011 that were used in combination with the original interferon-based regimens: Vertex's telaprevir and Merck's boceprevir.[5] Telaprevir had fewer side effects and more widespread use.[6] In their model, Gilead took telaprevir's price as $55,000 based on a scan of the prices Vertex was charging at the time (early 2013). Telaprevir still required an average of nine months of ribavirin plus injectable interferon as part of a complete regime. Adding this nine-month cost of interferon and ribavirin ($28,000) to the price of telaprevir meant an average total price of $83,000 for the existing standard of care at the time.[7] This pricing floor can be viewed as the cumulative effect of previous increases in prices for hepatitis C medicines and the "pricing escalator" described in chapter 1.

As a slide from Project Harry illustrates (Figure 6), Gilead's executives considered this $83,000 price point as a "baseline," compared to which sofosbuvir's "value premium" could command a higher price. They highlighted four key features of sofosbuvir that could be used to justify this premium: higher cure rates (sustained virologic response, SVR), increased tolerability (fewer side effects than

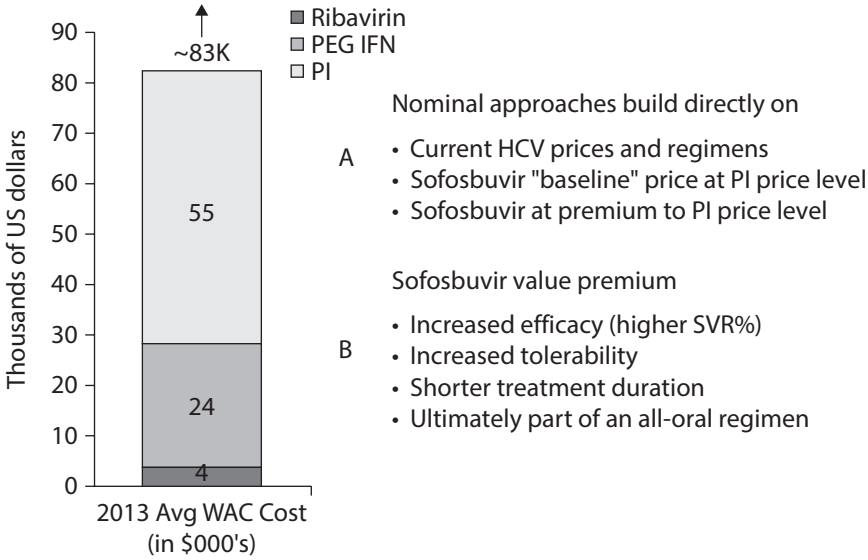

FIGURE 6. Gilead's initial pricing was based on the existing standard of care. Gilead's initial pricing approaches (A) "build directly on current HCV prices and regimens." Taking these as a baseline, sofosbuvir's higher quality would suggest (B) a "value premium" (letters added). "PI" here refers to the protease inhibitor medicines that were the standard of care at the time. Source: US Senate Committee on Finance (2015: 1348).

interferon), shorter treatment duration (only three months, compared to an average of nine months), and no need for injections (an all-oral regimen).[8]

Gilead's executives then sought to estimate the upper bounds of what this "value premium" could be by asking IMS to survey US health systems regarding how much they would pay for improved therapeutic outcomes. These surveys, which involved 90 officials in public and private health systems, helped Gilead estimate the price ceiling for sofosbuvir-based medicines. While their research clearly showed that lower prices would increase access to sofosbuvir, the surveys also gave Gilead confidence that a price range of $85,000 to $95,000 could be acceptable across a wide variety of health system payers, from commercial insurance plans to Medicare and Medicaid.

IMS's final recommendations also noted, however, that other, "softer factors must be considered."[9] Specifically, multiple stakeholders had pointed to the potential for public outcry due to the large number of hepatitis C patients waiting for better treatment. In addition to the survey, IMS prepared a "heat map" of the social and political responses Gilead might face from multiple key groups, such as patient activists and the US Congress, to different price points (Figure 7). This chart helped Gilead estimate the bounds past which "public outcry" or Congressional action would be likely.[10]

Stakeholders	*Wave 1 Regimen*	*$60,000*	*$70,000*	*$90,000*	*$105,000*	*$125,000*
	Wave 1 SOF product (12 wks)	*$50,000*	*$60,000*	*$80,000*	*$95,000*	*$115,000*
	Wave 2 FDC (8 wks or 12 wks?)	*$70,000*	*$80,000*	*$100,000*	*$115,000*	*$135,000*
Payers	Likelihood of applying directly observed therapy due to high price	Unlikely	Possible	Possible	Likely	Likely
Physicians	Likelihood of delay treatment of GT-1 TN patients due to pricing	Unlikely	Possible	Possible	Likely	Likely
	Likelihood of losing some KOL endorsement/support as price too high	Very Unlikely	Unlikely	Possible	Likely	Likely
	Likelihood of getting rejection on TE patients and delay treatment for all due to misconception of restriction for SOF	Possible	Possible	Possible	Possible	Possible
Patients and Advocacy groups	Likelihood of AHF, FPC and other advocacy groups reacting negatively to price, and affecting public opinion	Likely	Likely	Very Likely	Very Likely	Very Likely
	Higher out-of-pocket costs (not offset by patient support) could drive patient choice away from SOF, especially AbbVie has great patient support programs	Very Unlikely	Very Unlikely	Unlikely	Unlikely	Possible
	Likelihood of AHF, FPC and other advocacy groups promote AbbVie product due to the relationship and lower price	Unlikely	Unlikely	Possible	Possible	Likely
Treatment Guidelines	Likelihood of AASLD develop treatment pathway to prioritize (staging) patients (per KOLs or/and professional community request)	Possible	Possible	Possible	Possible	Possible
	Likelihood of a "price mention or asterisk" in AASLD (per KOLs or/and professional community request)	Unlikely	Unlikely	Possible	Possible	Likely
Others	Likelihood of public outcry if SOF revenue exceed $28 as government trying to control healthcare cost	Possible	Possible	Possible	Likely	Very Likely
	Likelihood of a letter from congress on SOF price	Possible	Likely	Likely	Likely	Likely
	Likelihood of a congressional hearing if SOF revenue exceed $28	Unlikely	Unlikely	Unlikely	Unlikely	Possible

FIGURE 7. Gilead's assessment of potential stakeholder responses to sofosbuvir's pricing. Gilead attempted to assess the severity of negative responses at the upper limits of the pricing range. For example, they anticipated "likelihood of a letter from congress on SOF price" at even $70,000 for sofosbuvir. Source: US Senate Committee on Finance (2015: 30).

Gilead's meeting with the Fair Pricing Coalition previewed this public pressure. A patient group that provided input to pharmaceutical-company executives on drug pricing, the coalition believed that sofosbuvir's price should reflect the great number of patients expected to receive it. The coalition's director, Lynda Dee, had already communicated this view at the FDA review meeting on sofosbuvir: "I mean, if the price of telaprevir and boceprevir I think is already exorbitant. I mean, if you could price it even close to what those drugs are, I think that you would be reasonable under the circumstances, and you'd still make a fortune. The volume that you're going to get for this is I think it's outstanding."[11] In their direct meeting with Gilead, the group communicated their hope that Gilead would set a price of $60,000, which roughly matched the price of telaprevir without interferon or ribavirin.

These appeals, however, were countered by a set of expectations from a powerful set of players: Wall Street investment analysts. In late October 2013, as Gilead prepared to launch sofosbuvir, Mark Schoenebaum—known then as one of the top biotechnology investment analysts on Wall Street—sent an email to Robin Washington, Gilead's CFO (and a member of the company's pricing committee) at the time, with the results of his own research. Schoenbaum had asked 203 investment analysts "Where do you think GILD [Gilead] will price 12 weeks of single-agent sofosbuvir?" The average answer was $85,400.[12]

On November 23, 2013, just two weeks before the FDA's decision date and the likely approval of sofosbuvir, Gilead's senior leadership arrived at their US launch

price: $84,000. In an email to the senior leadership team, CEO John Martin noted that the per-bottle price of $28,000 (one bottle lasting a month, making the total $84,000 for a three-month treatment) would be "easy from the press release, from 28 days and $28,000."[13] Gilead's other senior leaders concurred on the email chain, figuring that $1,000 a day for a cure would make for an easy marketing push. Instead, this easily digested figure became a target in the latest political battle over drug prices.

Ten months later, Gilead would launch its sofosbuvir-based combination therapy (which eliminated the need for interferon in all hepatitis C patients) at a price of $94,500. Gilead arrived at this figure by following the logics of the "value premium" described above, adding about $11,500 from Vertex's prior interferon-containing standard of care.

The launch prices of sofosbuvir-based treatments, then, served as a culmination of the pricing escalator that had been intertwined with financialized capital. Wall Street and drug companies predicted that health systems would pay high prices for the "value" of better treatments; drug companies had the patent-protected power to set those prices. Gilead's launch price also underscored the company's role in the chain of speculative actors that were a part of sofosbuvir's trajectory: that of an acquisition specialist betting on hepatitis C assets, with the power to turn expectations of future prices into a realized outcome. Gilead's efforts would now turn to the political process of getting health systems to pay high prices for the purported value of future health.

Justifying a Price: Health as Financial Asset with Future Value

Gilead's pricing approach triggered a crisis in treatment access and a contentious public debate over the value of new breakthroughs, landing the company on the front pages of the news media.[14] National network television in the US ran with stories of treatment restrictions faced by veterans and patients with Medicaid insurance due to sofosbuvir's price. Activists at the 2014 World AIDS Conference in Melbourne held a "die-in" to protest the company. By the summer of 2014, the Senate Finance Committee had launched an investigation into Gilead's pricing strategy.

In this politically contested space, the company's leadership shifted the discussion to what they believed would be favorable ground. Gilead executive Gregg Alton told a journalist, "Price is the wrong discussion. . . . Value should be the subject."[15] Value, from this perspective, meant the economic value of future health made possible by curing patients with hepatitis C. Paying the prices for these medicines, in Gilead's framing, was well worth this value. While I focus on the United States in my description here, such debates over pricing and value resembled those taking place in many other high- and middle-income countries where Gilead sought to charge "value prices"—lower than in the US, but still at the upper bounds of what health systems could afford.

To pursue this strategy, Gilead mobilized its overt political power, seeking to directly influence public officials and politicians. After the advent of sofosbuvir, Gilead's lobbying expenses more than doubled, from $1.59 million in 2012 to $3.48 million in 2016.[16] Gilead also made direct political contributions to public officials, including Richard Burr, the ranking Republican senator on the Senate's VA committee. In a Senate hearing, Burr echoed Gilead's argument, calling the focus on prices "misplaced" and urging his colleagues instead to "examine the long-term benefits groundbreaking therapies bring to our veterans and to taxpayers."[17]

But Gilead's strategy of "value" was not one of straightforward coercive dominance over public officials. Rather, Gilead's influence can be understood in terms of Sunder Rajan's work on *hegemony* and the pharmaceutical industry, in which he shows how corporations create a new "common sense" over the very terms used in health policy debates.[18] To establish a hegemony over value, Gilead pursued two strategies: enacting a moral-economic discourse to shift responsibility to health systems, and drawing on technocratic valuation practices that garnered credibility in influential policy and academic circles. In the new sensibility they sought to inculcate, high prices were the investment society needed to make to realize future health.

First, Gilead enacted this moral-economic discourse across its public communications as it launched sofosbuvir-based treatments. In a press statement regarding Harvoni's launch, for example, Gilead argued that the price "reflects the value of the medicine," emphasizing that "unlike long-term or indefinite treatments for other chronic diseases, Harvoni offers a cure at a price that will significantly reduce hepatitis C treatment costs now and deliver significant savings to the healthcare system in the long term."[19] John Milligan, the company's chief operating officer, would echo this refrain of value at a Brookings Institution policy forum: "We were providing more value, better outcomes, shorter duration, better patient experience at the same cost as the standard of care."[20] In their narrative, the "cure" secured substantial gains in health that translated into economic value—value for which health systems should pay.

This strategy aimed to shift responsibility to governments and public health systems—not for reducing drug prices but for appropriately valuing a curative treatment by paying the prices Gilead was charging. In 2015, Gilead put its rhetoric into practice by limiting enrollment in its "patient assistance program" for hepatitis C drugs, which had previously helped some patients gain access to the sofosbuvir-based treatments. By limiting enrollment, a *Wall Street Journal* article explained, "Gilead appears to be counting on patients to complain to payers about a lack of access."[21] One of Gilead's executives said, "We believe that payers should take the responsibility to provide coverage for their insured patients based on the treatment decisions of their healthcare providers."[22] In this framing, public health systems—which covered other expensive treatments that offered less benefit—needed to pay up for a curative medicine.

The access restrictions put US states under pressure from advocacy and civil society groups. As Robert Greenwald, a professor at Harvard Law School and faculty director of the school's Center for Health Law and Policy Innovation, put it, "If there were a cure for breast cancer or Alzheimer's or diabetes, people would be storming the White House to make sure those medicines were available to everyone, you can be sure of that."[23] He continued, "But we've responded completely differently with the cure for hepatitis C because of the stigma associated with that disease." In an effort to redress this situation, patient and civil rights groups launched a string of lawsuits against US states, with courts determining in most of these cases that state Medicaid and prison systems could not legally withhold access. States like Michigan, Missouri, Pennsylvania, and Florida all changed their access requirements or reached settlements due to these lawsuits.[24]

To buttress this moral-economic narrative, Gilead's "value pricing" strategy drew on a set of valuation practices from clinical medicine, health technology assessments, and epidemiology. These practices translated the value of health gains into quantifiable, future-oriented economic terms—terms that could then be used in influential policy and academic circles to bolster claims of value. This knowledge amounted to a kind of "valuation science," a set of methodologies that have been used, particularly in Europe, in the vexing public task of allocating budgets "cost-effectively." A prime example is the UK's National Institute for Clinical Excellence, which evaluates the costs and benefits of treatments and makes recommendations on whether the country's National Health Service should pay for a given treatment.

Though the US health system has eschewed the mandated use of such assessments—in large part due to historical industry opposition—such valuation practices have increasingly become part of the public debate over healthcare. In the realm of drug pricing, some progressive reformers have urged the use of valuation practices—similar to those used in Europe—to assess whether a treatment demonstrated its value at the price being charged by drug companies.[25] Reformers have plausibly presented "value assessments" as a rational approach to balancing incentives for innovation while also regulating prices in a way that directs industry capital and public budgets toward the treatments that yield the most health benefits. Such reforms may be making headway in the US, as signaled by legislation passed in the summer of 2022 which includes a limited use of value assessments as part of government negotiation of drug prices.

The emergence of the Boston-based Institute for Clinical and Economic Review (ICER) as an influential body in drug pricing debates reflects this growing focus on "value."[26] ICER assesses the cost-effectiveness of drugs and releases public reports that can be used by health systems to determine whether a given treatment is worth the price. The pharmaceutical industry has continued to be largely opposed to the mandated use of such assessments in the US, for fear they could curb prices in their largest revenue market. Yet on the other hand, the industry

has trumpeted "value-based" approaches to buttress its much broader moral-economic discourse of value.

Gilead's strategy on hepatitis C drew on pharmacoeconomic assessments to legitimate its prices in influential policy and academic communities. In a 2014 call with Wall Street investors, Gilead's chief operating officer, John Milligan, pointed to "publications out there, not by Gilead, but by respected people in the field," who can "start these conversations" regarding value "in more of an academic, collegial way." In referring to these studies later in the investor call, the company's chief scientific officer said that Gilead was working on "putting all of this together into a bigger pharmacoeconomic argument".[27] This "pharmacoeconomic argument" rested on a combination of three sets of knowledge practices which positioned sofosbuvir-based treatments as valuable for health systems.

First, clinical medicine methodologies developed in the postwar era, such as long-term tracking studies and randomized clinical trials, enabled assessment of the potential population-level effects of treatments on downstream disease. As Joseph Dumit has traced in his book *Drugs for Life*, these knowledge practices abstracted health from a "felt illness" model of disease into "statistical health."[28] Pharmaceutical consumption, in this model, enables health by reducing the risk of future disease progression. In the field of hepatitis C, long-term studies by the CDC and NIH found that liver dysfunction and mortality were long-term consequences of the virus.[29] Randomized clinical trials of successive generations of hepatitis C treatments found potential benefits of treatment with respect to these consequences.[30] The potential to reduce future disease risk through early treatment, in turn, became a locus of potential financial value for pharmaceutical businesses.

This locus of value was made visible by a second set of epistemic practices: a burgeoning field within economics of "health technology assessment," which has sought to assess the future benefits versus the costs of a given treatment in comparison to an existing standard of care.[31] With the prices of new medicines typically many times the median wages of individuals, this cost–benefit assessment falls to health systems. As buyers of medicines, health systems weigh how to generate the most health improvement for their populations with the money they have, a process known as "comparative cost-effectiveness research."[32] In this research, new treatments are tested for whether they can create more health in the future than other interventions—the unit of health being *quality-adjusted life years* (QALYs). These benefits are then weighed against the costs of the new treatment, and this ratio is compared with the benefits and costs of comparative interventions. with health systems using a "value threshold"—the upper limit of what they are willing to pay for one more unit of health—to determine whether they will approve funding for a new treatment. This threshold varies between health systems. In the UK it ranges from $30,000 to $40,000 per QALY; US economists use $100,000 to $150,000 per QALY.[33]

In the hepatitis C case, a series of eight health economics papers published in the two years after sofosbuvir's launch (with authors including prominent hepatitis C experts like John Ward, then the CDC's chief of viral hepatitis) each affirmed the pricing of sofosbuvir-based treatments as "value-based" using cost-effectiveness methodologies.[34] One study summed up the commonly held finding: "Treating HCV infection at early stages of fibrosis appeared to improve outcomes and to be cost-effective."[35]

Manufacturers and health policy experts have also turned to a third practice: using epidemiological studies to quantify "prevention value," which models comparative treatment strategies for their *population-level* health and economic benefits. For an infectious disease like hepatitis C, such studies have computed the economic value of reduced disease transmission and improved health for cured patients. These studies have also calculated the savings from averted liver transplants and hospitalizations. One study published in *Health Affairs* and funded by Gilead Sciences, for example, estimated that giving sofosbuvir-based treatments at all stages of hepatitis C could generate $610 billion to $1.2 trillion in value in the US, with an additional $139 billion in savings over fifty years.[36] These valuation practices framed health as an asset—an economically valuable state achieved through therapeutic consumption of a curative medicine.

Drawing on the very knowledge practices and even the discourses used by healthcare reformers, this valuation regime supported Gilead's aim to create a new "commonsense view," not just within the industry but also among decision-makers and influencers in academia and public policy. In a 2014 *Harvard Business Review* article, "It's Easier to Measure the Cost of Health than Its Value," Amitabh Chandra, an economist and the director of health policy research at Harvard's Kennedy School of Government, wrote with his colleagues that while focusing on the price of sofosbuvir made for "good theater," it missed crucial points about the "value of the treatment," including the future savings from averted liver transplants.[37] Chandra and his coauthors all cited industry funding, including from Gilead Sciences. This view would be echoed by other peers within academia, such as Mark Roberts, chair of the University of Pittsburgh's Department of Health Policy and Management: "The most important thing to remember about cost-effectiveness is that something that is really expensive can still be cost-effective if it is really, really effective. . . . And these drugs are very, very effective."[38] Wall Street logics of value had become mainstream perspectives in health policy circles.

This position reinforced the idea of holding governments responsible for valuing curative medicines. And the logic extended not only to hepatitis C treatments in the present but also to potential future cures. In summing up an interview with a group of health economists at the American Economics Association's annual meeting in 2014, journalist Sarah Kliff found a common thread: "Sovaldi, many of them argued to me, is exactly the type of drug we should reward with high prices."

While acknowledging the tension around access to medicines, these economists shared a common view that "when push comes to shove . . . many prefer that we err on the side of higher prices as a way to encourage other big, blockbuster drugs in the future."[39] In their *Harvard Business Review* piece, Chandra and colleagues warned that driving down prices would represent an overreaction from the government and that "future generations [would] suffer from the depletion in innovation" that could result from such efforts.[40] By not paying high prices, in their view, health systems were endangering not only patients with hepatitis C but all patients who might benefit from curative medicines in the future.

The Veil of Pharma Value

This hegemonic view of value, however, is a kind of veil, hiding the many other possible conceptions of value. By themselves, value assessments can be a useful way for health systems to allocate funding to better treatments. Yet the "pharma version" of value advanced by Gilead and echoed by many health policy experts appropriated this rationality in a way that naturalized ever-higher prices demanded by a financialized system of drug development. Specifically, the pharma version of value hides three processes intertwined with financialized capital: rising drug prices over time, the power of monopoly protections, and the dynamics of value creation and value extraction.

As I described in chapter 1, each new generation of treatment sets a new pricing floor, leading to a "pricing escalator" for many diseases. In 1998 interferon regimens cost $19,000, but by 2002 they were $32,000 (for a modified version).[41] With the advent of telaprevir in 2011, the price of hepatitis C medicines leaped again, and by 2013 it exceeded $70,000 per patient.[42] Physician and policy analyst Peter Bach has pointed out the challenge this raises for analyzing prices using existing value frameworks: "Expensive drugs can still seem deceptively cost-effective, because of the long upward spiral we have seen."[43] Combined with the larger number of eligible patients that might stand to benefit from an improved treatment, such price trends create significant budgetary challenges for health systems. This fiscal challenge is why groups like ICER have called for "budget impact" to be one of the considerations in assessing the price and value of any new treatment.[44] But such calculations present their own moral dilemmas. When ICER assessed Gilead's initial prices in 2014 as too high, based on their potential budget impact given the large population of hepatitis C patients, it received pushback not only from industry but also from many in the health policy and hepatitis C treatment communities. These communities felt that such negative evaluations of a curative treatment's pricing would threaten widespread access and restigmatize an already marginalized patient population as not valuable enough to treat.[45] The turn to restrictions in treatment access in the early years of sofosbuvir-based treatments gave ample grounds to those fears.[46]

A second aspect hidden by the pharma view of value is that the rising trend in prices is less about future health benefit and more about monopoly power in financialized markets. With many goods, a higher price would result in a lower demand for the monopolists' product. Yet with medicines, what economists call the *price elasticity of demand* is much smaller, because people's health is at stake.[47] Higher prices are thus a manifestation of "what society can bear" in the face of monopoly power. Without the threat of viable competition, intellectual property protections enable companies like Gilead to charge prices at the upper bounds of what health systems can be compelled to pay.

These two points feeds into a third elision in the pharma view of value: the ways value is *created* and *extracted* in financialized drug development. While the industry describes "value" as its reward for taking risks, reward actually flows, via mechanisms of *value extraction*, to the financial actors that take the least risks: corporate shareholders. The scale of Gilead's share buybacks, for example, shows that financial markets in contemporary drug development are a vehicle for extracting capital from the large pharmaceutical companies charging high prices to health systems. Furthermore, financial markets offer a mechanism by which companies like Gilead can buy growth by acquiring promising assets like sofosbuvir. Such assets are the product of *value-creation* processes that are collective and cumulative in nature, building on public contributions to the drug development process.

The dominant industry narrative veiled these alternative considerations of value. Instead, Gilead sought a *hegemony* over value, in which prices ostensibly reflect the "value" that curative medicines have for health systems. In the process, Gilead attempted to naturalize the financialized political-economic order as a taken-for-granted system. But the account presented here illustrates that this dominant orientation to value enabled significant value extraction—which in turn would drive crises of treatment access and political resistance in a contentious terrain.

RATIONING VERSUS PUBLIC HEALTH: THE POLITICS OF VALUE AND THE CRISIS OF TREATMENT ACCESS

At a health center in south Los Angeles in the summer of 2015, I huddled with Paul, a clinical coordinator for HIV and hepatitis C patients. As he reviewed the roster of patients for the day, he spoke of an anger that had been smoldering for many months. Seventy of the clinic's patients with hepatitis C had yet to receive treatment. More than eighteen months had passed since the launch of sofosbuvir-based treatments. Yet California's public insurance program for low-income patients, MediCal, had set an array of hurdles between patients and treatment. Like many health systems across the US and the world, MediCal did this due to the price tag of sofosbuvir-based treatments. Posted on the wall next to Paul's

workspace were large sheets displaying a labyrinthine set of instructions, forms, and lab tests that clinic staff needed to pursue to see whether a patient could get approval for the new medicines. To this point, only one patient had been approved.

Such delays and denials of care stood in stark contrast to the promise of the new hepatitis C treatments. With cure rates nearing 100% in many clinical trials, the new class of direct-acting antivirals conjured visions of curing not just individual patients but entire communities. "Viral elimination" became a tractable possibility. In 2016, all 194 member states of the World Health Organization (WHO) adopted the goal of eliminating hepatitis C as a public health threat by 2030 (defined as 90% reductions in new infections and 65% reductions in mortality from the 2015 baseline).[48]

Yet this would depend on widespread access to treatment, which in turn would be shaped by the political struggle over Gilead's intellectual property and pricing strategy across the world. The divergent trajectories of drug pricing and treatment access that unfolded in the years following the launch of sofosbuvir-based treatments illustrate how Gilead's position as a global gatekeeper over valuable pharmaceutical assets enabled it to maximize financial accumulation, as well as the opportunities for governments and civil society movements to challenge this dominant position. For low-income countries, Gilead selectively licensed its intellectual property to Indian generic manufacturers to produce medicines priced at about $1,000 per treatment. In high- and middle-income countries, Gilead charged "value prices," which produced a crisis in treatment access as health systems rationed treatment. In countries like Egypt and Australia, which had different approaches to intellectual property and drug pricing negotiations, sofosbuvir-based medicines were provided at a fraction of their US launch prices as part of public health strategies aimed at eliminating the virus.

The concept of *countervailing powers* sheds light on these disparate outcomes. Coined by John Kenneth Galbraith in 1952 as he observed an economy dominated by large financial interests and corporations, the term refers to competing sources of power that could be used to bring fairness and balance.[49] This power could reside in government policy, union organizing, social movements, or even a competing large corporation. In the realm of drug pricing, countervailing power can be exercised by governments and civil society actors to the extent that they counter the dominance of drug companies. My aim here is not to offer an exhaustive account of the treatment-access struggles that ensued. Rather, my empirical goal is to show how Gilead's global strategy and the responses of countervailing actors led to sharply contrasting outcomes: some health systems paid "value prices" and rationed care, while others paid a fraction of these prices and created public health programs. These divergent outcomes illuminate the contours of financialization's impact on global public health as well as the sites of struggle and resistance that open alternative possibilities for valuing medicines.

Resorting to Rationing: Public Health Systems in the United States

In March 2017, a commission of viral hepatitis experts convened by the US's prestigious National Academies of Sciences, Engineering, and Medicine concluded that eliminating the virus by 2030 was a possibility with the "prompt, large-scale treatment of hepatitis C." However, the commission would explain, "the price of these drugs is a major obstacle to unrestricted treatment, especially for institutions of limited means such as the prison system and state Medicaid programs."[50] This stark warning was founded on three years of observations of a patchwork approach in which rationing of treatment played a prominent role.

Officials estimated that at the launch of sofosbuvir-based treatments, the US had over 4 million patients with hepatitis C. Some were uninsured; some were covered by a fragmented network of private and public health systems. Public systems were responsible for about half of this population, as these systems finance and deliver care for multiple populations disproportionately affected by hepatitis C—patients over the age of 65 (Medicare), low-income or disabled patients (Medicaid), veterans (Veterans Affairs), Native Americans (Indian Health Service), and the incarcerated (such as state prison systems).[51] This patchwork of health systems is one of the reasons the countervailing power of the US health system is limited: the government cannot maximize its role as a buyer for the entire nation. Though current health policy mandates certain pricing discounts from list prices for specific health systems, such as Medicaid, Gilead could still use its position as a monopolist over sofosbuvir-based treatments to pursue a "value pricing" strategy and charge the most each health system could bear.

These health systems had to grapple with the significant expense of trying to treat even a small fraction of patients with hepatitis C, let alone all those who could benefit. One prominent study estimated that the drugs to treat all hepatitis C patients in the US would cost $136 billion over five years, of which $61 billion would need to be paid by the government.[52] For comparison, federal spending by the US Medicare program on *all* drugs amounted to $120.7 billion in 2014.[53] While this same study found that sofosbuvir-based medicines provided good "value," these projected figures also exposed how the financialized logics of price and value challenged health systems' budgets.

In the face of these remarkable financial considerations, US health systems faced one of three scenarios, each with its own political constraints: reduce drug prices, find more money, or ration the treatment. Reducing drug prices was a possibility open to US policymakers. The approach that would have led to the most significant price reductions required breaking the patent monopoly Gilead had been granted over sofosbuvir-based treatments. Section 1498 of the Code of Federal Regulations, for example, gives the government the power to procure generic versions of patented drugs in exchange for royalties to the patent-holding

company. Drawing on prior precedent, a group of policy experts allied with Louisiana's secretary of health to advocate applying Section 1498 to sofosbuvir-based drugs.[54] The Obama administration, however, did not pursue this path. This reluctance to license intellectual property to generic manufacturers illustrates the limits of the countervailing power of the US state in the face of the political influence of the pharmaceutical industry.

Another strategy for drug price reductions would be direct negotiations between health systems and drug companies. Yet given Gilead's initial monopoly over hepatitis C treatments, buyers had little power or leverage. Gilead's prices later dropped below $50,000 for many US health systems with the entry of competing hepatitis C regimens from AbbVie and Merck. Facing legal action and with the opportunity to pay lower prices, some state Medicaid programs loosened their treatment restrictions. Yet the US national hepatitis C commission concluded that even a $40,000 price per patient would be a barrier to developing a public health program aimed at treating patients already with the disease and substantially reducing new cases.[55] At that price, the commission found, only 240,000 patients on Medicaid could be treated (over twelve years, at a cost of about $10 billion)—far short of the nearly 700,000 Medicare members with hepatitis C at the time. "It is unlikely," the commission found, "that market forces alone will lower the prices of these drugs sharply or quickly enough to meet the targets set."[56]

The US Medicare program, which finances drugs for patients over 65, faced a different challenge: the 2003 legislation that inaugurated Medicare's prescription drug plan explicitly barred the program from negotiating with drug companies.[57] The program spent nearly $14 billion on hepatitis C treatments between 2014 and 2015, with its total prescription drug spending rising 17% in 2014 from the prior year due in part to this spending.[58]

Medicare's funding increase for hepatitis C points to the second approach health systems could take: finding more money to pay for treatment. As a hybrid public–private program, Medicare's prescription drug spending in turn falls on a mix of private insurance plans and "patient-beneficiaries." With greater prescription drug spending, these beneficiaries have experienced rising copays and premiums. For health systems like the VA and Medicaid, finding more money is a thorny political task, reliant on congressional approvals and individual state decisions. For example, even with discounted prices, in 2015 the VA ran out of funding for hepatitis C drugs in the second half of the year after spending nearly 17% of its entire pharmaceutical budget on sofosbuvir-based treatments.[59] In early 2016, public pressure, stemming in part from two national news broadcasts devoted to the VA challenge, led Congress to allocate $3 billion for hepatitis C treatment.[60]

The Medicaid program, which is run by individual states, also faced challenges. Spending on drugs rose by 24% in 2014, in large part from Gilead's launch of sofosbuvir-based treatments. Yet with the program reliant on a mix of federal and state financing, public officials had to weigh the impact of hepatitis C

treatments on their budgets. These impacts involved opportunity costs across multiple areas of health and social spending. The Drug Pricing Lab at Memorial Sloan Kettering worked with the state of Louisiana, for example, to develop a web-based tool to let users see for themselves how paying for hepatitis C treatments, even at a discounted price of $28,000, would force difficult budget decisions and additional legislative processes to allocate funding.[61] Ultimately, the US Medicaid program spent $4 billion in 2014 to 2015 to treat only 7% of all its hepatitis C patients.[62]

A major reason for this small number is that Medicaid programs responded to Gilead's prices with the third option: rationing.[63] At least thirty-three states, including states with large numbers of hepatitis C patients, such as California, Texas, and New York, restricted patients by the stage of their liver disease, giving access only to patients with advanced fibrosis.[64] Many states also required that patients be alcohol and drug free in the month (or even the six months) leading up to treatment. Most observers concluded that these guidelines, which had no clinical basis, were set up purely as obstacles by which to delay access and contain costs.[65] Researchers at the University of Pennsylvania found that about half of Medicaid patients in a national sample were denied access.[66] These denials disproportionately fell on those populations at the most risk for worsening hepatitis C as well as transmission of the infection: low-income patients and those with a history of injection drug use.

Beyond the Medicaid system, these restrictions impacted another vulnerable population: incarcerated patients. The US prison system, which accounts for an estimated 15–25% of the entire hepatitis C population in the US, provided treatment to less than 1% of its patients by 2016.[67] State prison systems are not mandated to receive a discount from Gilead, making their access challenges even steeper than other public systems.[68] Restricting access in this population has been a major squandered opportunity for tackling the epidemic, as prisons are often the only stable source of healthcare for these patients; after release, they are also at higher risk for transmitting the virus in the community.[69] In total, approximately 230,000 patients were given sofosbuvir-based treatments across US public health systems over the first two years of their launch—a sizable number, but still a small fraction of the estimated 1.6 to 2.4 million hepatitis C patients with publicly funded insurance.[70]

With rationing, the US health system had deferred what new hepatitis C medicines promised: a public health plan to eliminate the threat of the virus. Having examined the landscape for over two years, the national commission of hepatitis C experts painted a bleak picture. Though "eliminating the public health problem of hepatitis C is feasible," the group concluded, it would "require near universal access to treatment, something that appears unfeasible given the current pricing and policy environment."[71]

For Gilead, as for much of the pharmaceutical industry, the US represents a significant share of global revenue. But Gilead also recognized that pricing "for

value," as the company had, would make rationing likely. A group of economists funded by Gilead, for example, cautioned in a study published in *Health Affairs* that rather than providing universal access, "new treatments must instead be meted out over time."[72] By their analysis, "limiting access to new therapies to a subset of diagnosed patients prolongs disease transmission and generates less value, but it is more realistic given system capacity constraints."[73] Rather than explore the option of lower drug prices, the authors promoted a strategy of treating 5% of patients with hepatitis C annually.

Investment analysts on Wall Street even openly wondered about the "positive" implications of such rationing for Gilead's long-term growth potential. Michael Yee, a leading investment analyst for the Canadian investment bank RBC Capital Markets, summed up this possibility in a note to his clients in May 2014:

> If payers prioritize or ration patients and limit use to only F3–4—would this be bad because F3–4 is only 30% of the market? Our conversations with investors over the last week is peak revenues might be less near-term but long-term tail is much longer . . . so this is much more attractive. . . . *So if anyone including Medicaid starts to limit to only sicker patients, this wouldn't dramatically worry us and could be better long-term*.[74]

Here Yee invokes a grim epidemiological calculus. Referring to the F0–F4 system for staging liver disease (with F3 and F4 representing more advanced disease), Yee suggests that the "long-term tail" of revenues in a rationing approach might be "better," because the virus could be transmitted to more patients and linger for longer in the population.

While this chilling calculation would not faze Wall Street, such rationing of treatment would exact a deep medical and psychic toll from patients and their providers. In the later stages of disease (such as F4), New Mexico physician Sanjeev Arora noted, the liver is as "hard as a rock."[75] He would go on, "treating someone for hepatitis C after they have developed cirrhosis is a little bit like closing the barn door after the horse has left." Without timely treatment, patients can develop a dreaded outcome: end-stage cirrhosis. Recalling experiences with her patients, nurse practitioner Laura Bush told an *Atlantic* writer, "At the end you die not knowing who you are, your belly looks 12 months pregnant, you're malnourished, and you're bleeding to death."[76] At the time of her interview in 2015, Bush had twenty patients waiting for sofosbuvir-based treatment at her community health center in New Mexico. While treatments were helping reduce mortality rates from the virus, delayed access combined with injecting drug use associated with the surging opioid epidemic led to a spike in new hepatitis C infections in the US between 2015 and 2018, from 33,900 to over 50,000.[77]

In sum, Gilead's Wall Street–backed pricing strategy, in the years following the launch of its treatments, conceived of the US not as part of a public health program to eliminate hepatitis C but as a financially valuable territory within which to execute its "value pricing" strategy. "Value," in this framing, was tethered to

financial growth for Wall Street, which in turn was connected to epidemiological visions of ongoing disease and infectious risk. With its fragmented health system and limited use of countervailing public powers, the US provided Gilead a route to significant accumulation.

Segmenting the World and Strategies of Countervailing Power: From Rationing toward Access

As of 2015, the WHO estimated that about 71 million people worldwide were infected with hepatitis C, and that it killed about 290,000 globally every year.[78] For pharmaceutical companies like Gilead, part of the financial allure of hepatitis C was the opportunity to sell medicines across the entire world, as the disease could be found in almost every country. Yet the new treatments for hepatitis C were arriving in the wake of the global HIV/AIDS struggle, in which patients in poor countries were denied access to medicines in the 1990s and well into the 2000s.[79] This triggered a decade-plus-long social movement of civil society and treatment activist groups that managed to bring significant political pressure on global pharmaceutical companies. And this pressure coincided with the mobilization of a generic drug manufacturing sector in places like India and Brazil that could produce medicines at far lower prices than global multinational corporations.

Amid the global HIV/AIDS struggle and in response to activist pressure, some multinational corporations developed access strategies for low-income countries. As a leading manufacturer of HIV/AIDS medications, for example, Gilead pursued a two-pronged "global access" program: first, the company worked with eleven distributors to sell their branded medicines on "tier pricing" terms (with prices according to the income level of a given country); second, they licensed their technology to generic manufacturers to produce the drug at a cheaper price for low-income countries hit particularly hard by the HIV/AIDS pandemic.[80] The two prongs led to treatment access for about six million patients with HIV, with medicines priced as low as $100 annually.

Playing out on this global terrain shaped by the struggle over HIV/AIDS medicines, Gilead's pricing strategy for hepatitis C would result in at least four different trajectories for sofosbuvir and treatment access outcomes. These divergent trajectories illustrate how Gilead's role as a gatekeeper over access to intellectual property in the global system allowed it to accumulate the scale of capital expected in financial markets—as well as the countervailing powers that governments and civil society groups can apply to drug pricing and access to medicines.

First, in "less financially valuable" territories—low-income countries like Rwanda, for example—the medicines were licensed to generic manufacturers who could sell them closer to the cost of manufacture. At a September 2014 press conference in Delhi's Taj Palace Hotel, Gilead announced that it would issue a license for its sofosbuvir-based treatments to seven Indian companies, enabling

them to provide cheaper versions of the treatment in ninety-one low-income countries.[81] With this strategy, Gilead aimed to bring a treatment priced at about $1,000 per regimen, about 1% of the cost of the same regimen in the US at the time, to countries that would otherwise not be able to afford the medicine. Under the license, the Indian generic producers would pay a royalty to Gilead but still make a profit on a medicine that was estimated to cost only about $100 to make. These medicines, in turn, could be used as part of public health campaigns. Yet middle-income countries such as Ukraine, Thailand, Argentina, Georgia, and Brazil—home to some 40 million hepatitis C patients—were excluded from this initial licensing agreement.[82]

This exclusion would be part of carving out a second, more lucrative trajectory for Gilead: middle- and high-income countries where large patient numbers offered the chance for significant capital accumulation. Given their resource limitations, such a configuration would be particularly problematic for middle-income countries and the millions of hepatitis C patients there requiring treatment.

This selective licensing strategy highlights Gilead's position as a global gatekeeper over intellectual property and access to medicines. This position was a function of decades of lobbying by multinational companies and advocacy by US and European governments to "harmonize" intellectual property rules across the world. The effort to create a global intellectual property regime favoring multinational pharmaceutical companies accelerated with the 1995 creation of the World Trade Organization. The WTO emerged from multilateral so-called "free trade" negotiations aimed at regulating global trade. From these negotiations, intellectual property rules for national governments were enshrined in the TRIPS (Trade-Related Aspects of Intellectual Property Rights) Agreement.[83] In simple terms, this agreement gave the WTO the power to enforce uniform intellectual property regimes, similar to those in the US and Europe, all over the world. As some observers have noted, this process enabled intellectual property law to serve as a kind of neocolonizing force, guaranteeing the protection of foreign property in regions made to be dependent on this property.[84] Joining this global trade regime required many low- and middle-income countries to forgo their own previous national governance over intellectual property, which in cases like India had historically not granted product patents for pharmaceuticals.

For Gilead, a globalized intellectual property regime posed a financial opportunity in middle-income countries with large numbers of hepatitis C patients. Even though the prices charged in these countries would be significantly lower than in high-income countries, treatment access would be limited without significant new public funding. The group I-MAK (Initiative for Medicines, Access and Knowledge) estimated that if Gilead charged $7,500 per patient—as it proposed in Brazil—it would cost nearly $270 billion to treat patients in middle-income countries.[85] Without action to challenge intellectual property or devote

significant new sums to hepatitis C treatment, rationing would be the norm in these countries.

In many high-income territories, like Canada, Australia, and across Europe, Gilead charged "value prices"—lower than those in the US, but still the most a given health system could be compelled to pay for the purported "value" of future health. In the United Kingdom, for example, where an estimated 214,000 people were living with hepatitis C, the National Health Service initially restricted access to select sites, before opening up access over time. Annual treatment rates doubled between 2014 and 2016, from 6,000 to 12,000 annually, but prices per regimen were in the range of $40,000.[86] It would take almost five years of lengthy negotiations and a court battle for the NHS to procure treatment from three companies, including Gilead, at the scale needed for hepatitis C elimination.[87]

This divergence between high- and middle-income countries on the one hand and low-income countries on the other, however, led to a third trajectory for treatment: the phenomenon of "buyers clubs," a movement of "personal importation" to access medicines across borders. Living in a polarized world of rationed patented medicines versus generic access, patients waiting for treatment pursued desperate measures, including importing sofosbuvir-based medicines themselves. Through buyers clubs found on the Internet, patients get advice on accessing specific treatments. Profiled in the *New York Times* in 2017, Gregg Jefferys was an early example of "personal importation" with hepatitis C. An Australian patient suffering from progressive disease and without access to the treatment in his country, in 2014 Jefferys traveled to India and brought back a full twelve-week regimen for $1,000.[88] After he began blogging about his experience online, he began receiving hundreds of requests. For those who could not travel to India, Jefferys would organize a shipment of generic medicines in exchange for $1,000, an identification form, and a prescription or medical report showing they had hepatitis C. Hundreds of such buyers clubs launched with the advent of the new class of hepatitis C treatment, a stopgap measure only accessible to those who could afford it. Such desperate measures are a direct result of configuring medicines as a scarce asset subject to the conditions of financialized capital and pharmaceutical-company gatekeepers.[89]

Finally, with the emergence and action of countervailing powers in various forms—activist pressure and patent opposition, government action, and the entry of competing corporations—a fourth trajectory developed: the use of sofosbuvir-based treatments in public health campaigns aimed at eliminating the virus. In the wake of sofosbuvir's launch in high-income countries in early 2014, activists from across the world seized on Gilead's pricing. For example, at the 20th International AIDS Conference, in Melbourne, Australia, a consortium of groups held a "die-in" to protest the company.[90] With lessons learned from the HIV movement, civil society groups pursued one of three options in their campaigns: pressure Gilead to

offer voluntary licenses to its patents; challenge governments to give compulsory licenses to generic producers; or directly oppose the patents in the legal arena.[91]

When in the fall of 2014 Gilead provided a voluntary license for low-income countries—an approach that the precedent-setting activism for HIV antiretrovirals made possible—civil society groups focused their attention on the many middle-income countries left out of the licensing agreement, as well as high-income health systems struggling to provide access. While activism centered on pressuring high- and middle-income governments to issue compulsory licenses, only some middle-income countries (like Malaysia) followed suit. Patent opposition became a central strategy.

In this effort, groups like I-MAK took a leading role in contesting the patentability of compounds like sofosbuvir-based medicines under a given country's laws on intellectual property. I-MAK's legal claims in the case of hepatitis C rested on calling into question the "inventiveness" of sofosbuvir's underlying patents, given that much of the science behind the compound was drawn from collectively and already known science at the time of its development and thus, by their view, did not merit the patent protections the medicines ultimately garnered. In 2015 the group joined with local civil society and patient advocacy organizations to dispute Gilead's patents in multiple middle-income countries, and would later succeed in getting authorities in Ukraine, Argentina, and China to reject key patents on sofosbuvir-based medicines.[92] Though the creation of public health programs would require further political leadership and investment, the successful patent challenges opened the door for generic medicines as well as price concessions from Gilead in these countries. Efforts to replicate this success in high-income countries have yet to bear full fruit, but a partial revocation of Gilead's patents in 2016 by the European Patent Office, won by Medicines du Monde and Medicines Sans Frontiers, along with I-MAK's victories in some middle-income countries, signals a vulnerability in prevailing patenting systems that can be used to "de-assetize" and thereby definancialize medicines.[93]

In territories where sofosbuvir-based medicines were taken less as financial assets and more as essential medicines in need of distribution, hepatitis C treatment was scaled up as part of national public health programs. Egypt is perhaps the most notable example. In the 1960s and 1970s, unsterile needles were used in a public health campaign against schistosomiasis, infecting six million Egyptians with hepatitis C. By 2014, 10% of the country's population, or nine million people, were chronically infected.[94] As Egyptian authorities began price negotiations with Gilead, the country scrutinized the drug company's application for a patent—and subsequently declined to issue one. Ultimately, Gilead agreed to sell its sofosbuvir-based regimens in Egypt for $10 a pill, or about $900 per three-month regime.[95] This allowed Gilead to still garner sizable profits, given the modest manufacturing cost and large patient numbers, while also supporting a flagship public health effort. With affordable medications, the government

launched an aggressive national campaign to screen, diagnose, and treat the millions of patients with the disease. At its current pace, the country is on a path to cut the disease's prevalence in half by 2023 and could even eliminate it in the near term with additional investments.[96]

In high-income countries where intellectual property protections remained in place, restrictions gave way to access when governments deployed their countervailing powers as the primary buyer of medicines. This power was eventually aided by the entry of pharmaceutical company AbbVie, which offered a formidable alternative to sofosbuvir-based medicine, at a 2017 list price of $26,400 in the US. Gilead later launched a "generic" version of sofosbuvir-based treatment at $24,000 in the US. With two competing treatments, governments had a stronger position from which to negotiate lower prices. This instance of price competition may be more the exception than a rule in drug markets, as illustrated by Gilead's HIV treatments.[97] Out of these negotiations emerged the concept of the "Netflix model" of treatment, which frames medicines as assets to which buyers—in this case health systems—pay a "subscription fee" for unrestricted access for a defined period, much like a Netflix subscription lets one watch any show Netflix carries.

Australia is a prime example, having used its power as a national buyer to bargain with Gilead for a better deal. At Gilead's initial prices, the county could not afford to scale up treatment. In 2015, however, Australian authorities negotiated an agreement with hepatitis C drug manufacturers, including Gilead, in which the country would pay AUD 1 billion (USD 766 billion) for unlimited access to hepatitis C treatments.[98] For Gilead, this deal provided a guaranteed lump-sum payment for a territorial jurisdiction that had otherwise capped the number of patients who could receive treatment—which in turn also capped the company's revenue. For Australia, the agreement incentivized the health system to diagnose and treat at-risk patients as early and as much as possible to reduce transmission in the population. A research institute in Australia estimates that the country is now on pace to eliminate the virus by 2026, four years ahead of the WHO's targets. One study estimated that the country had also saved nearly USD 5 billion, compared to treating the same number of patients at Gilead's previous per-treatment price.[99] In the US, some states have pursued an approach similar to Australia's, negotiating with Gilead and its competitor AbbVie for universal access to treatments in exchange for fixed payment over a number of years.[100] Louisiana and Washington, for example, struck such deals with hepatitis C manufacturers in 2019.

By mid-2017, Gilead estimated that sofosbuvir-based regimens had treated 1.5 million around the world.[101] The WHO estimated that by the end of 2018, five million people globally had been given curative hepatitis C treatments, with a significant share coming from sofosbuvir-based treatments (Gilead's branded or generically licensed treatments).[102] While this is significant progress, the WHO

estimates that about 71 million are still chronically infected. Drug prices are just one of the barriers to wider treatment: health system investments in diagnosis and delivery programs, as well as political commitment to caring for vulnerable populations (such as people who inject drugs), will be critical to reaching WHO's 2030 targets. Yet the unmistakable link between lower drug prices and greater access also indicates the global implications of a financialized drug development system, in which Gilead's position as a gatekeeper over intellectual property allowed it to carve sharply divergent trajectories for treatment access in different places to maximize accumulation for shareholders.

Gilead has publicly supported viral elimination efforts, but Wall Street's expectations for growth are in conflict with this promise. Asked by investment analysts about the company's revenue projections for Egypt, a Gilead executive cautioned against large financial hopes: "Given that this is a *public health initiative*, obviously, the revenue number is small per patient" (italics added).[103] This response begged the question, if "public health" was happening in Egypt, what was happening everywhere treatments were being rationed due to their price? This distinction made it clear that maximizing shareholder value—not the "value" of future health—made rationing an acceptable strategy, and the one Wall Street preferred.

THE PATIENT CLIFF: THE LIMITS OF A CURE AS AN ASSET

Gilead had success, by every financial metric, after its launch of sofosbuvir-based medicines. Its revenues tripled in two years, from $11 billion in sales in 2013 to over $30 billion in 2015, mostly on the strength of its hepatitis C medicines. In 2015, these medicines alone brought $19 billion in total sales.[104] Investment analysts couched this success in historic terms. In 2014's first-quarter call, one of biotech's leading investors, Mark Schoenebaum, congratulated Gilead's senior leadership on the "best launch of any drug of all time, that I'm aware of at least." A fellow analyst, Brian Skorney, added: "Let me congratulate you and maybe even one-up Schoenebaum by saying I think this was actually the biggest single quarter for a pharmaceutical product in U.S. history."[105]

The Wall Street celebration came with major gains for Gilead's shareholders, who could anticipate near-term revenue growth in each new quarter. When Gilead bought Pharmasset in late November 2011, its share price stood at $19. By June 2015, it had leapt to $122 (Figure 8). As I noted in chapter 2, Gilead's senior executives, as significant shareholders themselves, were major winners from this share price boom. This honeymoon, however, would be short-lived.

Even with revenues exceeding $20 billion, the company's share price fell by almost 50% from its peak in mid-2015 to April 2017 (Figure 8).[106] The problem: from a purely financial point of view, curative sofosbuvir-based treatments cut into the very market on which their value as an asset depended. For Gilead, this

FIGURE 8. Gilead's share price, November 2011 to April 2017. The price climbed from $11 in November 2011 (before the Pharmasset acquisition) to $122 in June 2015 on the strength of hepatitis C–driven growth. But with the treatment being curative and growth slowing, by May 2017 the share price had sunk back into the mid-60s. Source: Google Finance, GILD.

meant forecasts of slowing growth and ultimately declining revenues. To respond to this decline, Gilead turned to a series of machinations that would reinforce and intensify the processes of value extraction made possible by the intellectual property protections and financial markets highlighted in chapter 2. The process would lay bare the threat that financialization poses to drug affordability but also to future medical breakthroughs.

The Patient Cliff for Hepatitis C

Sofosbuvir-based treatments revealed a clash between public health and the conditions of shareholder-oriented growth: while universal treatment and cure would end an epidemic—the best possible public health outcome—it would also shrink the number of patients needing treatment. Rather than a patent cliff, sofosbuvir would lead to a *patient cliff*: gradually eliminating the disease would in time also eliminate the market for Gilead's product. I use the stylized image of the patient cliff to illustrate a key point: even though tens of millions of patients continue to have hepatitis C, what matters under the conditions of financialized capital are the possibilities of growth. As Joseph Dumit has described in his book *Drugs for Life*, such growth is strongest with chronic and recurring treatment over a life course.[107] In the absence of such growth potential, what financial markets see is a danger similar to the loss of intellectual property protections—an eroding of the future financial value that serves as the basis for value extraction.

Analysts on Wall Street had run epidemiological models of hepatitis C under different pricing, treatment, and competition scenarios. Bloomberg financial analysts considered, for example, three hepatitis C "market scenarios" for Gilead.[108] All three had one trend in common: a downward revenue trajectory. Gilead's predicament came in part from the population-level dynamics of hepatitis C that

had been triggered by the launch of sofosbuvir-based medicines. Before 2013, a sizeable proportion of patients had delayed treatment for many years due to the toxicity and lower response rates of interferon-based therapies. With Gilead's treatment approved in late 2013, these patients-in-waiting turned up in higher numbers than the company originally estimated.[109] The large numbers of patients eligible for treatment, even under restricted access guidelines, combined with the company's launch pricing to fuel a surge of revenue growth in 2014 and 2015. Yet this high growth rate appeared to be impossible to sustain with a curative therapy.

With Gilead's hepatitis C sales starting to plateau, Wall Street analysts focused on the limits to the potential growth of these curative medicines.[110] When Gilead "disappointed" with second-quarter sales of $7.7 billion in 2016, a 19% decline compared to the same quarter in 2015, the company's share price fell by nearly 10%.[111] Deutsche Bank analyst Gregg Gilbert noted, "While management pointed to increasing screening volumes and confirmed its prior estimate of about 1.5 million people in the US who are yet to be diagnosed, it also anticipates a gradual decline in new patient-starts going forward, especially in mature markets such as the US, Germany, and France."[112] These gloomy predictions led to a progressive drop in Gilead's share price: from its peak of $122 per share in June 2015, it fell below $70 per share by late January 2017 (Figure 8). One trader, Bret Jansen, summed up Wall Street's view of Gilead in late 2016:

> Being a shareholder in biotech juggernaut Gilead Sciences over the past two years has been akin to being stuck in the classic *Waiting for Godot* as one feels like he is waiting for something that will never happen. Despite seeing a ~600% increase in earnings from FY2013 through FY2015 driven by the blockbuster success of hepatitis C cures Sovaldi and Harvoni, the stock has gone nowhere as investors have worried that hepatitis C sales will continue to decline in the United States as the sickest patients have been treated and new competition will continue to emerge in this lucrative space.[113]

Gilead's rate of profitability, 55% in 2015 and 45% in 2016, became almost insignificant under this calculus of shareholder-oriented growth.[114] Yet as I described in chapter 2, the velocity and magnitude of growth demanded by financial markets run counter to the long-run risk-taking needed for new breakthroughs. To meet growth expectations, then, Gilead turned to a set of business strategies that further illustrate the mechanisms and consequences of financialized drug development.

Playing the Game for Growth: Patent Controls, Price Increases, and Acquisition and Buyback Cycles

In a January 2016 *Financial Times* piece, "Gilead Risks Becoming Victim of Its Own Success," the company's executive vice president at the time, Paul Carter, admitted, "There's this sort of pressure now we are a $30 billion a year revenue company. People are asking where the next 8 or 10 percent of year-on-year growth is going to come from."[115] In other words, the faster the company had grown in the recent

TABLE 6 Strategies to maximize growth and extract value for shareholders

Strategy	Execution	Examples from Gilead
Extend length of control over chronic-treatment assets	Focus on late-stage clinical trials that will extend patent protection for medicines for long-term patient use	Late-stage clinical trials for HIV that will create new patent protections for Gilead into the late 2030s
Boost revenue from existing chronic-treatment assets	Raise prices of current chronic-treatment medicines; Identify new indications that require long-term therapeutic consumption	Price increases on HIV drugs; Launch of PrEP treatment based on government-funded research
Buy assets and stocks in financial markets	Stockpile cash to acquire drug assets via the financial market; Use capital to buy back shares	$40 billion spent on multiple acquisitions between 2017 and 2020; $23 billion in share buybacks between 2014 and 2016

past, the faster it would have to grow in the near future. As Gilead searched for this growth, it turned to a familiar set of strategies: extending its control over the patent life of its treatments for chronic HIV/AIDS; raising the prices and broadening the indications for existing treatments; and executing a financial cycle of acquisitions and share buybacks. Studying these strategies (summarized in Table 6) reveals the ways in which financialization reproduces itself, and even intensifies—producing even larger financial gambles, flows of capital to shareholders, and ongoing machinations for drug price increases and patent extensions.

Controlling Patents for "Chronic Market" Treatments

As Gilead sought to sustain growth for its immediate future, the company would initially turn to its most familiar business, treatments for HIV/AIDS. An exchange at Morgan Stanley's annual healthcare conference, in September 2016, between an analyst and Gilead's CEO, John Milligan, illustrates Gilead's approach to growth.

> Matthew Harrison (Morgan Stanley): It feels like the default investor viewpoint is that Gilead has to be a growth company. So do you think that's reasonable, do you think that's accurate?
>
> John Milligan (CEO, Gilead, italics added): We had an unprecedented rate of growth through 2015, essentially tripling revenue in three years. *That's a very challenging thing to grow off of. . . . So that* [hepatitis C] *doesn't lead to the continuous growth that you would want*. Still great economically, still great in cash flow and will be a very important product category for us for the next decade or beyond. But I separated [hepatitis C and HIV] at the beginning for a reason. *If you look at where we can focus and what we can do, it's really off that base HIV business*. I think what we'd like to

> see is that business continue to grow and really ultimately eclipse the HCV business through new products and growth out of our pipeline, which we certainly have the potential to do in the coming decade.[116]

In this response, Milligan outlined Gilead's predicament of near-term shareholder-driven growth, and how the company sought to respond. As he reminds us, the predicament is two-fold. First, *growing off growth* is itself a challenge; the launch of hepatitis C treatments had set a high bar of growth that would be nearly impossible to sustain. Second, a curative therapy "doesn't lead to the continuous growth that you would want." Both the magnitude and the rate of growth expected by shareholders posed a threat to Gilead. To address this threat, Milligan shifted the attention of the audience to where Gilead had placed its near-term hopes: "If you look at where we can focus and what we can do, it's really off that base HIV business." Gilead's HIV medicines are not curative; patients with HIV must take them as a lifelong treatment. This lifetime demand makes these treatments particularly valuable intellectual property for Gilead.

To seize this financial possibility of growth through HIV treatments, Gilead maneuvered to extend the patent life of its HIV franchise by making incremental improvements to one of the key compounds in its existing treatments. Gilead's intellectual property protection for one of its two backbone HIV compounds, tenofovir disoproxil fumarate (TDF), was set to expire in 2017.[117] This would expose its two main HIV/AIDS regimens, Complera and Stribild, to generic competition—threatening approximately $11 billion in revenue—because both contained TDF.[118] But the company had a play to avoid this fate: it pursued approval of a "new" HIV compound with incremental but clinically significant improvements, tenofovir alafenamide fumarate (TAF).[119] The original TDF therapies had adverse side effects such as kidney dysfunction and bone loss in some patient populations, but the new TAF therapies showed milder effects by means of a smaller dosage based on a minor change in chemistry.[120] Though some scientists have challenged the extent of these clinical improvements, the TAF therapies received approval from the FDA in 2015.[121] Critically for Gilead's future growth, the intellectual property rights for their new HIV regimens (Odefsey and Genvoya, both containing TAF) will last into the late 2020s and early 2030s. And with list prices over $30,000 annually, Gilead will make hundreds of thousands of dollars *per patient* during the fifteen or so years that the company has patents over these medicines.

The story behind TAF has drawn public scrutiny and is at the center of multiple lawsuits, in which patient groups have alleged that Gilead deliberately delayed further clinical trials of the new compound for several years to extend its intellectual property protection for as long as possible.[122] Legal filings show that as early as 2001 Gilead scientists had published findings describing a less toxic formulation of tenofovir than TDF, and in 2002 they even performed a small trial, with thirty patients, demonstrating this result.[123] But Gilead's leadership halted further study

of the compound until 2010, and the results of the small trial were not published until 2014. As clinical trials of TAF were initiated after 2010 and accelerated in 2014–2016, a Gilead executive reported to analysts that the new alternative could add "a great deal of longevity" to its HIV business.[124]

In 2018, the company accrued $14.6 billion from its HIV franchise (up from $12.9 billion annually just two years before), which helped offset flagging earnings from its hepatitis C franchise. The centrality of HIV as a recurring revenue source for Gilead's business strategy is one of the reasons one business analyst lamented that "the cold, hard truth is that developing a cure for HIV could be detrimental to Gilead over the long run."[125] Unlike hepatitis C cures, which formed a new source of revenue, a curative treatment for HIV would eat into, or even eliminate, its main source of growth.

Price Increases and Wider Indications for "Chronic Market" Treatments

To maximize this source of growth from HIV treatments, Gilead engaged in two other moves: regular price increases; and marshalling government-funded research to identify a new patient population for its HIV medicines.

Price increases for HIV treatments were critical to sustaining the antiretroviral business as a continued growth vehicle for the company. As has become common practice across the industry, Gilead raised the prices of a range of its products at the beginning of each year. Between 2006 and 2011, the company raised the list prices of its HIV medicines from $13,800 per year to $25,874 per year.[126] Gilead has continued to raise the prices of Complera and Stribld—for example, by 7% each in July 2016, after 5% and 7% increases on those two drugs in January 2016.[127] In 2017 and 2018, they were increased by 6.9%, to over $30,000 annually. These price increases are now so regular that even an increase that is smaller than expected generates headlines like "Gilead HIV Drugs' Price Increase 30% Lower than Prior Years, Says Piper Jaffray."[128]

Beyond price increases, Gilead also used government-funded research to seek a new "indication" for existing HIV assets with the launch of their pre-exposure prophylaxis (PrEP) treatment. Taking a daily medicine called Truvada—which contains Gilead's older TDF compound—has been shown to *prevent* HIV infection in those at high risk, such as men having sex with men, heterosexual men and women with multiple sexual partners, and injection drug users. The genesis of this regimen lay in research first conducted by the CDC in the mid-to-late 2000s, in which Truvada's main components were seen to prevent transmission of the virus in monkeys. Approximately $50 million in federal funding from NIH, and an additional $17 million from the Bill and Melinda Gates Foundation, supported human clinical trials that showed that a daily dose of Truvada prevented healthy people from contracting the virus.[129] According to the CDC, 1.1 million Americans could stand to benefit—creating a whole new "market" of potential patients for the company.[130] In 2012, Gilead received regulatory approval from the FDA to extend

Truvada's initial indications from suppressing the virus in people with HIV to also reducing the risk of acquiring HIV sexually.

Gilead's PrEP treatment has grown steadily since its launch in 2012, with over 200,000 patients in the US now using the regimen (up from 22,000 in 2014). But one reason why even more people have not started on PrEP is the price: nearly $2,000 a month in the US by 2018. Though the CDC has patents on Truvada's use as PrEP due to its pivotal early work, the US government has yet to exercise its ownership rights, such as by demanding royalties or lower prices.[131]

The long history of price increases for HIV drugs is one of the central factors blamed for the relatively slow uptake of PrEP.[132] A report by HIV activists known as the PrEP4All Collaboration estimated that it would take more than twenty-two years for the pill to reach all who might benefit from prophylactic treatment if prescriptions continued at their current rate.[133] In countries in which Gilead's patents for Truvada have expired, a one-month supply of the generic treatment costs less than $10 a month. Rapid adoption of this generic treatment in Australia, for example, has raised hopes the country might be able to make new infections a rare occurrence—and potentially eliminate HIV.[134] Yet even price increases and broader indications for existing HIV medications would not provide the rate of growth necessary to satiate the expectations of financial markets. Despite its new approach to its existing medications, Gilead's quarterly growth projections continued to shrink as 2016 rolled into 2017.

Acquisition and Buybacks

To meet shareholder expectations, Gilead turned to a third strategy, reprising a familiar financial cycle described in chapter 2: acquisitions and buybacks.[135] As the company pursued new revenue, Gilead's internal pipeline lacked value in the eyes of Wall Street, with Brian Skorney of the investment bank RW Baird seeing "few opportunities for such growth in the company's existing pipeline as is" in a note after Gilead's earnings call in early February 2016.[136] Piper Jaffray's Joshua Schimmer went further: "We have little enthusiasm for most of what we consider to be a highly speculative pipeline and nowhere close to the level we would expect from such an important and sizeable company. . . . There is not a single program which we even find worth highlighting."[137] Growth, in other words, appeared less likely to come from Gilead's own R&D.

Acquisitions remained Gilead's, as well as Wall Street's, favored vehicle for new revenue growth. In December 2015, when the *Financial Times* caught up with Norbert Bischofberger, the company's *head of R&D*, for an interview, he did not focus on the company's internal R&D prospects but on the company's acquisition strategy.[138] Under the headline "Cash Rich Gilead Hits the Acquisition Trail," Bischofberger positioned its approach to Pharmasset as a model moving forward: "Philosophically, we prefer to wait for more certainty and pay more money, which is what we did with Pharmasset, rather than getting something cheap with uncertainty."[139] He was echoing the mantra described in

chapter 2: instead of research and development, Bischofberger saw Gilead's role as *search* and development. When asked what the company was going to "do with all its money," Bischofberger continued, "Well, we have our eye on the external world—we have incredible cash flows and we are looking for opportunities."[140] Indeed, Gilead had accumulated over $20 billion in cash by early 2016, much of it from hepatitis C sales.[141]

This stockpiled cash positioned Gilead for a major acquisition. Leading biotechnology analyst Mark Schoenbaum probed Gilead's senior leadership in an earnings call: "The biggest question on everyone's mind for Gilead is, 'Who are you going to buy? Who are you going to buy? Who are you going to buy? Who are you going to buy?' Every day this is what we talk about in investment circles."[142] Though the company's senior leadership continued through 2016 and into 2017 to scan the market of pharmaceutical assets for their next Pharmasset, they would not have an immediate answer for Wall Street.

While speculation about acquisition possibilities continued, Gilead's senior leadership pointed investors to the other component of their financial strategy: directing capital to shareholders. The company's chief research executive, Bischofberger, shared the company's strategy on an earnings call in 2016:

> If you look back at the last six years, it has been remarkable. *We have done many, many deals*—CGI, Arresto, Calistoga, Pharmasset, Galapagos—and yet, *we were able to return 70% out of free cash flow to shareholders*. So I think that is a good way to think about the future, to in-license through collaborative efforts while at the same time *returning money to shareholders*.[143]

Indeed, as I documented in chapter 2, Gilead announced a series of major share buybacks with their new hepatitis C revenue. These aimed to boost the company's critical earnings-per-share ratio, making the stock more attractive for speculative trading by shareholders. In just the first six months of 2016, for example, Gilead bought back $9 billion in its own shares, about three times their entire R&D budget for the year.[144] Gilead used $23 billion in capital—a mix of its cash and debt—to purchase its own shares between 2014 and 2016.

Yet the share price still fell. The failure to generate ongoing growth with a curative therapy cost the company $41 billion in market capitalization between mid-2015 and the end of 2016. Buybacks, with their transient, short-term effects, could do little to influence this downward trajectory.[145]

From that perspective, the share buyback program *destroyed value*—both by limiting reinvestments into R&D and by failing even to boost the company's share price for its shareholders. In a *Bloomberg Business* piece, "Gilead Mismanaged Its Gold Mine," reporter Max Nisen described the buyback strategy as a "more efficient way to destroy value than an acquisition, with none of the upside."[146] The lack of positive share price performance after share buybacks among pharmaceutical companies (including Gilead) has even caught the eye of some prominent financial analysts. Studying six large biotechnology companies, including Gilead,

between 2014 and 2017, Geoffrey Porges, a longtime Wall Street biotechnology analyst, found that buybacks "destroyed more than $12 billion in value." Of the six companies he analyzed, only two generated any gain in their stock price; the group averaged a loss of 6%. "We believe investors should view buybacks with caution," Porges concluded, "and possibly regard them as value destroying."[147]

The long-awaited acquisition would finally come late in the summer of 2017, when Gilead bought a small biotechnology company, Kite Pharmaceuticals, for $11.9 billion.[148] While Kite had no approved products, the company had developed a novel cancer-fighting method which uses the body's own immune system to attack malignant cells. The company's most promising treatment, for non-Hodgkin's lymphoma, was already under FDA consideration, and was expected to receive approval later in the year. Using a sizable chunk of its hepatitis C capital in the acquisition, Gilead hoped that Kite's pipeline of cancer treatments would provide a new growth source.

Yet the basis for this promising class of treatments recalled Gilead's earlier HIV and hepatitis C franchises: public investments. In a 2017 *New York Times* story, "Harnessing the U.S. Taxpayer to Fight Cancer and Make Profits," Kite's founder and CEO Arie Belldegrun said that the company had tapped into "six years of monumental work" by NIH. He continued, "We shouldn't underestimate the value and the importance of N.I.H., not only to Kite, but to the whole field of engineered T-cell therapy."[149] Entering into the fray with their 2017 acquisition, Gilead now looked to Kite to develop oncology treatments and generate its newest source of growth. With its first cancer treatment, Kymriah, coming to market, Gilead set the price at $373,000. Gilead would make three more large deals by the end of 2020, betting an additional *$31 billion* to gain control over already approved or promising treatments. While it waited for gains from these acquisitions to materialize, in 2020 Gilead reported a 10% growth in revenues over the year before, largely thanks to nearly $3 billion in sales of remdesivir, the antiviral treatment for COVID-19 I mentioned in the preface.[150]

PHARMA(VALUE)

"Success in biotech comes with a curse," a writer in the *Wall Street Journal* observed in 2011: "the further a company goes, the harder it becomes to keep its growth story alive."[151] He was describing Gilead's position as it pursued Pharmasset, but he could have well been describing its position in 2017, after its hepatitis C growth story had faded. This almost continual search for growth marked the circulation of financialized capital that underpinned sofosbuvir's path. In tracing sofosbuvir's trajectory through the political struggle over treatment access, this chapter reveals the influence of financialized drug development on drug pricing and value in three key ways.

First, Gilead's justification for its pricing attempted to capitalize health itself—monetizing the value of future health into a present earnings stream that could

generate the growth expected by financial markets. This strategy reproduced the logics of speculative financial markets, in which the locus of value was configured around the notion that health systems would pay more for better treatments. Yet through an array of political lobbying, moral-economic discourses, and technocratic valuation practices, Gilead also sought to establish a *hegemony of value*—with higher prices representing the value of health as a commonsensical idea, one that society should adopt to realize future health.

Second, Gilead's pricing strategy illuminated its ability to use its position as a global gatekeeper over intellectual property to maximize financial accumulation and shape divergent trajectories of treatment access. Operating in a politically contested space, Gilead charged "value prices" in high- and middle-income countries, where treatment would be rationed. The company also selectively licensed its intellectual property to many low-income countries for use as part of public health programs. Countries excluded from this licensing agreement would either face a crisis of treatment access or exercise countervailing powers—at times buttressed by treatment activism, patent opposition, and the entry of corporate competitors—to lower drug prices and use sofosbuvir-based treatments as part of public health strategies aimed at eliminating the virus.

Third, capitalizing a curative medicine revealed a crisis at the heart of financialized drug development: the cure depleted the potential for ongoing growth. With Wall Street souring on Gilead's growth prospects, the company turned to an array of financial maneuvers—from patent extensions and drug price increases to acquisitions and buybacks—to generate fast accumulation and extract value for shareholders. These turns in the story of sofosbuvir both describe the mechanisms by which financialization shapes drug pricing and chronicle its outcomes. What emerges is a portrait of a political-economic system in which the financial logics of value can powerfully structure public health policy but also are vulnerable both to Wall Street demands and to social contestation.

The political struggle over treatment access shows that value is always plural—and human *values* are also at stake. Amid sofosbuvir's restrictions in his state, a Kentucky-based infectious diseases physician Dr. Fares Khater lamented, "It's very hard to see the patient, and just tell them, 'I can't treat you.'"[152] In this kind of encounter, it is not just abstracted future economic value but rather the values of the therapeutic relationship, the lived experience of neglect or care, that also hang in the balance. Because these values remain precarious, it becomes an urgent political task to empirically lay out the mechanisms of financialization that refigure, appropriate, or push aside these values—and how we might chart a different course.