

Toward Livelihood Insurance

Michael Abramowicz[†]

Had Nobel Laureate Robert Shiller's proposal for livelihood insurance been implemented, economic adjustment to the coronavirus pandemic would have been much smoother. Individuals hit especially hard economically, such as restaurant workers and small business owners, would have received payments based on the collective circumstances of those similarly situated. Because no such market existed, the government acted instead as social insurer. Unable to measure loss accurately, the government distributed payments to all taxpayers, providing fiscal stimulus but not effectively focusing relief on those suffering the most. This Article considers how the government might facilitate creation of robust markets in livelihood insurance. Such markets might smooth adjustment not only to pandemics, but also technological changes and unexpectedly weak economic performance in specific economic sectors, regions, or nations. Obstacles to creation of such insurance include limited ability of consumers to assess the benefits of this financial product and inability of businesses to obtain intellectual property protection. Short of creating a regime of mandatory insurance, which might easily be evaded, the government can facilitate such markets by collecting and distributing information, serving as a market maker, or temporarily subsidizing purchases.

I. INTRODUCTION

The economic dislocation associated with the COVID-19 pandemic might have been reduced if pandemic insurance were widespread. Such insurance could not have averted a decline in gross domestic product, because if businesses must be closed to maintain social distancing, production will necessarily fall. But it probably could have ensured that the pandemic did not disproportionately harm a portion of the population. Those who owned businesses particularly vulnerable to the pandemic would have been at least partly insured. The same might have been true for individuals working at such businesses, who would have been able to ride out the pandemic with less pain. Losses would be borne by insurance companies and ultimately by their shareholders, who hold

[†] Oppenheim Professor of Law, George Washington University. For helpful comments, I thank Peter Siegelman, David Simon, participants in a virtual workshop sponsored by the Insurance Law Center at the University of Connecticut, and participants in this symposium. All errors are mine.

insurance stocks in diverse portfolios. The insurance payouts thus would have represented a transfer from those with retirement portfolios to those without their usual source of income. In the absence of pandemic insurance closely tailored to individual loss, the government, within a few months of the start of the pandemic, provided direct subsidies, in the form of loans to small businesses,¹ payments to all taxpayers,² and increases to unemployment payouts.³ Critics pointed out that such payments not only increased the national debt, but also were poorly tailored to COVID-19 losses.⁴

Yet, outside of the All England Club, host of the Wimbledon Tennis Tournament,⁵ virtually no one held pandemic insurance. Why was the world uninsured? One theory is that the pandemic was a black swan, a truly unpredictable event.⁶ That is clearly untrue. The prospect of a global pandemic was well known and widely discussed.⁷ The more plausible answer is that most rational people would not have purchased such insurance. The transactions costs are simply too high. These costs include not only ex ante underwriting, but also ex post decision-making, entailing the complexity of determining to what extent economic losses during a pandemic are properly attributed to a pandemic. Moral hazard is a problem too.⁸ Businesses that know they have coverage might not try as hard to return to business, and unemployed individuals might be better off accepting insurance payments than returning to work.⁹ Moral

¹ See Paycheck Protection Program Flexibility Act of 2020, Pub. L. No. 116-142, 134 Stat. 641 (2020).

² See Coronavirus Aid, Relief, and Economic Security (CARES) Act, Pub. L. No. 116-136, 134 Stat. 281 (2020).

³ See *id.* § 2104(b)(1)(B).

⁴ See, e.g., Terry Gross, *How the CARES Act Became a Tax-Break Bonanza for the Rich, Explained*, NPR (Apr. 30, 2020), <https://www.npr.org/2020/04/30/848321204/how-the-cares-act-became-a-tax-break-bonanza-for-the-rich-explained> [<https://perma.cc/AZL3-U23A>].

⁵ See *Wimbledon Shows How Pandemic Insurance Could Become Vital for Sports, Other Events*, INS. J. (Apr. 13, 2020), <https://www.insurancejournal.com/news/international/2020/04/13/564598.htm> [<https://perma.cc/5NKX-PHAB>].

⁶ See, e.g., Tatiana Antipova, *Coronavirus Pandemic as Black Swan Event*, 136 INTEGRATED SCI. IN DIGITAL AGE 356 (May 27, 2020).

⁷ See, e.g., Bernard Avishai, *The Pandemic Isn't a Black Swan but a Portent of a More Fragile Global System*, NEW YORKER (Apr. 21, 2020), <https://www.newyorker.com/news/daily-comment/the-pandemic-isnt-a-black-swan-but-a-portent-of-a-more-fragile-global-system> [<https://perma.cc/9L6Y-NDWH>]; see also Bill Gates, *The Next Outbreak? We're Not Ready*, YOUTUBE (Apr. 3, 2015), https://www.youtube.com/watch?v=6Af6b_wyiwI&feature=emb_logo&ab_channel=TED [<https://perma.cc/A2AX-N7ML>]. A better argument might be that the response to the pandemic was unpredictable, that it was generally assumed that if a pandemic occurred, it would sweep through quickly, causing human but not economic carnage.

⁸ See, e.g., Mark V. Pauly, *Overinsurance and Public Provision of Insurance: The Roles of Moral Hazard and Adverse Selection*, 88 Q.J. ECON. 44 (1974); Steven Shavell, *On Moral Hazard and Insurance*, 93 Q.J. ECON. 541 (1979).

⁹ Evidence from the recent pandemic, however, suggests that unemployment benefits did not

hazard increases the cost and reduces the attractiveness of insurance. Finally, both businesses and individuals might rationally expect at least some governmental help, and there is no guarantee that such help will be afforded to those who are insured and thus no longer need the assistance. Potential insureds may overestimate the prospect of government help and underestimate the risk of a pandemic, further inhibiting developing of an insurance market.

One strategy to prepare for the next pandemic might be to bolster the insurance market in order to encourage many businesses to purchase pandemic insurance. Such insurance has generally not been offered in the past,¹⁰ but greater awareness might lead to a stand-alone product or a rider on existing business interruption policies. Business interruption policies are well known but generally did not cover the highly correlated losses wrought by the pandemic.¹¹ Even so, the pandemic was among the most expensive events in history for insurers.¹² Still, if insurance did not exist because businesses did not take the prospect of a pandemic seriously enough, that is no longer a problem, and an insurance market might spontaneously generate. Because a pandemic could produce enormous correlated losses,¹³ however, some have proposed legislation under which the government would subsidize insurance. In the United States, a bill called the Pandemic Risk Insurance

make it much more difficult for employers to find willing workers. See Joseph Altonji et al., *Employment Effects of Unemployment Insurance Generosity During the Pandemic*, TOBIN CTR. FOR ECON. POLY (July 14, 2020) [https://tobin.yale.edu/sites/default/files/files/C-19%20Articles/CARES-UI_identification_vF\(1\).pdf](https://tobin.yale.edu/sites/default/files/files/C-19%20Articles/CARES-UI_identification_vF(1).pdf) [<https://perma.cc/T8BM-LTQK>]; Ioana Elena Marinescu et al., *Job Search, Job Posting and Unemployment Insurance During the COVID-19 Crisis*, (Aug. 10, 2020), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3664265 [<https://perma.cc/RM9D-QVQJ>].

¹⁰ Steven L. Schwarcz, *Insuring the 'Uninsurable': Catastrophe Bonds, Pandemics, and Risk Securitization* 3 (Dec. 22, 2020), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3712534 [<https://perma.cc/Z6YZ-84H7>] (“In practice, however, insurers do not currently offer pandemic insurance, certainly not at rates (i.e., ‘premiums’) that businesses regard as reasonable.”).

¹¹ See, e.g., *Zwillo V v. Lexington Ins. Co.*, 2020 U.S. Dist. LEXIS 230672 (W.D. Mo. Dec. 2, 2020) (denying coverage). For a balanced assessment of current coverage issues, see Christopher C. French, *COVID-19 Business Interruption Insurance Losses: The Cases for and Against Coverage*, 27 CONN. INS. L.J. 1 (2020). See also Jonathan Minnen et al., *Business Interruption Insurance for COVID-19 Related Losses*, SMITH, GAMBRELL & RUSSELL, LLP (May 1, 2020), <https://www.sgrlaw.com/client-alerts/business-interruption-insurance-for-covid-19-related-losses/> [<https://perma.cc/FVR2-S8QH>]; David F. Klein, *Insuring Against the Business Risks of Coronavirus*, PILLSBURY WINTHROP SHAW PITTMAN LLP (Mar. 17, 2020), <https://www.pillsburylaw.com/en/news-and-insights/insuring-against-the-business-risks-of-coronavirus.html> [<https://perma.cc/7LG2-V9AD>].

¹² Oliver Ralph, *Coronavirus to Cost Insurers More Than \$200bn*, FIN. TIMES (May 14, 2020), <https://www.ft.com/content/51d32286-5264-4c93-80c3-3d0b0fd4558a> [<https://perma.cc/HDP5-85FZ>].

¹³ The insurance industry has argued that pandemic losses are highly correlated and thus uninsurable. See French, *supra* note 11 at 17–18.

Act,¹⁴ modeled after an earlier statute focused on terrorism risk,¹⁵ would have the government cover 95 percent of losses exceeding 5 percent of insurers' premiums in the previous year, up to \$750 billion.¹⁶ Heavily subsidized insurance rates might suffice to create a market for insurance claims.

This model, however, has several weaknesses. First, it is not clear why pandemic insurance should be governmentally subsidized when most other catastrophes are not,¹⁷ unless the goal of such insurance is to dampen economic activity.¹⁸ Perhaps there is a role for the government to jump-start the market, but that requires only temporary intervention until the market becomes large enough to survive on its own. Second, pandemic insurance entails considerable moral hazard before the pandemic occurs. Businesses will have little incentive in advance of a pandemic to take steps that would allow them to continue operating during a pandemic, such as improving ventilation,¹⁹ if their losses from failing to do so will be insured. Even if pandemics occur only once per century, the necessary investment in ventilation may be relatively small relative to the overall cost of construction, but an insured business might not be willing to undertake even this modest expense. Third, the primary role of private insurers in such a scheme is to perform risk evaluation that the government can piggyback on to tailor pandemic relief effectively.²⁰ But when the vast majority of expected losses will be paid by the government, the premiums charged by the insurers will not be directly proportional to the risk that the government is assuming.²¹ Some businesses might over-insure, knowing that insurance companies

¹⁴ Pandemic Risk Insurance Act of 2020, H.R. 7011, 116th Cong. (2020), <https://www.congress.gov/bill/116th-congress/house-bill/7011> [<https://perma.cc/5P62-BJLB>].

¹⁵ Terrorism Risk Insurance Act of 2002, Pub. L. No. 107-297, 116 Stat. 2322 (2002).

¹⁶ Pandemic Risk Insurance Act §§ 4(e)(1)(A), 4(e)(2).

¹⁷ Earthquake insurance, for example, is generally not subsidized, though there are some semi-public insurers that offer cross-subsidized rates. See, e.g., Xiao Lin, *Risk Awareness and Adverse Selection in Catastrophe Insurance: Evidence from California's Residential Earthquake Insurance Market*, 61 J. RISK & UNCERTAINTY 43 (2020).

¹⁸ Perhaps the best argument is that the government may have a role because it wishes to discourage economic activity, given the need for social distancing during a pandemic. But insurance is a very indirect way of encouraging social distancing, in comparison to more conventional approaches like mandated retail closures.

¹⁹ It is possible that such investments are inefficient in any case given the relatively low probability of a pandemic in a particular year. But it is also possible that ventilation improvements might be relatively cheap when a building is constructed and much harder to implement once a pandemic exists.

²⁰ For an argument that private insurance companies can serve as useful partners to the public sector in insuring an event such as a pandemic, see Kevin M. LaCroix, *America's Insurance Capital to the Rescue?*, THE D&O DIARY (Mar. 24, 2020), <https://www.dandodiary.com/2020/03/articles/insurance-industry/guest-post-americas-insurance-capital-to-the-rescue/> [<https://perma.cc/JR26-M4C4>].

²¹ See *infra* Part III.D.

will have only limited incentives to fight claims aggressively when responsible for only a small portion of the claims.

These problems stem from a deeper mismatch. Insurance is vital when losses are highly individualized and costly to ascertain. In providing auto insurance, for example, an insurer provides both the service of assessing an individual driver's risk of an accident and the service of verifying that a claim that an accident has occurred is accurate. Even in areas of insurance where there may be correlated losses, such as hurricanes, individual insureds may face highly variant susceptibility to and experience of loss. With pandemics, losses affected entire industries relatively uniformly. The pandemic did not strike one in three restaurants and spare the others. To be sure, some may have offered features, like patios or delivery, that left them better able to adapt to the world of social distancing. But a high proportion suffered some loss and would be expected by insurers to suffer again in another pandemic. The benefits from insurers performing individualized pandemic risk classification are thus small, and governmental subsidies limit insurers' incentives to identify high-risk insureds.

The core problem is that the dominant danger for both businesses and individuals from another pandemic is not idiosyncratic risk, but shared risk—simply, the risk that another pandemic will wreak economic havoc on their industries. Protection from such a risk does not primarily require the services of the insurance industry, which specializes in case-by-case risk analysis and claims processing. The financial products required can be far blunter than that. Restaurant owners should be able to buy financial products that will pay off if the restaurant industry as a whole suffers. Similarly, restaurant workers should be able to purchase a financial product that will pay off when restaurant workers as a whole experience a precipitous decline in income. Such products give up on the aspiration to generate perfectly tailored payouts and may compensate the occasional restaurant owner or worker whose business did not suffer when others did. But in principle, they can provide at least a crude insurance function at much lower cost than the insurance industry—while still being far more tailored than any social insurance that the government could offer. The proposition, of course, is not limited to the restaurant industry but extends more broadly to all industries and all types of workers. Nor is the proposition limited to pandemics but extends to all types of risks where harm is highly correlated across individuals in a particular line of work.

In short, there is a missing product in our financial marketplace: livelihood insurance.²² This Article's project is to assess why livelihood

²² For a more general assessment of how traditional insurance may fall short in addressing some risks, see Lee Anne Fennell, *Unbundling Risk*, 60 DUKE L.J. 1285 (2011).

insurance is missing and how the government might encourage its development. The idea for livelihood insurance originates with Robert Shiller, now a Nobel Laureate.²³ Shiller uses the word “insurance” not merely because this financial product would perform a risk management function, but also because he imagines insurance companies playing a critical role. But one can imagine versions of livelihood insurance that are not insurance products in the conventional sense, and no insurance company is needed to provide protection against group harms.²⁴ All that is needed is a financial derivative that can serve a risk management function for investors. For example, a security sold in 2024 might represent a promise to pay a dollar in 2025 for every dollar that the average income of restaurant workers falls more than 10 percent below the level that restaurant workers earned in 2023. If restaurant workers in 2023 earned an average of \$25,000 but only \$20,000 in 2025, then the security would pay \$2,500.

The most natural purchasers of such a security would be restaurant workers themselves, particularly those not well positioned to transition into other lines of work during a pandemic, because it would provide a hedge against bad times that affect such workers directly. Restaurant workers do not have much disposable income, but, especially after the experience of the recent pandemic, they might be willing to allocate some of their limited income to reducing future risk if they had confidence in the financial product. This product requires only one or more counterparties, who will accept the restaurant workers payments in ordinary times but lose their investments in especially bad times. Such counterparties might be financial institutions like banks or hedge funds capable of assuming significant risks. Insurers, or perhaps more likely reinsurers, might well enter the business, given their general expertise in risk management and their ability to market to consumers, but the product would be different from a typical insurance product.²⁵ The purchaser is protected not when the purchaser has suf-

²³ ROBERT J. SHILLER, *THE NEW FINANCIAL ORDER: RISK IN THE 21ST CENTURY* 107–20 (2003).

A partial explanation for the nonexistence of livelihood insurance is that Shiller devoted only a few pages to it. But a similar idea of Shiller’s has reached the marketplace. *See infra* note 68 and accompanying text. Enough people in the financial industry presumably read the book as to raise the question why no one sought to create a livelihood insurance product.

²⁴ Shiller does refer to the party that provides funding to those whose livelihood has declined as an “insurer” or an “insurance company.” *See, e.g., id.* at 114. This Article will sometimes use these phrases but will also sometimes use the term “counterparty” to clarify that the party need not be an insurer.

²⁵ As Elizabeth Brown argues, many financial products, not just insurance, serve risk management functions, and the lines between different types of financial institutions are becoming ever blurrier. *See* Elizabeth F. Brown, *The Continuum of Financial Products*, 25 *STAN. J. L. BUS. & FIN.* 183 (2020).

ferred an individual loss, but when there is a loss to the person's *livelihood*, that is to the group of people in roughly the same line of work. Financial products might even be based more narrowly on restaurant workers in a particular geographic region to better target risk.

There is an obvious disadvantage of livelihood insurance relative to ordinary insurance: that it does not consider individual circumstances. A restaurant worker whose income improves during the pandemic will receive as much money as one who loses her job and is unable to find new work. But this disadvantage highlights several advantages. First, livelihood insurance entails no moral hazard. A livelihood insurance security's payoff will be independent of any one worker's income, and so that worker maintains every incentive to adapt as best possible, for example by switching to restaurant delivery.²⁶ Second, livelihood insurance similarly avoids the problem of adverse selection. With livelihood insurance, the risk to an entire industry is unlikely to be better known to insureds than to insurers, and thus adverse selection will not be a concern. Third, and perhaps most importantly, livelihood insurance is a low transactions cost product. Neither claims adjustment nor underwriting is necessary. Because their own individual loss is irrelevant, holders of livelihood insurance cannot commit claims fraud, the costs of which will thus not be passed along to policyholders in general. As long as there is sufficient competition among potential counterparties, the expected payout should be equal to the cost of the livelihood insurance minus the cost for the counterparties of bearing risk. And because the securities could be tradable, a restaurant worker who owns such a security would not need even to wait for the end of the period to receive compensation. Taken in total, these advantages suggest that livelihood insurance will be preferable to conventional insurance products when losses will be especially highly concentrated.

It might seem that a livelihood insurance payout would be conditioned at least on a finding that a pandemic has occurred. Certainly, it would be possible to design a policy along these lines, providing for payouts in the event that some group of workers suffer a loss of income after a pandemic but not if they suffer a loss of income after some other event. Such a policy, however, seems demonstrably inferior. What individuals ultimately care about is whether they face loss of income out of their control, not simply whether they face loss of income from some source that happens to be highly salient given the recent pandemic. They are thus better off with partial protection against a wide range of

²⁶ Shiller, writing with Allan Weiss, makes a similar point in writing about home value insurance. See Robert J. Shiller & Allan N. Weiss, *Home Equity Insurance*, 19 J. REAL ESTATE FIN. & ECON. 21 (1999).

hazards than greater protection against a single hazard, equal in expected value terms. Ideally, livelihood insurance therefore need not be limited to any particular hazard to a livelihood. If, for example, a revolution in robotics puts restaurant workers out of work en masse, or if diners simply unexpectedly decide that they prefer HelloFresh, livelihood insurance should pay out. Livelihood insurance can protect not only against pandemics but also against technologically induced market change or against regional economic decline.

None of these policies would need to be contingent on any particular type of economic catastrophe occurring. A different sort of condition on livelihood insurance is conceivable, however. Under a hybrid approach, an insured would receive a payout only if there is a decline in the income of the group *and* the individual also suffers some loss. For example, a policy might be conditioned on involuntary loss of employment or perhaps even on individuals' taking steps to find new employment. Indeed, this is Shiller's original vision for livelihood insurance and explains his use of the word "insurance." The argument for such an approach is that the insurance payouts are more targeted to those who have suffered. Whenever someone receives a windfall, in the form of an unneeded livelihood insurance payment, risk-bearing could be better achieved by distributing the payment entirely to those who have suffered a decline in income. But this greater targeting comes at significant cost. There will need to be ex post evaluation of loss and, worse, underwriting to price insurance based on risk classification. Adverse selection will re-emerge, as employees most likely to be dismissed in a downturn will be most likely to produce coverage, and so will moral hazard, with the prospect of a payout giving employees reduced incentive to hold on to their employment or seek a new job.

Perhaps a hybrid approach may still be justified, but the case must then be that there are economies of scope in delivering livelihood insurance in combination with an economically separate product that transfers wealth from relatively fortunate individuals in a profession to relatively unfortunate ones. This Article will depart from Shiller in considering a livelihood insurance product that is independent of individual circumstances because that allows focus on how livelihood insurance differs from traditional insurance. Hybrid designs will necessarily increase transactions costs, moral hazard, and adverse selection relative to pure livelihood insurance, and whether that is a worthwhile improvement to livelihood insurance is a second-order question.

This account of the virtues of livelihood insurance is subject to the \$20 bill counterargument:²⁷ If livelihood insurance makes so much

²⁷ See, e.g., *The \$20 Bill on the Sidewalk*, FINANCING EFFICIENCY (Oct. 19, 2011), <https://financingefficiency.wordpress.com/2011/10/19/the-20-bill-on-the-sidewalk/> [<https://perma.cc/ME6B->

sense, why doesn't it exist already? It can't be that no one has conceived the idea. Shiller thought of it, and he was successful in shepherding a related risk reduction product, financial derivatives tied to real estate values in particular regions, into the marketplace.²⁸ The purpose of this Article is not so much to advertise the virtues of livelihood insurance as to ask why it does not exist and what role the government might have in fostering markets for livelihood insurance. Livelihood insurance may be difficult to foster, even if it could thrive at scale.

Part of the problem is consumer knowledge. Consumers may not understand livelihood insurance. Few will have read Shiller, and few will be willing to be among the first to purchase a new form of financial product. Lack of consumer knowledge is not the entire problem, though. On the supply side, finance companies have little incentive to build market share. If the product becomes successful, it will become a commodity, producing for the first movers temporary quasi-rents rather than permanent rents. There is little reason to invest in a large advertising campaign for kale if one can't corner the kale market. The challenge on the demand side compounds the challenge on the supply side. Livelihood insurance, like kale, would be good for consumers, but consumers don't always invest in what's good for them, especially if they do not know if it really is good for them. Even knowledgeable consumers might avoid kale until it becomes a fad, and so too with livelihood insurance. Consumers are conventional. The irrationalities of behavioral economics play a role, including regret aversion.²⁹ With high probability, consumers will regret their purchase of livelihood insurance. Purchasing a risk management product that proves unnecessary reduces consumers' welfare relative to others, and people care about relative income.³⁰

The absence of strong markets in livelihood insurance is thus not surprising, and although this absence does not decrease the normative case for livelihood insurance, it highlights the challenge that the government faces in encouraging development of markets. Yet, if these obstacles to developing a market could be overcome, then livelihood insurance could spread quickly.

UNHR] (discussing the joke in which an economist denies that there could be a \$20 bill on the sidewalk because someone else would have picked it up already).

²⁸ Shiller, however, acknowledges that the vast majority of those who would benefit from such a product have not purchased it. See Frank J. Fabozzi et al., *A 30-Year Perspective on Property Derivatives: What Can Be Done to Tame Property Price Risk?*, 34 J. ECON. PERSP. 121, 136–41 (2020) (ascribing blame to technical challenges and regulatory issues).

²⁹ See generally Graham Loomes & Robert Sugden, *Regret Theory: An Alternative Theory of Rational Choice Under Uncertainty*, 92 ECON. J. 805 (1982).

³⁰ See, e.g., Shane Sanders, *A Model of the Relative Income Hypothesis*, 41 J. ECON. EDUC. 292 (2010) (providing an overview of evidence for the hypothesis that individuals care about relative income).

Thus, the paradox: Livelihood insurance, once understood in general terms by consumers, is so simple that markets for it could be competitive, but until then, there is no reason for anyone to provide or demand it. The Article's primary ambition is thus to consider what the government can do to foster such markets. Fortunately, there is much that the government can do at potentially lower expense for any increment of protection than proposals for conventional insurance would entail. A modest role is for the government to produce information, such as indices of the income of individuals in particular livelihoods, nationally and in particular regions. The government's role as recipient of tax returns makes it far more capable of doing this than any private actor that would need to use surveys, and the government's numbers would be more trustworthy. This simple information collection role addresses the danger that counterparties will manipulate numbers to prevent payouts.

Once the government serves as the repository of the data that would determine when payouts need to be made and also has ensured solvency of the payors, it is but a modest step, though not a trivial one, for the government to host a marketplace where consumers can purchase such insurance. Such a marketplace could improve consumers' confidence in products and ability to shop among them. The marketplace for health insurance under the Affordable Care Act produces similar benefits. Because livelihood insurance is a much simpler product, a marketplace should be much easier for the government to maintain and consumers to navigate. In effect, the government would be serving as a market maker operating a prediction market.

Yet a further step would be for the government to subsidize the markets. The prospect of subsidy is already under consideration in proposals for pandemic insurance of a more conventional kind,³¹ but the case for subsidy is stronger with livelihood insurance. The argument is that the subsidy is needed in the short term to familiarize consumers with and to encourage first adopters of a new form of financial product. Such a subsidy need not be permanent, and authorization legislation could include a phaseout. Ideally, the subsidy would be in the form of an explicit discount to consumers, rather than in the form of a promise to cover part of any potential losses by insurers, though political economy considerations may make it easier for the government to subsidize payouts rather than consumer payments. To be sure, conventional pandemic insurance could be temporary as well. But there is no reason to believe that consumers need acclimatization to such insurance, and

³¹ See *supra* note 16 and accompanying text.

there is thus every reason to expect that subsidies of conventional insurance would need to remain in place. There is no guarantee that livelihood insurance will thrive with a temporary subsidy, but it may be a worthy experiment even to someone skeptical of government provision of financial services.

One could imagine a much more aggressive governmental role in encouraging livelihood insurance. Most obviously, the government could mandate the purchase of livelihood insurance, much as the government (albeit currently without penalty³²) mandates the purchase of health insurance.³³ The proposal for a mandate recognizes that in its absence, people may not be willing to purchase insurance because they expect that, come crisis, the government will assume the role of social insurer. Even if this proposal were politically feasible, however, it runs into a formidable practical problem: Individuals who purchase livelihood insurance only because they are compelled to do so would still presumably have significant freedom to choose *which* livelihood insurance product to purchase, and they are thus likely to purchase products that with high probability will return the consumers' initial investments but that will perform less effectively in more dire circumstances. For example, a livelihood insurance product might pay *whenever* a livelihood's performance falls below some very high expectation, but the payouts would be small. The problem is akin to an issue with health insurance. If the government requires but does not define "health insurance," then those who do not want to buy health insurance might instead buy a product that reimburses little in the event of health emergencies but a lot for routine care. If the government were to mandate livelihood insurance, consumers might follow a similar strategy.³⁴ Thus, the government would likely need to require consumers to choose brokers, who in turn would select the products, subject to a fiduciary duty.

The Article proceeds as follows. Part II describes Shiller's original proposal, focusing on some issues in the design of a livelihood contract, such as what the duration of protection should be and whether payouts should depend on an individual insured's own economic performance. It then considers both demand- and supply-side obstacles to emergence of

³² See I.R.C. § 5000A(c) (2018) (setting the amount of an alternative tax at zero).

³³ See *generally* Nat'l Fed'n of Indep. Bus. v. Sebelius, 567 U.S. 519 (2012) (upholding the constitutionality of the Affordable Care Act and its insurance mandate).

³⁴ A theoretically rational reason for consumers not to want to buy such insurance is that the government may end up helping consumers who do not help themselves. See, e.g., James M. Buchanan, *The Samaritan's Dilemma*, in ALTRUISM, MORALITY AND ECONOMIC THEORY (E. Phelps ed., 1975). Given the small degree to which the government in fact has been willing to cushion economic shocks, however, the Samaritan's Dilemma may be a minor consideration to a rational consumer. The recent pandemic might be seen as an exception, but the government's total spending amounted to a relatively small portion of total losses, and much of it was received by individuals who hadn't lost anything.

a livelihood insurance market. The problems are linked. Because consumers do not currently demand a product that they do not understand, what is needed are producers willing to invest in consumer education, but because it is easy to compare competing proposals on price, there may be little incentive to do this. Thus, if a livelihood insurance market is to emerge, at least in the near future, it will probably require governmental intervention. Part III considers how such intervention might work. The most aggressive form of intervention, a universal insurance mandate, might be difficult to implement and in any event is not politically enactable. But the government could jump-start the market by taking on more modest responsibilities.

II. SHILLER'S VISION AND OBSTACLES

Shiller unveiled his vision for livelihood insurance in his book, *The New Financial Order: Risk in the 21st Century*.³⁵ Before unveiling this proposal, Shiller identifies a problem to which livelihood insurance is one response. The problem is that market capitalism, especially in an era of technological change, “can be unforgiving, mercilessly tossing out people when they are no longer productive.”³⁶ Shiller does not accept that displaced workers will necessarily be able to shift easily into alternative employment, suggesting that an increasing proportion of workers may have zero marginal product, meaning that no one would hire them at any salary.³⁷ Meanwhile, in the digital era, capitalism increasingly has become winner-take-all, making it ever more important both to furnish incentives to try to make products and services that are winners and to help losers.³⁸ Globalization heightens the possibility of creative destruction.³⁹ Risk-taking benefits society as a whole, however, and individuals may be more willing to take risks if institutions can cushion failed risks.⁴⁰

Modernity may bring not only more possible sources of risk, but also new tools for management of risk. Shiller places the development of these tools into historical perspective, noting that improvements in information storage technology did not begin only with the development of the internet. Information, after all, has long been capable of being stored on paper, but the cost of such storage has greatly decreased over

³⁵ SHILLER, *supra* note 23.

³⁶ *Id.* at 45.

³⁷ See, e.g., Tyler Cowen, *Zero Marginal Product Workers*, MARGINAL REVOLUTION (July 19, 2010), <https://marginalrevolution.com/marginalrevolution/2010/07/zero-marginal-product-workers.html> [<https://perma.cc/5QXD-64XZ>].

³⁸ SHILLER, *supra* note 23, at 51–53.

³⁹ *Id.* at 53–55.

⁴⁰ *Id.*

the centuries.⁴¹ The cost of transmission of information also fell continuously well before the digital age; though it may seem that the price of postage stamps always rises, in real terms (and especially when adjusting for the overall size of the economy) the cost of sending a letter has fallen dramatically over time.⁴² Still, modern databases⁴³ and innovations such as electronic money (which Shiller cites despite writing years before the development of Bitcoin),⁴⁴ considerably facilitate the tracking of risk-related information. The financial industry, meanwhile, has developed technologies allowing for the exchange of risks,⁴⁵ with modern auction and finance theory providing guidance about just how an individual can reduce risk.

Shiller's book focuses not just on risk to livelihoods but highlights instead the wide range of risks to which finance may need to respond. There can be risk to entire countries, as a result of economic recessions or depressions.⁴⁶ There can also be risk to groups of people within countries, not only groups associated with particular occupations. For example, Shiller cites a study by Joshua Angrist, finding that after the Vietnam War draft lottery, people with lottery results making them especially likely to be drafted years later earned as much as 15 percent less than those whose results make them especially unlikely to be drafted.⁴⁷ This exemplifies the possibility that calamities that entirely spare few may nonetheless have widely distributed burdens, and some may find economic opportunity in war or other disasters.⁴⁸ Much the same could be said of pandemics, though they receive no mention in Shiller's writing, which benefit few but impose their burdens highly unequally.⁴⁹

This Section considers Shiller's vision in more detail, addressing what the provisions of a livelihood insurance might be and whether livelihood insurance's payoffs should depend in part on the welfare of the particular insured. Although Shiller argues that livelihood insurance should only cover those who have suffered individual losses, there may be benefits to versions of livelihood insurance whose payoffs are entirely

⁴¹ *Id.* at 69–70.

⁴² *Id.* at 70.

⁴³ *Id.* at 72–73.

⁴⁴ *Id.* at 73–74.

⁴⁵ *Id.* at 75–76.

⁴⁶ *Id.* at 59–61.

⁴⁷ *Id.* at 62 (citing Joshua Angrist, *Lifetime Earnings and the Vietnam Era Draft Lottery: Evidence from Social Security Administrative Records*, 80 AM. ECON. REV. 313 (1990)).

⁴⁸ *Id.* at 63–64.

⁴⁹ See, e.g., Max Fisher & Emma Bubola, *As Coronavirus Deepens Inequality, Inequality Worsens Its Spread*, N.Y. TIMES (Mar. 16, 2020), <https://www.nytimes.com/2020/03/15/world/europe/coronavirus-inequality.html> [<https://perma.cc/3XZS-7RFT>].

independent of individual performance. This Section then considers both demand- and supply-side obstacles to the development of livelihood insurance. Central to both the demand- and supply-side challenges are informational problems. If consumers do not have sufficient information to recognize the potential value of livelihood insurance in general and specific livelihood insurance policies in particular, then suppliers will need to invest in informing consumers, but suppliers may not be able to educate consumers about how simple livelihood insurance is without also alerting consumers to alternative suppliers of the same financial product.

A. The Vision

Shiller's proposal for livelihood insurance emerges in his brief Chapter 8, titled "Insurance for Livelihoods and Home Values,"⁵⁰ alongside a proposal for insuring regional real estate values that has had more, though still limited, success. The proposal is animated by an example of a biochemist considering whether to specialize his career in recombinant DNA technology.⁵¹ The choice turns out to be an interesting one today given the role of such technology in research on vaccines that promise to end the current pandemic.⁵² Shiller's emphasis is on the risk facing the researcher, but that risk is linked to risks facing society; for society to be able to develop innovative technological solutions to problems such as viruses, it must be able to induce individuals to become scientists and focus their energies on uncertain research programs. "Recombinant DNA technology," Shiller notes, "may be fundamental to our economy, or it may be a disappointment."⁵³ A researcher may spend years working in the field, only to be faced with a biotechnology bust, resulting in lower incomes or perhaps even a need for retraining.⁵⁴

1. The contract

The risk faced by the recombinant DNA scientist is not well addressed by insuring against a single cause, even if one could envision some discrete events, such as successful development of a competing technology, that would reduce the relative value of the recombinant

⁵⁰ SHILLER, *supra* note 23, at 107–20.

⁵¹ *Id.* at 107.

⁵² See, e.g., Ricki Lewis, *How the Various COVID Vaccines Work*, DNA SCI. (Sept. 10, 2020), <https://dnascience.plos.org/2020/09/10/how-the-various-covid-vaccines-work/> [<https://perma.cc/8GDA-BLQU>].

⁵³ SHILLER, *supra* note 23, at 108.

⁵⁴ *Id.* at 109.

DNA researcher's skills. Thus, perhaps the most defining feature of livelihood insurance is that it "would cover losses to livelihoods from *all* causes."⁵⁵ It does not matter *why* a particular field may have turned out to be a poor choice. One could imagine, for example, that researchers could prove a victim of their own success, making recombinant DNA techniques so useful and easy to apply that the expertise of the recombinant DNA scientist is no longer necessary, in much the same way that a cure for a particular disease might put many doctors out of work. Whether researchers suffer as a result of their field's successes or as a result of their field's failures, or simply for some other reason such as change in academic fashions or oversupply of researchers, a financial loss may result. That does not mean that researchers would be indifferent between different sources of financial problems. Researchers may care about their reputation and their contribution to the welfare of the world as much as their income. Insurance products, however, generally seek to minimize unpredictability in income rather than uncertainty in total welfare.

Shiller complicates his story, however, by envisioning an insurance contract whose payout depends not only on the overall success of the field, but also on individual welfare. His initial description of the policy seems to make it contingent only on the performance of the broad group of recombinant DNA scientists: "[A] policy for recombinant DNA technologists could pay to the covered person 50 percent of the decline in the income of the average person who has started working in the field (and who continued to work, though not necessarily still in the field, or has gone back to school for retraining) below a specified lower level for the income."⁵⁶ A critical feature of such a policy is that the index is based on a group, and the group is defined as those who *started* working in the field. This is important, because harm depends in part on the degree to which individuals may adapt by pursuing other fields. If, for example, recombinant DNA technology fails, but it turns out that the skills of the technologists are readily transferable to nanochemistry, then the livelihood loss should be seen as small. The financial loss is not the reduction in salary in the recombinant DNA field but the reduction in employability of recombinant DNA scientists.

Shiller's example of the recombinant DNA scientist highlights one critical difference between the risk protected by livelihood insurance and the risks covered by most other forms of insurance, and it is a difference that makes livelihoods more difficult to insure. A lucky or unlucky choice of livelihood can have repercussions throughout one's life. One can easily purchase fire insurance for just the next year. Perhaps

⁵⁵ *Id.* at 111.

⁵⁶ *Id.* at 113.

the fact that one's house did not catch fire in the previous year might have some actuarial relevance to the pricing of the next year of fire insurance, and certainly drivers who rack up tickets and fender-benders will face higher premiums as a result. But one's susceptibility to fires and moving violations is at least partly in one's control. If one tried to buy livelihood insurance on an annual basis, however, one would be protecting oneself only from a small portion of the risk. If a new technological development suddenly makes recombinant DNA technology irrelevant, then one might expect an insurance rebate the following year, but most of the loss would be felt in subsequent years, and an insurer on an annual basis would adjust premiums appropriately. A technology may gradually rise and decline in apparent usefulness in a random walk rather than prove itself or fail suddenly, but insurance will protect only against vicissitudes relative to value at the beginning of the year.

Still, livelihood insurance might provide some value if limited in duration to a year or two. First, the current pandemic illustrates that individuals may suffer a great deal even from nonpermanent livelihood shocks. Perhaps the restaurant industry will return more-or-less to normal in a year or so, but it has suffered a temporary decline. Even a livelihood insurance policy purchased in 2019 but limited to 2020 would have provided individuals in affected professions considerable risk-reduction value.

Second, while lifetime protection might make sense for Shiller's hypothetical recombinant DNA scientist, it may not be the appropriate duration of coverage for everyone. Someone working in the restaurant industry, perhaps while enrolled in graduate school, for just a couple of years might not need lifetime protection. Restaurant work requires less of a development in human capital than recombinant DNA work, and thus the appropriate duration of coverage is shorter. Shiller's example highlights the potential of livelihood insurance to afford risk management for large lifelong risks, but the pandemic demonstrates the usefulness of livelihood insurance over shorter time scales.

Third, people can adapt to gradual changes in livelihood, even for a lifelong risk such as that faced by a new recombinant DNA scientist. If it turns out that recombinant DNA technology is not quite as hot as its adherents hoped, then some scientists may continue to practice in the area, while others will move into new areas. If the failure of recombinant DNA technology manifests gradually, disappointed recombinant DNA scientists can gradually acclimate to a future in which they will have somewhat less income than they might have hoped, as so many people do. Even if failure manifests suddenly, with a failed experiment leading to mass layoffs of scientists, what is most urgent is replacing income that individuals count on in the short term. Longer term, individuals may be able to obtain new jobs or adjust their consumption. In

principle, livelihood insurance can still provide protection for lifelong risks, but the pandemic highlights the burdens of sudden shocks.

Fourth and perhaps most importantly, a policy covering just a year or two would be much cheaper to purchase. Especially when livelihood insurance is initially introduced, it is critical that the commitment demanded of purchasers not be too large. A one-time purchase of sufficient livelihood insurance to last the rest of one's life might require a large percentage of one's annual income, and if few consumers are willing to commit to a new risk management product, even fewer will be willing to put up that much cash or take on a mortgage. Any effort to create a market for livelihood insurance will probably be more successful if focusing on relatively short-term coverage than on lifetime coverage. It might be tempting to try to achieve both goals at once: to sell policies for short periods of time but then to require insurance companies to renew policies at relatively low rates, much as health insurers are not permitted to discriminate on the basis of conditions that emerge during the period of health coverage.⁵⁷ But this would mean that anyone purchasing any coverage is required to buy with it an option to buy both more coverage and options for still more down the line. This would greatly increase the cost of coverage and likely make early experiments cost prohibitive. It also might become necessary to regulate the providers of livelihood insurance to make sure that consumers are sufficiently informed of large premium increases.

Shiller's simple example highlights another issue of contract design: When does a policy begin to make payouts, and what percentage of income loss is covered? Shiller's phrase "below a specified lower level for the income" indicates that if there is a modest decline in the income of the average recombinant DNA scientist, there will be no payouts. This number can be viewed as analogous to a policy deductible. But there is an argument that the policy should set the "specified lower level" to the current income of the group or perhaps to the expected income of the group in the relevant time period, that is that the policy should make payoffs even based on small amounts of loss. With that approach, the insurance would kick in even with just a modest decline in the welfare of recombinant DNA scientists. After all, a primary function of a deductible is to reduce moral hazard, but the beauty of livelihood insurance, at least if not dependent on individual income, is that it eliminates moral hazard. One might reasonably advise a consumer

⁵⁷ See 42 U.S.C. § 300gg-2 (2010). Even before the Affordable Care Act's passage, however, Congress had put in place various protections for policy renewals. See generally Jack A. Rovner, *Federal Regulation Comes to Private Health Care Financing: The Group Health Insurance Provisions of the Health Insurance Portability and Accountability Act of 1996*, 7 ANN. HEALTH L. 183 (1998).

facing a choice between a livelihood insurance policy that pays off beginning with the first dollar of group disappointment and one that kicks in only after a large shock to purchase the more inclusive policy. If we assume that the expected payout of livelihood insurance is very close to the cost of buying such insurance, a consumer can better smooth out risk by paying whatever it costs to buy the policy that pays out as soon as group welfare falls short of expectations. A simple model suggests that it will be in the consumer's interest to raise the "specified lower level for the income," and pay an actuarially fair increase in premiums, until the level reaches expectations.

Yet this is likely to be a tough sell, particularly for a consumer unsure of whether to purchase livelihood insurance in the first place. A policy that pays off as soon as the group's income falls short of expectations is likely to be *much* more expensive than one that pays off its first dollar only once income falls dramatically short of expectations. About half the time, after all, expectations will not be met. If the "specified lower level" is set at a level where there is only, say, a one-in-ten or a one-in-twenty chance of any payout at all, premiums accordingly can be much lower. Many consumers are likely to compare a livelihood insurance product with the cost of other insurance products, such as fire insurance, and may erroneously conclude that the higher priced product is overpriced, not taking into account that there is a relatively high probability that the premiums will be paid back. Meanwhile, the actual value to a consumer of small amounts of livelihood insurance is low. Individuals can self-insure relatively small risks. In any year, a person may face risks from a car requiring unexpected repair, an unexpected medical expense, or a change in interest rates. Moreover, when the group's income falls slightly, the individual's income may or may not have fallen. Finally, there is no guarantee that livelihood insurance will be offered at actuarially fair rates, and if the rates are not actuarially fair, then one is best off insuring only relatively large losses. Any particular minimum group loss threshold will be arbitrary, but policies that pay out only when group income falls by 20 percent might be reasonable, especially when livelihood insurance is new.

Meanwhile, Shiller's imaginary policy covers "50 percent of the decline in the income of the average person who has started working in the field" in income. As Shiller words the policy, it appears that once the "specified lower level" is reached, then the recipient would receive half of the *entire* decline. In other words, there is a sharp discontinuity, as a tiny difference in group income will trigger reimbursement of half of the policy. A simpler alternative is for the policy to cover only declines in average income beyond the specified lower level. With this alternative, it does not matter what percentage of the additional income decline

is covered, because individual consumers may decide how much coverage they wish to purchase. With conventional insurance, an insurer might need to increase rates more than proportionately, given adverse selection; perhaps the consumer who seeks full coverage of any shortfall below the threshold is an especially bad risk. But if livelihood insurance's payout is not based (more than marginally, anyway) on the income of the purchaser, then this is not a concern. And as long as people may purchase multiple units and fractional units of coverage at the same price, much as they can with other financial products, then the percentage of the decline covered becomes irrelevant. If, for example, one unit of the policy covers 1 percent of the decline below the threshold, then an average insurance consumer can obtain full coverage by purchasing one hundred units. An insured whose income is only partially dependent on the income of the group, because the individual works part-time or because the individual has better fallback options than most in the group, might purchase less coverage. Some might well underinsure (while fewer over-insure), but this problem does not derive from poor contractual design.

Thus, in effect, there is only one number that meaningfully differentiates livelihood insurance policies covering a particular group, and that is the threshold below which incomes must fall before the policies begin to pay out. Livelihood insurance policies, however, must also specify just whose incomes constitute the group that livelihood insurance is covering. Shiller refers to the "average person who has started working in the field (and who continued to work, though not necessarily still in the field, or has gone back to school for retraining)."⁵⁸ The policy, of course, must clearly define what constitutes "the field" and how the income of those in the field should be determined. Below, we will consider the possibility that the government might publish income indices for different fields. But private organizations also might develop indices. Yet another approach would be for the income amount to be measured based on those who actually buy the insurance. Every policyholder might, for example, be required to provide tax returns, both in the year in which coverage is purchased and for any year covered by the insurance. So long as there are a large number of policyholders, this does not create adverse selection or moral hazard, because any one policyholder's decisions have only a negligible effect on payouts. A slight disadvantage is that counterparties must estimate the pool of policyholders who sign up, rather than relying on a static definition.

Livelihood insurance policies also might reasonably focus not solely on the absolute income of some defined group, but on the income of that

⁵⁸ SHILLER, *supra* note 23, at 113.

group relative to a much larger group, such as all taxpayers. If the livelihood policy is triggered simply by a sufficiently large decline in the income of the group, then it is covering not just shocks specific to the group, but also larger economic shocks. A policy might, on the other hand, cover a decline in the income of the group to the extent that income falls *relative* to all taxpayers' income by more than some percentage. One advantage of this approach is that counterparties may require less compensation for risk. In general, unsystematic risk—that is, risk uncorrelated with other risk—can be held in diversified portfolios without increasing the overall risk of those portfolios. The income of restaurant workers relative to all workers will be largely unsystematic risk. After all, if livelihood insurance were available for each livelihood for each dollar of unexpected relative risk, then the combined payouts of livelihood insurance would be predictable. In fact, we have seen that livelihood insurance will only cover large declines, so some of the risk will still be systematic, but less than if livelihood insurance were based on a group's absolute income.

A counterargument is that individuals need protection from swings in their own income, not just from swings in their relative income. There are, however, two problems with this argument. First, people care very much about their relative income. Cutting one's own spending by 10 percent will never be pleasant, but it may be much worse when others are not cutting than when everyone is making cuts in the face of a shared challenge. Second, creating livelihood insurance based on relative income does not prevent individuals from insuring against regional or national declines. Rather, it simply unbundles protection for a particular livelihood from protection against regional or national declines. Individual insureds in principle could buy multiple (perhaps now misnamed) livelihood insurance policies, one focused specifically on their profession and one focused on their region. Or one might buy several policies, ranging from one defined on a relatively discrete group, such as employees of a particular company, to one defined broadly. If livelihood insurance were widespread, it might make sense to reduce consumer confusion by bundling all risks. But livelihood insurance is more likely to emerge if the initial products are relatively inexpensive, and a product focused on relative income should be cheaper than one focused on overall income.

2. Group vs. individual insurance

Perhaps the most important question in the design of livelihood insurance is whether policies should be based solely on the income of the group, as I have been implicitly assuming, or also on the income of the

individual. Continuing with the theme of risk for recombinant DNA specialists, Shiller compares the risk-management function of livelihood insurance to academic tenure, which similarly can shield individuals from the risk associated with ambitious research programs.⁵⁹ Academic tenure is granted only after great scrutiny of each particular recipient. This helps reduce the moral hazard danger that a tenured professor will feel little need to continue with research (though in fact it does not accomplish this very effectively).⁶⁰ It provides little protection for the possibility that one's field will become irrelevant; indeed, schools sometimes fire tenured faculty by eliminating entire departments.⁶¹ Shiller's point rather is that it can encourage risk-taking and that livelihood insurance can encourage risk-taking in one's choice of livelihood. Academic tenure provides protection for an individual within a group making choices that may be different from others in the group, rather than protection for a group as a whole.

Given his analogy to academic tenure, it should not be surprising that livelihood insurance, as envisioned by Shiller, conditions payouts in part based on individual performance. Continuing his example, he writes that the policy "would also pay 50 percent of the decline in the covered person's income below the specified floor for the person, and the second 50 percent contingent on the person's remaining fully employed or going back to school for retraining."⁶² The first part of the sentence makes payment contingent on the individual's own performance. But that creates a moral hazard problem, absent in the policy where payouts are dependent entirely (or almost entirely) on the income of others. The second part of the sentence then purports to address the moral hazard problem, preventing someone from choosing a life of leisure at the insurer's (and other insureds') expense. This approach, however, dramatically changes the nature of the financial product, from an entirely impersonal one that can be provided without any individualized risk classification to one in which the likelihood of individual success may be critical. An insurer issuing policies of this sort would be well advised to have expert biochemists review the research plans of individual insureds. And insurers, meanwhile, must worry about adverse selection. Perhaps only the worst recombinant DNA researchers would buy the insurance, making it not worth buying for the average practitioner.

⁵⁹ *Id.* at 110.

⁶⁰ Empirical research suggests that tenure reduces both publications generally and highly influential publications. See Jonathan Brogaard et al., *Do Economists Swing for the Fences After Tenure?*, 32 J. ECON. PERSP. 179 (2018).

⁶¹ See, e.g., Robin Wilson, *What Happens When Entire Departments Get the Ax*, CHRONICLE HIGHER ED. (June 18, 2009), <https://www.chronicle.com/article/what-happens-when-entire-departments-get-the-ax/> [<https://perma.cc/HZ86-4VUE>].

⁶² SHILLER, *supra* note 23, at 110.

Moral hazard becomes a problem too. There is less reason to work hard if one's individual decline in effort is insured.

To his credit, Shiller recognizes at least part of this problem. “[W]hen the policy is large and moral hazard appears substantial, or when basic monitoring for moral hazard is costly or impossible, payments may have to be tied exclusively to the index of aggregate incomes to avoid excessive risk of the moral hazard,” he concedes.⁶³ Over time, the “insurance industry will have to learn under what circumstances the moral hazard is likely to play a significant role.”⁶⁴ But this ignores that the very industry performing the risk management function may depend on whether there is an attempt to individualize payouts. If payouts depend entirely on aggregate indices, then the risk management product is a relatively simple financial security, and the provider need not be an insurer at all. Insurance companies, however, would be needed for a more individualized product. As soon as risk depends on the individual, adverse selection and moral hazard emerge, and with them, the need for individual risk classification.

Shiller more clearly recognizes the value of a uniform product when he discusses risks to home equity values. He describes an experiment in Oak Park, Illinois, that offered insurance against the value of particular homes. The experiment, which was designed to reassure white residents that an influx of Black residents would not adversely affect their home values, drew relatively few homeowners.⁶⁵ Those homeowners in fact never receive payouts, given the steady increase in the value of Chicago real estate. But Shiller acknowledges that one problem with such insurance is that one must sell one's house to collect. That entails a clear moral hazard problem; if one expects to receive insurance, one will be more willing to accept an offer than to wait for a better one. Shiller notes that he and Allan Weiss proposed that insurance claims should thus be settled “based on indexes of home prices.”⁶⁶ He notes the possibility of constructing indices not only for large cities, but also for small geographic areas and particular neighborhoods. Indeed, he does more than note this possibility; he and two coauthors created such indices and a business to market them. In the book, Shiller suggests the possibility of “[a] futures market for single-family homes for a city” based on such indices.⁶⁷ Since the book's publication, this business has

⁶³ *Id.*

⁶⁴ *Id.*

⁶⁵ *Id.* at 118.

⁶⁶ *Id.* at 119.

⁶⁷ *Id.* at 136.

in fact been successful in marketing securities in affiliation with the Chicago Mercantile Exchange.⁶⁸

Creation of these financial products was presumably much simpler than creation of individualized equity insurance would have been. With an individualized insurance product, insurers would need to develop models of each piece of real estate, recognizing that some might depreciate faster than others, and each real estate owner, recognizing that some might take better care of their property than others, and it might need to play a role in the sales process. Mistakes in pricing the insurance could easily lead to premiums failing to cover payouts, even if there is no systematic decline in the quality of real estate in a serviced region. Perhaps someday one might imagine supplementing the financial product based on aggregate home values with property-specific insurance policies. But that day is likely to arrive only once the simple, transparent, low transactions costs financial product becomes popular. Unfortunately, it appears that even that day has not arrived. A recent report of the CME indicates that the number of future contracts held by market participants (the “open interest”) was one for the New York-linked contract, four for the Los Angeles contract, and so on for other contracts.⁶⁹ (Total open interest of all securities on the CME was 86,302,998.⁷⁰) One might properly argue that the failure of this approach suggests that more individualized insurance could not have been any less successful. Perhaps so, especially if homeowners are more worried about risks to their specific parcels (say, from an unsavory business opening down the street) than risks to the market as a whole. But if consumers are unwilling to purchase a product that provides reasonable risk reduction in a transparent way, they might also be unlikely to purchase a product that involves high transactions costs simply because it boasts somewhat improved risk management properties.

It is possible to imagine a financial product that provides for individualization without increasing the challenge to insurers in forecasting their liability risk. For example, an insurer might offer a livelihood insurance product whose gross payoff is based entirely on the performance, absolute or relative, of the covered group, calculable using a simple formula. Yet the insurer might provide that the *relative* amount

⁶⁸ See, e.g., CME GROUP, S&P/CASE-SHILLER HOME PRICE INDICES FUTURES AND OPTIONS (2007), <https://www.cmegroup.com/trading/real-estate/files/housing-fact-card.pdf> [<https://perma.cc/P3QC-TYXQ>]. For a broad assessment of how financial securities can reduce the risks associated with home ownership, see Lee Anne Fennell, *Homeownership 2.0*, 102 NW. U. L. REV. 1047 (2008).

⁶⁹ CME GROUP, EXCHANGE SUMMARY VOLUME AND OPEN INTEREST EQUITY INDEX FUTURES, (Jan. 7, 2021), https://www.cmegroup.com/daily_bulletin/current/Section01C_Summary_Volume_And_Open_Interest_Equity_Index_Futures_And_Options.pdf [<https://perma.cc/38NF-2WNN>].

⁷⁰ *Id.*

that each insured receives should be based on that insured's individual circumstance. For example, the insurer might distribute the gross amount to all the purchasers of the product who have suffered a loss, in proportion to the loss and to the amount of coverage purchased. With this approach, the insurer still does not need to worry initially about the risk associated with individual insureds, because the total payout will depend solely on the group. But that does not eliminate the problem of adverse selection; it simply means that the parties who need to worry about it are the insureds. Any insured who thinks that it is in less danger than others with the same livelihood will be hesitant to invest, because the expected payoff will be lower. The pool of insureds will thus consist solely of those whose risk is relatively high, and there is a chance that the insurance pool could be subject to a "death spiral," in which no one will purchase coverage.⁷¹

Some risks are so narrow that individual risk classification makes sense. No one would want to buy an automobile risk management product that paid off when the total number of automobile accidents increased in the metropolitan area. The core case for livelihood insurance, however, is based on the observation that some risks are widely shared, and when payouts do not depend on individual characteristics, risk management can be accomplished through relatively simple and low transactions cost financial products. Perhaps if livelihood insurance is successful, it will make sense to develop some hybrid products in which payouts depend at least in part on an individual's total income. But Shiller may have been too ambitious in including this in his standard example of livelihood insurance. A transparent financial product has a much better chance of finding consumers than one that aims for perfection.

B. Obstacles

Shiller did not blithely assume that his ideas, once set to paper, would immediately lead to the creation of multi-billion-dollar markets. To the contrary, he acknowledged that inventions were subject to "contagion,"⁷² and that a "great many inventions tend to spread slowly at first because their adoption requires a broad social recognition of their

⁷¹ For an explanation of how a death spiral can arise, combined with skepticism about whether this is likely in the real world, see Peter Siegelman, *Adverse Selection in Insurance Markets: An Exaggerated Threat*, 113 YALE L.J. 1223, 1254–58 (2004).

⁷² SHILLER, *supra* note 23, at 100.

usefulness, a recognition that may be very slow in coming.”⁷³ As examples, he cites nonfinancial inventions like wheeled suitcases⁷⁴ and movie subtitles.⁷⁵ Inventions for managing livelihood risks, he suggests, face an additional problem: “one has only one lifetime, one opportunity to experience the success or failure of one’s risk management system.”⁷⁶ Livelihood insurance or other risk management products could prove their worth in just a single crisis. But that requires at least some people to recognize the value of these products based on their merits, rather than anecdotal experience. In Part III, we will consider the possibility that the government might help promote the development of the market for livelihood insurance. To determine what type of help may be needed, however, we need to assess why livelihood insurance does not exist. In this section, we will focus on the demand-side as well as the supply-side obstacles.

1. Demand side

The demand-side challenge for livelihood insurance arguably is greater than the challenge of developing wheeled suitcases or movie subtitles. One needs only to observe someone wheeling a suitcase once to recognize their potential utility. A glance might not solve the consumer information problem entirely. A consumer might worry that wheels might not be durable or that the suitcase frequently lose balance. Still, a glance is enough for the consumer to gain at least a basic appreciation of product features. Much the same may be true of movie subtitles. If subtitled silent films were really preferable to intertitled films, then a single viewing could have been enough to illustrate their virtues. Livelihood insurance, however, is a financial product. A consumer might have trouble understanding the idea that this is a product that will pay off not when the policyholder personally experiences a decrease in income, but when the group as a whole suffers such a decline. Moreover, a consumer who does understand this point might think that the product is therefore not a useful one. What’s the point, the consumer might reason, of insurance that will pay you only if *others* have suffered a loss?⁷⁷

⁷³ *Id.*

⁷⁴ *Id.* at 101–02; see also Michael Abramowicz & John F. Duffy, *Intellectual Property for Market Experimentation*, 83 N.Y.U. L. REV. 337, 371–72 (2008).

⁷⁵ SHILLER, *supra* note 23, at 102–03 (noting that subtitles would have been especially useful in silent films, but that they generally used intertitles instead, perhaps because the first movie to superimpose subtitles did it ineffectively).

⁷⁶ *Id.* at 103.

⁷⁷ One way to entice buyers might be to promise benefits in the absence of a calamity. See, e.g., Tom Baker & Peter Siegelman, *Tontines for the Invincibles: Enticing Low Risks Into the Health-Insurance Pool with an Idea from Insurance History and Behavioral Economics*, 2010 WIS.

The case for livelihood insurance demands some appreciation of market dynamics. The reduced form version of the argument is that by adopting a simple compensation formula, livelihood insurance can provide protection against group harms much more cheaply than regular insurance. But an appreciation of just why this is so requires some degree of sophistication. A customer likely will not understand that livelihood insurance succeeds in eliminating adverse selection, though a seller of livelihood insurance might make some headway by pointing out that with individualized wage insurance, everyone pays more because of a few bad apples who know they will face a loss of income. Similarly, one can offer an intuitive explanation of moral hazard—that with individualized insurance, some insurance recipients won't work as hard—but it takes another inferential step before the potential insured can understand how the moral hazard problem raises the cost of insurance and how livelihood insurance solves the problem. An insured might be told that risk classification and claims processing are costly activities, but only a customer with an intuitive appreciation of the workings of supply and demand will recognize that insurers will pass along some of the savings to insureds.

One apparent selling point might be that livelihood insurance contracts are much simpler and easier to understand than conventional insurance contracts. A contract can dispense with long descriptions of just what is covered and what is excluded. But that does not mean that livelihood insurance contracts will be two or three sentences long. There will need, for example, to be some explanation of exactly how income is to be measured. And even though disputes should be much rarer, there will still need to be some language about just how disputes between the insurer and insured should be resolved. A contract with tens of paragraphs might not seem meaningfully much shorter than a contract with hundreds of paragraphs, particularly given the reality that most consumers don't read contracts.⁷⁸ The length of the contract will thus fail to convey the message that the insurer cannot avoid payment by pointing to some minor technicality. Maybe some customers who are familiar with purchasing stocks and other securities will have an intuitive appreciation of the fact that livelihood contracts will reduce their overall

L. REV. 79 (2010), https://scholarship.law.upenn.edu/faculty_scholarship/255/ [<https://perma.cc/K9GK-UFDJ>].

⁷⁸ Jeff Sovern et al., “*Whimsy Little Contracts*” with *Unexpected Consequences: An Empirical Analysis of Consumer Understanding of Arbitration Agreements*, 75 MD. L. REV. 1, 15–19 (2015) (reviewing the literature).

risk exposure. But most people who could benefit from livelihood insurance do not have large investment portfolios or experience in investing.⁷⁹

Many consumers will recognize correctly that any company trying to sell them livelihood insurance is seeking to make money. Consumers have no easy way of determining just how much of what they pay in premiums can be expected on average to become insurance company profit. Ordinary disclosure requirements will not help much either because, in the typical year, an insurer will not need to pay out anything on livelihood insurance policies. The argument that livelihood insurance will generally be a good deal is that because entry barriers are fairly minimal and policies are easy to compare, competition should be robust. Even this argument, however, does not strongly apply in the short term. If there is just one provider of livelihood insurance, that provider may well charge prices that will produce a large profit. That is not necessarily so; perhaps the provider will seek to build up significant market share by offering reasonable prices. Consumers, however, have no simple basis for assessing whether a particular livelihood insurance policy is a good deal, even if sold on the general case for livelihood insurance.

Consumers generally purchase insurance when they are required to do so. Automobile insurance is generally required by law,⁸⁰ and homeowners insurance is generally required by lenders.⁸¹ Once they are buying a policy, they might well be upsold to achieve greater protection. Many consumers do purchase insurance not required by law, such as disability insurance, though generally only when such insurance is provided by an employer.⁸² Most people do not feel sufficiently confident in their own ability to assess the merits of an insurance policy to buy it unless they must buy it, if they are encouraged to do so by an employer,

⁷⁹ If this problem were serious enough, the government could address it by fostering the development of a market for loans to be used for the purchase of livelihood insurance or perhaps allowing individuals to purchase livelihood insurance by promising to pay a portion of their future income, with payments to be made through the tax system. This would greatly complicate the creation of a market, but the possibility highlights that consumers can use future income to finance livelihood insurance, just as they can do so to finance education or other investments. Short-term liquidity problems should not necessarily doom livelihood insurance proposals.

⁸⁰ See Mila Araujo, *Minimum Car Insurance Requirements by State*, BALANCE (Mar. 1, 2021), <https://www.thebalance.com/understanding-minimum-car-insurance-requirements-2645473> [<https://perma.cc/WMM6-2YN7>] (noting that forty-seven states require automobile insurance).

⁸¹ See, e.g., Pat Howard, *How Much Homeowners Insurance Is Required by Mortgage Lenders?*, POLICYGENIUS (Apr. 30, 2020), <https://www.policygenius.com/homeowners-insurance/mortgage-lender-requirements-for-homeowners-insurance/> [<https://perma.cc/NUB2-HZDL>].

⁸² Approximately six million Americans have individual disability coverage, and many working Americans have insufficient insurance coverage for disability. See COUNCIL FOR DISABILITY AWARENESS, *HOW MANY WORKING AMERICANS HAVE ADEQUATE DISABILITY COVERAGE?* (Apr. 26, 2018), <https://blog.disabilitycanhappen.org/how-many-americans-have-disability-coverage> [<https://perma.cc/977T-82U5>].

or if they observe that many other people purchase the coverage. The market thus faces a chicken-and-egg problem. If livelihood insurance achieved a certain critical level, many consumers might well be willing to set aside some of their income to purchase it, but until it reaches this level, no one will want to purchase it.⁸³

Problems of information are not the only demand-side problems. Consumers who care mostly about relative income may not be willing to sacrifice current social standing for the possibility of avoiding a future calamity. Meanwhile, some consumers may have high discount rates. If we accept the normative legitimacy of preferring present to future consumption, then we must concede that it may not be rational for them to purchase livelihood insurance. Still other consumers may be hyperbolic discounters,⁸⁴ with very high discount rates over short time frames and low discount rates over longer time frames. To enroll such customers, insurance companies may need to provide very low premiums at first with higher premiums later, much as credit card sellers offer low teaser rates that rise over time, benefiting from consumers who fail to revisit their earlier financial decisions. But this is precisely the sort of behavior that insurance regulators might find deceptive. If livelihood insurance is provided as a simple financial security, then consumers could borrow to obtain it. But this complicates the transaction considerably.

Some of these challenges might be reduced if employers offered livelihood insurance as a benefit. The premia for livelihood insurance can then be deducted from employees' paychecks. But this will not be in employers' interest if employees remain skeptical about livelihood insurance's value. Especially if livelihood insurance is an unusual product, employees may wonder whether employers are receiving a kick-back—and indeed, some financial incentive for employers might well be necessary initially. Meanwhile, some consumers may not wish to be *safer* than other consumers.⁸⁵ Finally, livelihood insurance might suffer from the same reputational effect as seatbelts once did: A business that offers livelihood insurance, like a car with seatbelts, must be unsafe. A potential advantage of employer-provided livelihood insurance is that the relevant group could be defined as employees of a particular employer, particularly if the employer is large enough. That creates a new

⁸³ For a review of Shiller's book making similar points, see Stephen A. Ross, *A Review of The New Financial Order*, 42 J. ECON. LIT. 1098 (2004).

⁸⁴ See, e.g., Karen E. Dynan et al., *Do the Rich Save More?*, 122 J. POL. ECON. 397, 416 (2004) (reviewing research on hyperbolic discounting).

⁸⁵ See, e.g., Thomas C. Shelling, *Hockey Helmets, Concealed Weapons, and Daylight Saving: A Study of Binary Choices with Externalities*, 17 J. CONFLICT RESOL. 381 (1973) (noting that hockey players might not want to wear helmets even if they would like the league to adopt a rule mandating helmets).

problem for the employer, however. If employees are protected against their employer's failure, then they may work less hard. Traditionally, employers have sought to bond employees through securities that align their interests, such as defined benefit plans.⁸⁶ Employers might thus offer only livelihood insurance defined based on industry-wide livelihoods, where their own employees will be a significant number. But that means that employees will only be insured for some portion of the risk beyond their personal control. For some employees, such as those in startups, the risk associated with an employer may be greater than the risk associated with the industry as a whole.

These problems are not unique to livelihood insurance. Many goods have strong network effects, making them valuable to consumers only if many other consumers are using them. And yet, some early adopters may decide they receive enough value even without network benefits, providing enough liftoff for others. Livelihood insurance does not seem like a good that inherently involves strong network effects, but products that consumers have difficulty evaluating face a problem similar to network goods. It may therefore be tempting to conclude that, just as other network goods and difficult-to-evaluate goods have come to market, livelihood insurance will necessarily succeed as well. Many forms of insurance at one time faced the same challenge. But there may be many other goods that would be wildly successful if only they could achieve a critical mass of users, and we cannot assume that markets will always overcome this challenge when it is in consumers' interests. And even if we can have confidence that the market ultimately will overcome this challenge, that may take a long time, perhaps far longer than the time interval between pandemics and other crises for which livelihood insurance might be valuable. To determine whether the problem can be overcome in a reasonable time absent government intervention, we must consider the incentives of suppliers. The question is whether there are suppliers who can benefit from promoting and subsidizing early consumers in the hope of gaining market share.

2. Supply side

If sufficient consumer demand exists for livelihood insurance, then supply will follow. This is an axiom of industrial organization, whose models generally assume that entry will occur until producers earn zero economic profits. And yet, not only does livelihood insurance not exist,

⁸⁶ See, e.g., RICHARD A. IPPOLITO, PENSION PLANS AND EMPLOYEE PERFORMANCE: EVIDENCE, ANALYSIS, AND POLICY (1997) (reviewing evidence that pension plans help employers improve performance).

but even pandemic insurance of a more conventional sort is not available. This section considers two possible explanations: First, any sort of insurance against events on the magnitude of pandemics is impossible because insurers cannot access a sufficient amount of capital. The first subsection will cast doubt on this explanation. Second, even if sufficient capital is available, in the absence of existing consumer demand, financial companies are unlikely to be willing to experiment on the product. An experiment would require an expensive effort to educate the public about the benefits of livelihood insurance, but if that experiment were successful, second-movers could easily free-ride on the success of the first-movers. The second subsection will advance this argument. Too often, we assume that if a hypothetical market transaction that would benefit both a producer and a consumer, then the transaction will occur, but that may not be the case when consumers lack information that the transaction would be beneficial and producers providing such information are unable to stop consumers from entering into contracts with competitors.

a. Availability of risk capital

The standard explanation for the absence of antiterrorism insurance and other forms of insurance where losses are highly correlated is that insurance companies are unable to access sufficiently large pools of capital. Insurance companies, of course, do have standard approaches to dealing with the problem of correlated losses, such as the acquisition of reinsurance.⁸⁷ But one might worry that reinsurance is insufficient to address the losses on the scale of a global pandemic.⁸⁸ Global reinsurance capital is under one trillion dollars.⁸⁹ The 2020 global COVID-19 pandemic, meanwhile, is estimated to have caused approximately a 4.3 percent loss, relative to gross world product of approximately \$142 trillion in 2019,⁹⁰ so the global loss would have greatly exceeded the available insurance pool.

⁸⁷ Reinsurance is important not merely because it provides capital but also because it provides an institution that effectively serves a regulatory role. See Aviva Abramovsky, *Reinsurance: The Silent Regulator?*, 15 CONN. INS. L.J. 345 (2009).

⁸⁸ As Peter Siegelman notes in the context of terrorism insurance, “risks are hard to diversify-away,” though “there are means for laying-off parts of such risks.” Peter Siegelman, *War Damage Insurance After Fifty Years: A New Old Look at Terrorism Insurance*, 9 CONN. INS. L.J. 19, 38 (2002).

⁸⁹ See *Reinsurance Market Outlook 2020*, AON PLC (2020), <http://thoughtleadership.aon.com/Documents/20200710-re-analytics-reinsurance-market-outlook-junejuly.pdf> [<https://perma.cc/WQ9Z-HSAZ>].

⁹⁰ See WORLD BANK, *GLOBAL ECONOMIC PROSPECTS* (Jan. 2021), <https://openknowledge.worldbank.org/handle/10986/34710> [<https://perma.cc/6Z2W-MA8H>].

The size of the global reinsurance market, however, is not fixed as a matter of physics. If there were sufficient consumer demand for anti-terrorism insurance and pandemic insurance, larger reinsurance pools could be created, or alternative financial institutions could be developed. There is no shortage of global capital chasing high returns. Hedge funds, for example, might be willing to place some of their capital at stake in return for high annual payments. Steven Schwarcz has argued that pandemic risk is insurable, if securitized via pandemic catastrophe bonds, which pay off if and only if a pandemic occurs.⁹¹ Livelihood insurance can be conceptualized as a special kind of catastrophe bond,⁹² which insurers use to provide capital to pay claims in the event of highly correlated losses. The catastrophe is not declaration of a pandemic per se but large relative loss of income.

Those who have studied the difficulty that insurers face in building sufficient capital for so-called “uninsurable risks” do not claim that the task is inherently impossible. Rather, it is a product of current institutional arrangements. For example, Dwight Jaffee and Thomas Russell note that accounting conventions and tax rules may make it difficult for insurance companies to build large pools of capital that they anticipate they will likely not need to pay out for many years.⁹³ Problems of this sort are difficult but not intractable. If there were strong consumer demand and political will, they might be overcome.

A full account of these problems is beyond my scope here. But the problem is likely to be no more serious for livelihood insurance than for standard pandemic coverage. Indeed, livelihood insurance can be written in a way that greatly ameliorates the problem. A livelihood insurance policy may cover only *relative* declines in income, paying off only when a particular livelihood suffers relative to others in the economy. If the concern is thus that a catastrophe could be much worse than the current pandemic, and we need look no further beyond the science fiction shelf to recognize that this is at least theoretically possible, we still need not worry that everyone’s livelihood insurance would kick in at the same time. To be sure, following a major catastrophe, total livelihood insurance payouts will increase, because catastrophes have, at least in relative terms, winners and losers.

⁹¹ See Schwarcz, *supra* note 10.

⁹² *Id.* (discussing financial products that pay out only in the event of a large catastrophe, such as a sufficiently dangerous hurricane).

⁹³ See Dwight M. Jaffee & Thomas Russell, *Catastrophe Insurance, Capital Markets, and Uninsurable Risk*, 64 J. RISK & INS. 205 (1997).

b. Market experimentation

Even if sufficient pools of risk capital are available, the weakness on the demand side creates a challenge for the supply side. In principle, a financial company, whether an established player or a startup, might enter the market, accepting short-term losses in the hope of capturing market share in the long term. The company's strategy would be to promote livelihood insurance, certainly through marketing and perhaps even by offering policy terms that would be expected to produce a net loss. The goal would be to build the market and establish a strong trademark. The short-term losses would be an investment at producing rents over the long term.

The vulnerability of this business plan is the assumption that the first-mover will be able to earn rents over the long term. Such an assumption would be appropriate for a complex financial product that is difficult to compare. If a particular financial services company established a reputation for such a product, consumers will likely favor that company's products over competitors'. The reputation might signal to consumers that the financial services company has good products or that it is known to meet its commitments. Because insurance companies have considerable discretion in how aggressively to fight claims, reputation matters. Livelihood insurance, however, is a simple product. It amounts to nothing more than a bet about what will happen to some welfare index. The terms of a proposed bet are easily compared, and a consumer would presumably choose to enter into such a bet with whoever offers the best terms. Customers could easily determine which company offers the best deal.

A counterargument is that consumers often buy products without shopping around as effectively as they might. For example, consumers buy mortgages, and many do not separately call each potential financial services provider. Therefore, better known banks will be in a better position to obtain market share. There are, however, significant differences. Mortgage companies use complex underwriting processes, and despite advertising of interest rates, the interest rate that one consumer receives may differ from the interest rate others receive. Though based on individualized risk assessment, the differences are not entirely a predictable consequence of known credit scores. Mortgage applications are long and complex, and a consumer may economize on time by shopping with just one or a few potential providers. Providers of livelihood insurance, by contrast, would not care about borrowers' credit-worthiness. Even if livelihood insurance were financed with premiums paid over time, failure to pay livelihood insurance premiums would terminate the provider's obligations, so credit-worthiness will at least be

much less of a consideration. It will thus be much easier for consumers to shop for livelihood insurance.

Some consumers, admittedly, won't shop. Even if livelihood insurance becomes ubiquitous, many are likely to purchase from familiar financial services providers, such as their existing bank or insurance company. These financial providers might well earn more than zero economic profit selling livelihood insurance. But this only makes the challenge of developing market share by promoting one of the first livelihood insurance products more severe. In sum, if consumers can be expected to take the minimal steps needed to shop for the best livelihood insurance deal, then first-movers have no advantage. But even if consumers don't shop, they may still treat the livelihood insurance product as a commodity. The only hope for a first-mover is that there might be some consumers who will buy from the first-mover simply because it is the first-mover. If the extra profits to be gained from such consumers are sufficiently great, there could be an incentive to market livelihood insurance aggressively. That could be the case in the future, but the failure of livelihood insurance to emerge so far may well be attributable to an expectation that first-mover advantages are limited.

Usually, economists operate on the assumption that if hypothetical products would benefit consumers, those products will be timely provided by the market. Shiller, however, was correct to identify wheeled suitcases as an example of an invention that failed to gain earlier adoption because no one provider would be able to appropriate the benefits of the new product. John Duffy and I also used the wheeled suitcases example in an article drawing a parallel between incentives to engage in technological innovation and incentives to engage in market innovation.⁹⁴ Sometimes, there is uncertainty not about whether a particular invention is technologically feasible but about whether there is consumer demand. In the absence of intellectual property or government subsidies, the amount of invention will be suboptimal. Each inventor realizes that second-movers will be able to copy inventions and quickly gain market share. The second-movers can be seen as free-riding on the technical information discovered by the inventor. What is less appreciated is that the same phenomenon occurs with market innovation. If a first-mover proves that there is unexpected consumer demand or invests in creating such demand, then second-movers can free-ride on the first-mover's investments. Even in the absence of intellectual property or any government interference, eventually useful products will likely find their way to the marketplace. But the possibility of free-riding on

⁹⁴ Abramowicz & Duffy, *supra* note 74.

market experimentation suggests that products facing uncertain consumer demand will arrive in the marketplace inefficiently late, just as the possibility of free-riding on technological experimentation means that innovations will take longer to develop.

The absence of livelihood insurance can be explained in two different ways. The first explanation is that it is not a useful product because workers' risks are largely idiosyncratic, rather than resulting from their choice of profession. The pandemic was a rare exception, but the number of comparable shocks to industries is not sufficiently large to justify a product like livelihood insurance. I am skeptical of this explanation. Pandemics are hardly the only phenomenon that can spread economic hardship widely on those in a particular profession, and livelihood insurance can be just as effective at protecting against the possibility of future technological change. The second explanation is that even if livelihood insurance would be useful, the product is difficult to bring to market, both because consumers cannot easily understand the case for it and because producers cannot appropriate the benefits of educating consumers. If this explanation is correct, markets may eventually correct the problem. Perhaps the pandemic will be an occasion for workers in some industries to recognize the value of protection. But that could take a long time. If it is a priority for the government to foster better mechanisms for risk sharing, it should consider temporary initiatives that could help build markets in livelihood insurance that could then be self-sustaining.

III. POTENTIAL GOVERNMENT ROLES

In establishing the argument for livelihood insurance, we have built an implicit case for its superiority to conventional insurance. Livelihood insurance avoids the problems of adverse selection and moral hazard, and the transactions costs of providing it are greatly reduced. That does not mean that livelihood insurance is superior to conventional insurance for all types of risk, of course. In principle, livelihood insurance can be adapted to any sort of group risk, so long as it is possible to construct an index of value. As the case for a security-based rather than insurance-based solution increases, the greater the degree of sharing of the risk. An insured worried about hurricane damage probably should purchase conventional insurance rather than an adaptation of livelihood insurance that will pay off based on damage to all houses in a neighborhood because even serious hurricanes often wreak much greater destruction against some houses in a neighborhood than others. But if protecting against the risk that climate change will make broad swaths of waterfront property uninhabitable, an approach analogous to livelihood insurance may be appropriate. Livelihood insurance will

never threaten the automobile insurance industry, but it is certainly the better model for management of the risk of regional decline or of economic recession.

If livelihood insurance indeed would be a useful product but will not be provided by the finance industry at sufficient scale, the question becomes whether the government might have some role in fostering development of the market. The government's role might be designed to be temporary, to jump start the market.⁹⁵ Or it might have some role in perpetuity, especially if the most significant obstacle to the development of a market is the difficulty of procuring sufficient risk capital. This is true both for livelihood insurance and for a more conventional type of insurance product. And for both types of products, there are a number of different forms that government intervention might take. This Section surveys a range of them, focusing especially but not exclusively on a government plan to foster livelihood insurance. In particular, it considers the possibility of requiring insurance purchases, of collecting information, of serving as a market maker or organizer, and finally of subsidizing the market.

A. Universal Insurance

The simplest, though also most dramatic, potential government intervention would be to mandate the purchase of livelihood insurance. Moreover, Jack Hirshleifer recognized the core of the argument over seventy years ago in an article entitled *War Damage Insurance*.⁹⁶ As Peter Siegelman notes in a paean to Hirshleifer's article,⁹⁷ Hirshleifer understood the essence of the adverse selection problem years before now-Nobel Laureate George Akerlof modeled it in his famous *Market for Lemons* article.⁹⁸ Mandatory insurance eliminates the problem of adverse selection because good risks and bad risks alike will be required to purchase coverage. Meanwhile, Hirshleifer recognized that "universal coverage (not achievable under a voluntary plan) would entirely eliminate the problem of demands for compensation sure to arise after

⁹⁵ A danger is that once the government initiates funding, strong public choice pressures will cause the government to continue subsidies even once the market could become self-sustaining. Moreover, resources will be expended pressuring the legislation to maintain rents. See generally Anne O. Krueger, *The Political Economy of the Rent-Seeking Society*, 64 AM. ECON. REV. 291 (1974) (introducing the idea of rent-seeking).

⁹⁶ Jack Hirshleifer, *War Damage Insurance*, 35 REV. ECON. STAT. 144 (1953), reprinted at 9 CONN. INS. L.J. 1 (2002).

⁹⁷ Siegelman, *supra* note 88, at 28.

⁹⁸ George Akerlof, *The Market for "Lemons": Quality Uncertainty and the Market Mechanism*, 84 Q.J. ECON. 488 (1970) (discussing adverse selection, with special attention to the used car market).

bombing on behalf of those who have failed to take out insurance.”⁹⁹ Adapted to the pandemic crisis, the observation is that mandatory coverage compensates for the fact that people will expect the government to provide social insurance should that affect livelihoods. Indeed, the government’s massive expenditures on pandemic relief strengthen the concern that government provision will inhibit development of the private market. On the other hand, the government’s relief was not well tailored to the amount of loss, so if expectations are that government will proceed in much the same way next time, consumers might still demand coverage.

A critical design question in a mandatory livelihood insurance regime is just what protection individuals must purchase. Mandatory insurance might simply require each individual to allocate some percentage of income to livelihood insurance and similar financial products. In principle, individuals could then choose products based on their own risk. Some might decide that much of their risk is associated with the danger of regional decline and purchase a security that will pay off if the region performs poorly relative to the nation. A homeowner might purchase insurance tailored to the value of houses in their neighborhood. Workers might purchase insurance tied to an index of livelihood in their chosen professions. And some might choose to protect against a mix of risks. But a simple mandate like this runs into a significant problem. Individuals who would rather not buy livelihood insurance at all may simply choose the product that provides the greatest probability of a payout but the least helpfulness in the event of a catastrophic shock. This significantly complicates the legislative scheme, requiring the government to regulate insurance products so that they are truly geared toward catastrophic risks rather than to evading the mandatory insurance requirement.

A further difficulty of a mandatory insurance regime of this sort is that different individuals have different degrees of need for livelihood insurance. Some individuals may work in professions that are relatively immune to unexpected shocks. Undertakers, unfortunately, seem unlikely to be out of work soon, and there seems little reason to require them to purchase livelihood insurance. Truck drivers, on the other hand, would maximize welfare by purchasing quite a bit of livelihood insurance, given the possibility (but hardly the certainty) that automation will eliminate their jobs.¹⁰⁰ In principle, the government could enact detailed industry-by-industry regulations, but this would involve a

⁹⁹ Hirshleifer, *supra* note 96, at 147.

¹⁰⁰ See Maury Gittleman & Kristen Monaco, *Automation Isn't About to Make Truckers Obsolete*, HARV. BUS. REV. (Sept. 18, 2019), <https://hbr.org/2019/09/automation-isnt-about-to-make-truckers-obsolete> [<https://perma.cc/6PXF-SZSK>] (presenting the favorable view of truckers’ prospects).

great deal of guesswork. For example, do Uber drivers need more livelihood insurance than most because of the danger of self-driving cars, or less because many drivers intend to drive only temporarily? Did the pandemic prove that grocery store employees are immune to shocks because of the essential nature of their work, or does the rise of grocery delivery services portend the need to find other employment? The goal of establishing a private insurance market is to save the government the trouble and the politics associated with making such assessments.

Instead of dictating the percentage of income that individuals must set aside, the government might require that individuals set aside enough to purchase sufficient livelihood insurance to cover a sufficient decline in their livelihoods. For example, the government might require each person to purchase enough insurance so that half of the decline in one's livelihood, relative to other livelihoods, beyond a 20 percent threshold must be covered. Such a system not only would focus its mandate on the workers who most need liability insurance but would also send a useful market signal to individuals in professions at high risk from future catastrophes or technologically driven obsolescence. If livelihood insurance is very expensive, people might come to realize, that must mean that others believe that there is a high chance that individuals in this profession will experience difficulty in the future. Even if they do not consciously understand the implications of high prices for livelihood insurance, those high prices will change workers' after-tax income, and that in turn may affect people's choices about allocation of human capital. At least at the margins, it would be better if fewer workers devoted their efforts to unsustainable jobs. Some might still choose the jobs and adapt after their elimination, but the livelihood insurance will cushion this transition.¹⁰¹

This approach also creates regulatory challenges, however. The problem remains of classifying someone's livelihood to ensure that the person purchases the correct insurance. We would not want everyone to claim to have a future interest in being an undertaker and purchase the super cheap undertaker's insurance. And so, the government would need some means of assuring that workers make reasonable decisions about which livelihood policies to buy. This might be possible to achieve at the employer level. Each employer would be required to identify its line of business, much as employers do already on tax returns, and each employee would be required to purchase livelihood insurance protecting individuals in that line of business. For some employees, that will result

¹⁰¹ On the other hand, forcing coal miners to pay high insurance prices *now* might give them greater incentive to prevent regulatory changes that the market is anticipating. If, for example, joining a climate change accord will increase insurance prices this year, that might produce more opposition than an accord that might have effects in ten or fifteen years.

in a mismatch, though, because some employees' principal risk arises not from the business of its employer but from their role within the organization.

Another possibility would be for the government to require every worker to enlist a broker whose responsibility is to determine the livelihood insurance policy that would most effectively reduce that worker's risk. Then, the individual would be required to allocate a sufficient amount of income to achieve a designated level of protection, again such as protecting at least half of income beyond a 20 percent relative decline in value. If the worker has several sources of risk, the broker might recommend that the individual's purchases be divided across several livelihood insurance products. This shifts the task from regulating each worker to regulating brokers. A relatively simple approach would be to impose a fiduciary duty on brokers and to insist that brokers carry insurance covering any liability for breach of fiduciary duty.¹⁰² This approach might not lead to optimal purchasing decisions, but it would at least place some hurdles in the way of a worker who sought to evade a mandatory insurance requirement by purchasing livelihood insurance unrelated to the actual risks faced by the broker.¹⁰³

Admittedly, this discussion of how a mandatory livelihood insurance regime is academic, even by the standards of this academic publication. At least, it seems highly unlikely that the federal government in the United States would make livelihood insurance mandatory. Adverse selection concerns also create an argument for mandating purchase of health insurance,¹⁰⁴ and the Affordable Care Act even created a mandate,¹⁰⁵ but the government has now lowered the penalty for noncompliance to zero. Challenges in the health insurance market receive far more attention than the absence of insurance protection against pandemics and similar shocks. Even if one could imagine the government creating some form of mandate, it seems unlikely that it would insist on protection from more than a small percentage of downside risk. It seems plausible that many individuals would optimally reduce risk if

¹⁰² A fiduciary duty is a common tool "where one party is given discretionary authority over property or a 'critical resource' owned by another party." Andrew S. Gold, *On the Elimination of Fiduciary Duties: A Theory of Good Faith for Unincorporated Firms*, 41 WAKE FOREST L. REV. 123, 130 (2006).

¹⁰³ This depends on the assumption that fiduciary duty requirements will have a sufficiently disciplining effect. *But see* Daniel Schwarcz & Peter Siegelman, *Insurance Agents in the 21st Century: The Problem of Biased Advice*, in HANDBOOK ON THE ECONOMICS OF INSURANCE LAW (Daniel Schwarcz & Peter Siegelman eds., 2015) (offering skepticism about advice of brokers).

¹⁰⁴ *See generally* Allison K. Hoffman, *Oil and Water: Mixing Individual Mandates, Fragmented Markets, and Health Reform*, 36 AM. J.L. & MED. 7 (2010) (reviewing the function of the individual mandate).

¹⁰⁵ *See* I.R.C. § 5000A.

they were to devote 5 or 10 percent of their income to products like livelihood insurance, including policies with very long time horizons. That would be a major policy change and one that at least for now has no apparent political support. In the foreseeable future, the best we can hope for is for the government to take modest steps in the direction of allowing voluntary purchases of livelihood insurance. If successful, the product might become more commonplace, and a conversation could begin about the possibility of mandates.

B. Information Collection

The most modest step that the government could take would be to collect information. In particular, the government could require taxpayers to enter their livelihood on their tax forms, perhaps by choosing from a menu of codes. More importantly, the government could commit to publishing reports on the income trajectory of each group of taxpayers. If, for example, a livelihood category for 2022 were “restaurant worker,” then the government would each year report the average gross incomes of all who entered that category in 2022. In subsequent years, the government would report the average gross incomes of these same individuals, even if they entered some other livelihood category. Shiller makes the need for this clear: “A person is classified as in an occupation whether or not that individual stays in that occupation; this is important since when the economic status of occupations falters, many will find a different occupation, leaving behind only those who are still doing well in the occupation.”¹⁰⁶ The opposite is also true; if waitstaff are easily assimilated into other lines of work, then their livelihood has not declined as much as if they are out of work.

A reasonable question is whether the data should include individuals who have exited the workforce altogether. There is a strong argument that the answer is yes because exits from the labor force, though not counted as unemployment, often reflect difficult economic circumstances. But in some professions and especially across long time horizons, it may be that people have exited the labor force because they have saved enough to retire. Even if they have no income, their standard of living might remain quite high. Unfortunately, it would be considerably more complex for the government to measure standard of living. Meanwhile, an additional question is whether to count dead people, presumably earning zero income, in both the numerator and the denominator. Dead people do not need livelihood insurance but excluding them might paint an unduly rosy picture of professions whose workers are especially likely to die as a result of occupational hazards or of despair. So

¹⁰⁶ SHILLER, *supra* note 23, at 113.

long as the government's goal is simply to provide data for private markets, however, these questions are easily resolved: The government can construct different measures and report them all. Ideally, the government would provide far more data than just average income among employees; it might publish initially a distribution of income, and then it might publish the distribution of income for every percentile within the distribution. This could allow livelihood insurance products tailored not just by industry classification, but also by current income level. The government also could provide information for specific states or regions, as well as for the country as a whole.

Even those skeptical of the argument that government subsidies of livelihood insurance could correct a market failure might concede the potential virtues of government reporting data that the industry could then choose to use as it sees fit. The government, after all, already is in the business of producing economic statistics. Information is often said to be a public good. Indeed, there is an argument that livelihood indices are nonrivalrous, because any one business can use them without adversely affecting another business's ability to do so, and nonexcludable, because businesses will need to publish the indices they are relying on to resolve contracts.¹⁰⁷ The simpler argument, however, is that it is much cheaper for the government to collect this information than for anyone else to do so. The government already collects information on each person's income on tax forms. The only social costs are thus the time that it will take each taxpayer to code his or her livelihood and the effort to create and execute a computer program that will report changes in livelihood over time. This is much cheaper than private surveying and, given the possibilities of nonrandom selection of respondents and either incorrect or deliberately misleading survey responses, much more reliable.

C. Market Maker

One modest additional step would be for the government to collect information not only about present livelihoods, but also about expectations of future livelihoods. In prior work, I have described how governments might harness the power of prediction markets to generate collective forecasts of variables of interest.¹⁰⁸ For example, a local government might create prediction markets to forecast the school-age population some years in the future so that it can make informed decisions about whether to build new school facilities. Similar markets exist

¹⁰⁷ An intellectual property right could be created in an index, however, preventing others from selling products on that index without a license. *See, e.g., Dow Jones Co. v. Int'l Sec. Exch.*, 451 F.3d 295 (2d Cir. 2006).

¹⁰⁸ *See* MICHAEL ABRAMOWICZ, PREDICTOCRACY (2008).

for entertainment purposes, forecasting the probabilities that different candidates will win political races or that teams will win sports events. Studies have shown that such markets are generally quite accurate, even when the organizer of such markets takes a cut of the winnings. The government can further improve the accuracy of such markets by not charging fees and instead subsidizing these markets.¹⁰⁹ Existing prediction markets, such as [predictit.com](http://www.predictit.com),¹¹⁰ demonstrate that creation of such markets can be relatively inexpensive.

It thus should be possible for the government to create prediction markets tied to particular livelihoods. One such prediction market might forecast the 2023 income of workers in the fiftieth percentile of restaurant workers in 2022 tax returns. In principle, the market can forecast the entire income probability distribution for each range of workers. That is, it might forecast some probability of these fiftieth percentile of workers experiencing a 0 to 5 percent increase in income, some probability of a 5 to 10 percent increase, some probability of a 0 to 5 percent decrease, and so forth. The markets also might forecast the possibility of different changes in income for the median or average worker in the livelihood relative to other workers. In short, these prediction markets would provide information to workers about the market's evaluation, among other things, of the risk of catastrophic changes in income for comparable individuals in their livelihood. Such information might encourage them to buy livelihood insurance, or at least allow them to gauge whether various livelihood insurance products are a good deal.

Creation of prediction markets, however, would do more than help evaluate livelihood insurance products. The prediction markets would *be* livelihood insurance products. To purchase livelihood insurance, a worker would buy securities that would pay off if catastrophic declines in income occurred. That would tend to drive up the price of those securities above the corresponding true probability, attracting the interest of individuals not personally subject to the same risk. Those individuals would take the short side of such a transaction and thus serve as the counterparties on the prediction market contract. The market might differ from many other prediction markets in that the buyers and sellers would be individuals with different risk profiles. But the prediction markets literature recognizes the possibility that hedging risk may provide a reason to participate in prediction markets.¹¹¹ If these markets

¹⁰⁹ See Michael Abramowicz & M. Todd Henderson, *Prediction Markets for Corporate Governance*, 82 NOTRE DAME L. REV. 1343, 1351–53 (2007) (explaining the mechanics of subsidized markets).

¹¹⁰ PREDICTIT, <http://www.predictit.com> [<https://perma.cc/386P-JKYB>].

¹¹¹ See ABRAMOWICZ, *supra* note 108, at 86–87.

became very large, then predictions derived from prices would likely be slightly biased because the counterparties would insist on some compensation for the risk they were assuming, but the markets would still allow for market-based estimates.

This should highlight that livelihood insurance is a relatively simple product. The government could easily enough itself create the infrastructure needed for matching workers with counterparties. Ordinarily, of course, we allow private market actors to provide financial services, even when those services are relatively easy to provide, and we could do so here. Perhaps that would have the benefit of encouraging innovation in the definition of livelihoods, including both livelihood insurance products relying on the government's indices and on indices that the government cannot easily create. But in the short term, there may be serious regulatory obstacles to creation of prediction markets, including gambling laws and the complex regulatory scheme governing commodity futures. It may actually be simpler for the government to serve as a market maker by creating its own prediction markets than to fix the regulatory regime to permit the creation of private markets.

D. Market Subsidizer

Whether or not the government serves as market maker, it can serve as a subsidizer of the market. Indeed, this is perhaps the most obvious role for the government, as proposals for conventional pandemic insurance, like proposals for antiterrorism insurance before them, imagine that some form of government subsidy will be necessary. For example, the government might promise to reimburse private insurers for all pandemic-related damages beyond some threshold, perhaps subject to some maximum cap.¹¹² Perhaps the greatest virtue of such a proposal is that it may be politically enactable because it requires no current government outlays. But, as with government loan guarantees more generally, this approach masks the true cost of the program.¹¹³

Moreover, the approach distorts the insurer's lending decision. The purpose of a subsidy is to encourage greater issuance of insurance, but ideally, the premiums paid should still be proportional to risk. That will not necessarily be the case, however, when the government will bear a wide range of damages. Moreover, a benefit of governmental subsidies is that they may save the government the challenges of administering a social insurance program sensitive to factual evidence. But the private

¹¹² See *supra* note 16 and accompanying text.

¹¹³ For a general assessment of how federal insurance guarantees are not fully accounted for in the budget, see GOV'T ACCOUNTABILITY OFFICE, FISCAL EXPOSURES: FEDERAL INSURANCE AND OTHER ACTIVITIES THAT TRANSFER RISK OR LOSSES TO THE GOVERNMENT (Mar. 2019), <https://www.gao.gov/assets/700/697964.pdf> [<https://perma.cc/XZE6-FKH2>].

insurer has little incentive to challenge inflated insurance claims over a wide range of damages.

It is not difficult, however, to change the subsidy approach to improve the alignment of the private insurer and the government. One approach is to allow the government to offer matching insurance. That is, for every dollar of coverage purchased in a private transaction, the government will offer some coverage, either at the same price or a lower price. For example, the government might specify that it will offer ten dollars of coverage for just 7.5 times the price paid by the insured to the insurer. Then, if the insurer eventually paid out on the insurance policy, the government would pay ten dollars for every dollar paid out by the insurer. If the government is also serving as market maker using prediction markets, it could achieve much the same effect by placing 1 of every 7.50 dollars contributed by the purchaser of the security corresponding to the catastrophic scenario into the market and then pay from its own accounts nine times whatever value the purchaser receives from the private party.

Whether or not the government is the market maker, the goal of this approach to subsidization is for the government to harness the private sector's skills in risk classification without distorting those risk classification decisions. Commentators have previously suggested that a similar approach might be used for deposit insurance,¹¹⁴ on the theory that private actors might be more effective at predicting default risk than the government. This approach accepts the claim that the private sector may not have access to sufficient capital pools to insure certain large risks, and it responds by placing most of the risk on the government. In principle, however, the approach can be used without a subsidy at all, but because the private insurance price will reflect the cost of risk classification, it makes sense for the government to provide at least some subsidy. If there is an argument for providing a subsidy—whether that argument is that insurance coverage has positive spillovers or that first-movers cannot fully appropriate the benefits of educating consumers about the benefit of the insurance—then that can be adjusted on a sliding scale, by adjusting the amount of coverage or its price. Consumers will be more likely to purchase private insurance if they know that this purchase will entitle them to additional units of subsidized government coverage, but private insurance carriers retain the incentive to risk classify.

For one of two reasons, there is a strong argument that the government subsidy should decline over time. One reason is that livelihood insurance markets may succeed. If so, private parties will have time

¹¹⁴ See Kenneth E. Scott & Thomas Mayer, *Risk and Regulation in Banking: Some Proposals for Federal Deposit Insurance Reform*, 23 STAN. L. REV. 857 (1971).

and incentive to determine how to provide sufficient capital pools for such markets, and worries about consumer information and incentives for market experimentation will have been overcome. The other reason is that livelihood insurance markets may fail. If consumers have little interest in livelihood insurance even at subsidized rates, it is not clear that the government should provide the insurance at all. With only a small percentage of the population buying such insurance, it would not meaningfully decrease the government's incentive to provide ex post compensation. And there may be little reason to provide benefits only to those wise enough to purchase the product. If they are so wise, they ought to be able to make purchases at close-to-market rates.

IV. CONCLUSION

Attempts to eliminate the effects of shocks may sometimes be less effective at performing risk mitigation than cruder policies that seek merely to cushion them. Pandemic insurance may be too ambitious a product. It requires insurers to assess each insured's risk ex ante and to measure loss attributable to pandemics ex post. The businesses at greatest risk of pandemic losses will be most likely to sign up and then will take the least care to avoid loss. In its pure form, livelihood insurance is far less ambitious. It makes no attempt to measure individual loss and serves more as a financial security than as a true insurance product. But it might still be effective in cushioning shocks. The current pandemic has shown that losses from pandemics may be widely shared across particular industrial sectors. In principle, the transactions costs of providing the product should be relatively low. Livelihood insurance may well need government help if it is to catch on soon. But the government would be wise to spend its money on launching a market rather than on permanently subsidizing a market for conventional pandemic insurance that will always require high transactions costs.

Fostering development of the livelihood insurance market could be useful not only as preparation for the next pandemic, but more broadly as a risk management tool to confront any risk that may be widely shared across groups. Technological change has often dealt blows that have harmed large numbers of people with particular business interests and in particular occupations. Creative destruction will surely continue in the future, though at what pace and in which areas is a matter of great uncertainty. Development of financial products is valuable because it can help those who disproportionately suffer from new technologies and in turn because if workers and business owners know that shocks are cushioned, that can reduce resistance to new technologies. Unlike pandemics, technological change is generally valuable, but that makes cushioning the shocks they cause all the more critical.

Livelihood insurance is not the antidote for every risk. Coverage for antiterrorism insurance presents different challenges because terrorism might cause widespread damage yet still leave the vast majority of property owners unaffected. Livelihood insurance's weakness is that holders of livelihood securities will receive benefits whether they have been affected or not. If only a small percentage have suffered significant loss, then livelihood insurance may be an inefficient compensation mechanism. Still, there may be room for hybrid mechanisms with anti-terrorism coverage as well. One approach is to offer an insurance product with no ex ante risk classification. A financial institution would procure risk capital that would become available to claimants only in the event of a covered terrorist event. Individuals and businesses could buy the right to become beneficiaries of the fund. In the event that a terrorist event triggers release of the fund, a trustee would then distribute the fund, in direct proportion to both damages and to the amount contributed to the fund, and in inverse proportion to the vulnerability to a terrorist attack.¹¹⁵ Such a product protects claimants by assuring them that the entire fund will be distributed, instead of by giving an ordinary right to litigation. This is but one possible institutional arrangement, but both livelihood insurance and this proposal highlight a broader point: sometimes, the goal of risk spreading can be best achieved without detailed contracts and individualized adjudication.

¹¹⁵ For a description of a similar mechanism, see Michael Abramowicz, *Cryptoinsurance*, 50 WAKE FOREST L. REV. 671, 676 (2015).