AN INSURANCE STRUCTURE TO ENCOURAGE INVESTMENT IN PREVENTIVE HEALTH CARE

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The incentives for investments in Americans' health are poorly aligned. Health insurers are not sufficiently motivated to invest for the long term. The structure of health insurance does not compensate insurers for investments in lasting health, such as measures preventing chronic disease. If an American changes insurers, the new insurer reaps the benefits of the good health the prior insurer's investment produced.

This Essay explores insurers' incentives to invest in health, illustrates how those incentives fail, explores possible improvements, and shows that subsequent insurers should have an obligation to compensate the prior insurer for the averted expenses of expected diseases that did not emerge. This gives insurers the full incentive to prevent chronic disease while strengthening the incentives to develop cures.

INTRODUCTION

A good example of the failure that this essay addresses is gastric bypass surgery. This surgery dramatically reduces the complications from obesity, including the risk of diabetes. The procedure costs about $23,000 and produces monetized annual benefits of about $4,000, making it clearly desirable.[1] However, insurers only started covering it when medical boards approved it, and insurers still do not have the incentive to be the first movers in recommending the

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1. *See* Ronen Avraham & K.A.D. Camara, *The Tragedy of the Human Commons*, 29 CARDOZO L. REV. 479, 489, 499 (2007) (cost of $25,000, annual benefits of $5,000); *see also* Pierre-Yves Crémieux et al., *A Study on the Economic Impact of Bariatric Surgery*, 14 AM. J. MANAG. CARE 589, 592 (2008) (reporting that insurers recover within four years from savings the approximate $26,000 cost of bariatric surgery, and recover within two years the approximate $17,000 cost of laparoscopic bariatric surgery, suggesting annual benefits of well over $6,000); Gerry Oster et al., *Lifetime Health and Economic Benefits of Weight Loss Among Obese Persons*, 89 AM. J. PUB. HEALTH 1536, 1540 (1999) (lowest estimate of annual benefits is $3,300 to $3,800); Denise Mann, *Gastric Bypass Surgery Cost*, CONSUMER GUIDE TO BARIATRIC SURGERY, http://www.yourbariatricsurgeryguide.com/gastric-bypass-cost/ (last visited Feb. 29, 2012) (cost ranges from $18,000 to $35,000); *Weight-Control Information Network*, NAT'L INST. OF DIABETES & DIGESTIVE & KIDNEY DISEASES, http://win.niddk.nih.gov/publications/gastric.htm (last visited Feb. 29, 2012) ("Bariatric procedures, on average, cost from $20,000 to $25,000.").

surgery to insured individuals. Insurers do not have the appropriate incentive because the insured may change insurers, giving to the subsequent insurer the reduction in claims and the insured's good health caused by the surgery. This example fits all costly procedures that produce enduring health benefits.

The theoretically optimal decision on healthcare would be the one taken by a fully informed, solvent, and self-insured individual. Health insurance shifts some of the risk to the insurer. The result is that an average individual, already insufficiently informed, also loses significant financial motivation to make the correct decision. Other insurance contracts transfer the insured's lost financial motivation for care to the insurer. Insurers of property, for example, bear the cost of its destruction and therefore have the incentive to prevent harm.

But this is not true in health insurance. The turnover of health insurers means that their incentives are woefully shortsighted.[2] For a health insurer, a chronic disease imposes costs of care only until the patient switches insurers. The motivators of healthcare demand and cost-benefit calculations remain professional boards (that establish what treatments are appropriate) and insured individuals. Neither group has the full economic incentives of its decisions. This Essay seeks to strengthen the insurers' incentives and align them with those of the insured. The current environment of healthcare reform offers a unique opportunity to improve incentives in health insurance.[3]

The contribution of this Essay is a proposal for improving the incentive structure of health insurance. The proposed reform would give insurers, including employers that self-insure through ERISA plans,[4] stronger incentives for preventing chronic disease

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2. Anecdotal reports place the duration of insurance contracts at three to five years. *See, e.g.*, Erica Worth Harris, *The Regulation of Managed Care: Conquering Individualism and Cynicism in America*, 6 Va. J. Soc. Pol'y & L. 315, 364 (1999) ("[W]hether because an employer changes managed care plans or because employees change jobs, the average person changes health care plans once every three years."); Jennifer M. Yeh et al., *A Refined Estimate of the Average Lifetime Cost of Pelvic Inflammatory Disease*, 30 Sexually Transmitted Diseases 369, 376 (2003) ("[T]he average person changes healthcare plans every 3 to 5 years.").

3. For the current status of health care reform in the United States, see Patient Protection and Affordable Care Act of 2010 (PPACA), Pub. L. No. 111-148, 124 Stat. 119 (codified at scattered sections of 42 U.S.C.), *amended by* Health Care and Education Reconciliation Act of 2010, Pub. L. No. 111-152, 124 Stat. 1029 (codified at scattered sections of 20, 26, and 42 U.S.C.). The constitutionality of the PPACA's most important provisions was upheld in *Nat'l Fed'n of Indep. Bus. v. Sebelius*, 132 S. Ct. 2566 (2012).

4. The Employee Retirement Income Security Act of 1974, Pub. L. No. 93-406, 88 Stat. 829 (codified as amended at 29 U.S.C. §§ 1002–1461 (2006)), gives employers the option to self-insure (i.e., pay directly the medical expenses of their employees instead of buying health insurance). The statute provides that "'welfare plan' mean[s] any . . . program . . . by an

among their insured. By advocating for insurer responsibility, the proposal partly resolves the conundrum identified by prior articles that have noted that increased patient responsibility could constitute an improvement but entails dangers.[5] Also, this Essay differs from arguments giving patients the incentive to take precautions, such as allocating resources by a measure of preventive care.[6] Such approaches would have drawbacks similar to those of increased patient responsibility. The proposal here has similarities to the idea of a clearinghouse of insurers, which was proposed to give insurers the incentive to cover procedures with long-term benefits.[7] The proposal does not call for any new infrastructure. Rather, by utilizing the infrastructure of the current insurance scheme, the proposal is more immediately realizable than previous proposals.[8]

I. INSURANCE INCENTIVES AND CHRONIC DISEASE

Insurance coverage is a marvel of economic creativity and a wellspring of value—profit for the insurer and security for the insured. The insurer agrees to shoulder a specified risk under specified conditions, relieving the insured from significant costs of the risk. To the insured, the value of avoiding the debilitative consequences of a risk can be enormous. The insurer extracts a profit by pooling the risks of numerous insured, diversifying the risk, and satisfying the claims of the unfortunate few from the premiums that all the insured pay.

The incentives surrounding the insurance relation are complex. The principal changes of conduct that insurance tends to cause are categorized as expressions of two phenomena: moral hazard and adverse selection.

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employer . . . [providing] through the purchase of insurance or otherwise . . . medical [care] . . . ." *Id.* § 1002(1); *see, e.g.*, DAVID A. PRATT & SHARON REECE, ERISA AND EMPLOYEE BENEFIT LAW: THE ESSENTIALS (2010).

5.   *See generally* Wendy K. Mariner, *Social Solidarity and Personal Responsibility in Health Reform*, 14 CONN. INS. L.J. 199 (2008) (identifying benefits of additional personal responsibility and its problems).

6.   *See, e.g.*, Justin Hurwitz, *Indexing Health Insurance to Marginal Health Status: A Spoonful of Economics Helps the Premiums Go Down*, 12 DEPAUL J. HEALTH CARE L. 43, 56–57 (2009) (arguing for measuring individuals' care for their health by an index and using it to allocate health coverage to those who cared for their health).

7.   *See, e.g.*, Avraham, *supra* note 1 (proposing insurer clearinghouses that would induce insurers to take a longer-term outlook compared to the prevalent three-year horizon).

8.   *See, e.g.*, Laura D. Hermer, *Private Health Insurance in the United States: A Proposal for a More Functional System*, 6 HOUS. J. HEALTH L. & POL'Y 1, 5–6, 82–84 (2005) (proposing consumer cooperatives).

A. Moral Hazard

Moral hazard refers to the change of an insured's conduct due to the insurance contract's reduction of the risk the insured bears.[9] An insured has a reduced incentive to avoid risks and an increased incentive to take more risks, whereas when uninsured had the full incentive to avoid risks. For example, consider a homeowner who obtains insurance against fire. Does our homeowner oversee fireplaces, barbecues, ashtrays and stoves with the same intensity as before the insurance?[10] Does the ship-owner who obtains insurance navigate with the same care as before insurance?[11] We are susceptible to incentives.[12] Therefore, some reduction of care must be expected.

Insurers, of course, are sensitive to moral hazard in the design of insurance contracts. Terms of insurance contracts that address moral hazard include deductibles, exclusions of coverage for specific causes, and adjustments of premiums to reflect increased risk associated with certain types of conduct.[13]

In health insurance, a much-discussed expression of moral hazard is the tendency to visit doctors more. This is akin to a bias toward hypochondriac behavior and creates excessive consumption of care. Research addresses the question of how deductibles prevent excessive care.[14] That version of moral hazard, however, does not relate to this Essay's proposal.

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9.   *See* Liran Einav & Amy Finkelstein, *Selection in Insurance Markets: Theory and Empirics in Pictures*, 25 J. Econ. Persp. 115, 129–36 (2011).

10.   The conventional wisdo, is of course not. *See, e.g.*, Everett U. Crosby, *Fire Prevention*, 26 Annals Am. Acad. Pol. & Soc. Sci. 224, 226 (1905) ("The record of fire losses has clearly shown that moral hazard is frequently found . . . .").

11.   *See, e.g.*, Samuel Plimsoll, Our Seamen 23 (1873) (reporting that before the advent of insurance, legislation was not needed to prevent excess loading of ships).

12.   Whereas incentives may not fully explain any individual's choices, they undeniably have an effect in the aggregate, as we see from decades of studies. *See, e.g.*, Isaac Ehrlich & Gary S. Becker, *Market Insurance, Self-Insurance, and Self-Protection*, 80 J. Pol. Econ. 623 (1972) (analyzing insurance as a substitute for self-protection). *See generally* Gary S. Becker, A Treatise on the Family (1991) (showing that incentives influence life decisions even in non-financial areas such as marriage, reproduction, and divorce).

13.   *See, e.g.*, Liberty Mut. Ins. Co. v. State Farm Auto. Ins. Co., 277 A.2d 603, 608 (Md. 1971) (identifying insurance clauses designed to protect insurers from moral hazard); Alan D. Miller & Ronen Perry, *The Reasonable Person*, 87 N.Y.U. L. Rev. 323, 343–44 & n.86 (2012) (discussing contractual terms that alleviate moral hazard); David M. Cutler et al., *Selection Stories: Understanding Movement Across Health Plans*, (Nat'l Bureau of Econ. Research, Working Paper No. 15164, 2009) (explaining how insurance companies have developed strategies against moral hazard).

14.   *See, e.g.*, M. Kate Bundorf et al., *Health Risk Income, and Employment-Based Health Insurance*, 13 F. Health Econ. & Pol'y 1 (2010) (describing how insurers use deductibles to deter excessive claims).

A more relevant facet of moral hazard is the level of preventive care. The moral hazard analysis argues that the presence of health insurance reduces the incentive to prevent disease, and some evidence supports this conclusion. For example, one study finds that individuals at risk for diabetes exercise somewhat less if insured.[15] This implies that as the U.S. moves toward universal coverage, prevention is likely to slightly decline, intensifying the need to motivate health insurers to adopt this Essay's proposal.

B. Adverse Selection

Adverse selection refers to the tendency for high-risk individuals to opt into more comprehensive insurance plans and low-risk individuals to opt out of them. Candidates for insurance who are in poor health and are therefore at high risk of consuming healthcare are more likely to purchase insurance than their healthier, low-risk counterparts. Because of a potential information asymmetry about health status among insurers and the insured, insurers cannot always identify the high-risk individuals and price premiums accordingly.[16] Adverse selection can cause a death spiral that destroys the insurance market. The departure of each low-risk group causes the insurers to raise premiums and the market to contract, successively excluding the next-lowest risks, perhaps to extinction.[17] The opposite phenomenon, advantageous selection or propitious selection, can also appear, as it does in supplemental insurance that tends to appeal to the more educated and healthier segments of the population.[18]

Chronic diseases make the potential for adverse selection especially pronounced in health insurance. Individuals already bearing a chronic disease produce an insurance paradox. The expenditure for the care of their existing disease is not an unknown risk but a certainty. In an environment of private insurance, insurers will balk

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15. Betty T. Tao, *The Impact of Insurance on Recommended Medical Care, Lifestyle Behaviors and the Health of Non-Elderly Diabetics*, UNIV. N.C., 17–22 (Nov. 29, 2006), http://www.unc.edu/the/archives/tao.pdf.

16. *See* Peter Siegelman, *Adverse Selection in Insurance Markets: An Exaggerated Threat*, 113 YALE L.J. 1223, 1223–24 (2004).

17. Consider the recounting of such a death spiral by David M. Cutler & Richard J. Zeckhauser, *Adverse Selection in Health Insurance*, 1 FRONTIERS IN HEALTH POL'Y RES. 1, 11–14 (1998) (describing how when Harvard University offered a cheaper plan that attracted the healthier members of the pool away from the traditional plan, the traditional plan eventually had to be abandoned).

18. Jonneke Bolhaar et al., *A Dynamic Analysis of the Demand for Health Insurance and Health Care*, 56 EUR. ECON. REV. 669 (2012), *available at* http://personal.vu.nl/b.vander.klaauw/healthinsurance.pdf.

at covering inescapable expenses under the same terms as probabilistic risks. In jurisdictions without universal coverage, chronic disease produces the ultimate expression of adverse selection. Those with chronic disease may have expected costs that exceed the premiums the insurers offer, thus making the extension of coverage to them a losing proposition for the insurer. The transition to universal coverage seems problematic, because a disproportionately large fraction of the uninsured would be expected to have chronic diseases. In an established regime of universal coverage, chronic diseases are less of a problem because everyone must have insurance before and after the onset of the chronic disease. Universal coverage, however, does not necessarily eliminate adverse selection. For example, those who develop chronic conditions may still have a stronger incentive to increase their coverage compared to those who do not.

State law tends to follow a bifurcated approach to the adverse-selection problem posed by chronic diseases. Most states give insurers a grace period in individual insurance contracts, during which they need not provide coverage for preexisting conditions.[19] More importantly, insurers may condition the offering of individual insurance contracts on a health exam, which may enable them not to avoid covering those with preexisting conditions.[20] Denials on the ground of preexisting conditions are typically prohibited for group policies offered through employers, although the new policies may avoid coverage of preexisting conditions temporarily.[21] Thus, insurers may avoid offering individual policies to those with preexisting

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19. For example, Indiana Code provides:

> The benefits provided by: (1) an individual policy of accident and sickness insurance; or (2) a certificate of coverage that is issued under a nonemployer based association group policy of accident and sickness insurance to an individual who is a resident of Indiana; may not be excluded, limited, or denied for more than twelve (12) months after the effective date of the coverage because of a preexisting condition of the individual.

IND. CODE ANN. § 27-8-5-2.5(b) (West 2008); *see also* N.Y. INS. LAW § 3232(b) (McKinney Supp. 2012) (a preexisting condition provision in any health-insurance contract may not exclude coverage for more than twelve months).

20. *See, e.g.*, *Individual Major Medical Insurance: Applying for an Individual Major Medical Insurance Policy*, ILL. DEP'T OF INS., http://insurance.illinois.gov/HealthInsurance/Ind_Maj_Med_Ins.asp (last visited Feb. 16, 2012) ("Companies frequently request medical records and may require you to take a physical exam or have blood tests."); *Individual Health Plans: Frequently Asked Questions: 2.1*, TEX. DEP'T OF INS., http://www.texashealthoptions.com/cp2/faq.html#2.1 (last visited Feb. 16, 2012) ("With an individual policy, you may be required to undergo a physical or a health screening . . . .").

21. *See, e.g.*, CAL. INS. CODE § 12682 (West 2005) (providing that the "policy shall not exclude, as a preexisting condition, any condition covered by the group policy"); IND. CODE ANN. § 27-8-15-34.1 (West 2003) ("[A] small employer insurer must: (1) offer to any small

conditions but must offer coverage if the same individuals work for an employer who offers a group plan. Massachusetts has a universal insurance mandate that requires the coverage of preexisting conditions in both individual and group policies.[22] Recent U.S. federal health care reform adopts the same model, calling the obligation to cover preexisting disease a "guaranteed issue."

II. The Incentive Structure of Health Insurance

Health insurance treats chronic disease in an unusual way. Effectively, health insurance does not provide full coverage for chronic diseases. Rather, health insurance provides temporary coverage only during the current insurance relation, the current term, and its renewals. To observe this effect, contrast the insurance of assets, known as property and casualty insurance.

Property and casualty insurance addresses risks to a specific piece of property, such as a house, car, or boat. If a risk materializes and harms that asset, the insurer will repair or replace the asset (subject to any deductibles, coinsurance, or other terms). Thus, the insurer bears the entirety of the risk of harm during the term of the insurance contract. For the insurer to expect to stay in business, the premium must equal or exceed the probability-adjusted harm. The probability-adjusted harm is the sum of the product of each probability that the asset will suffer each possible harm during the term of the contract multiplied by the cost of the corresponding repair of the asset or its replacement.[23]

Chronic disease shows that this model does not apply to health insurance. Granted, the insured's health may be damaged in a fully curable way, as in the case of a curable infection. However, the existence of chronic disease means that irreparable deteriorations of

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employer all products that are approved for sale in the small group market and that the insurer is actively marketing; and (2) accept any employer that applies for any of those products."); Ohio Rev. Code Ann. § 3924.03 (LexisNexis 2010) ("[H]ealth benefit plans covering small employers are subject to the following conditions, as applicable: . . . (C) A carrier shall not exclude any eligible employee or dependent, who would otherwise be covered under a health benefit plan, on the basis of any actual or expected health condition of the employee or dependent."). All states must now require group insurers to guarantee issue. Medical exams, if conducted, can only be used to identify pre-existing conditions, not to deny coverage. *See* Patient Protection and Affordable Care Act, 42 U.S.C.A. § 300gg(a)(1)–(4) (2010).

22.   *See* 830 Mass. Code Regs. § 111M.2.1(5) (2012) (failure to maintain coverage may be subject to a penalty under Mass. Gen. Laws ch. 111M, § 2 (2012)).

23.   *See* S. David Promislow, Fundamentals of Actuarial Mathematics 261 (2011) (discussing the mathematics of property and casualty insurance). Formally, let all possible harmful events i have harms h_i and their corresponding probabilities p_i. The premium must exceed the sum .

health exist. Chronic diseases require continued treatment that will exceed the term of the insurance contract. The role of the health insurance contract in those cases becomes covering ongoing treatment but only during the term of the insurance contract.

Compare this setting to insuring a house or car. The insurance of each successive year is unrelated to that of the previous year. The insurer who will cover the damage due to a fire or a crash will depend only on the time period when the harm occurred. In health insurance, the damage from a chronic disease will span many years, perhaps burdening several different insurers and eventually Medicare, which provides care in one's later years.

The two settings create different incentives. Property insurers shoulder the risk of destruction and have the full incentive to prevent it (and induce the insured to prevent it). Health insurers know that they will likely pass part of the cost of chronic diseases to subsequent insurers and eventually Medicare so they do not have the full incentive to prevent chronic disease. The incentives of health insurers are closer to those of a manufacturer providing a short-term warranty rather than those of a casualty insurer. A manufacturer who provides a warranty has the incentive to make the repairs that will merely outlast the warranty period but not to restore the item to its new condition. Health insurers have similarly shortsighted incentives. Health insurers have the incentive to maintain the functional health of the insured, but only during their period of coverage, and do not have the incentive to make the large expenses that cure or altogether prevent future illness.

This shortfall of incentives exists for any long-term investment in care by the insurer, as previous analysis has shown.[24] For the insurer to recover the cost of the investment, the insurer must continue to receive premiums from those (of the insured) whose diseases were prevented. To wit, if a disease is likely to occur to half the members of a group and a costly prevention makes it only occur to a quarter of its members, then the cost of that prevention must be recouped from the premiums of the still-healthy members who would have gotten the disease—the quarter of the group whose disease was prevented. Because the incidence of disease is mostly probabilistic, the individual members of the group who, without the prevention, would have gotten the disease are impossible to identify. Therefore, no easy solution exists that would restore the insurer's incentives to make long-term preventive expenditures.

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24.   *See* Avraham, *supra* note 1 (proposing insurer clearinghouses that would a induce longer-term outlook among insurers compared to the prevalent three-year horizon).

The importance of this difference becomes evident when asking how to redesign the health insurance contract to fully cover the cost of the onset of chronic disease. The problem is open to various avenues of analysis.

The cost of the onset of chronic disease must include the entire cost of care for the disease. If the model under which we approach the payment of premiums assumes annual premiums, then the insurer bears the full cost of onset only if (i) the insurer will continue to cover the expenses of disease for the rest of the patient's life and (ii) cannot increase the premium in reaction to the onset. From this perspective, the only insurer in the U.S. market who fully bears the risk of the onset of chronic disease is Medicare. (As a governmental entity, it is subject to the many imperfections that public choice theory identifies.) For example, consider that obesity may lead to diabetes with some probability per year and diabetes care involves a significant annual cost, but that Medicare covers all individuals from age sixty-five. An insurer of a sixty-year-old obese person knows that from age sixty-five it will not be liable for this person's health expenses. Thus, the insurer is only concerned with the probability of whether this person develops diabetes over the next five years, rather than over the person's lifetime. This insurer would break even by charging a group of such individuals for the probability of developing diabetes and assume care only for the next five years.[25] Medicare, as an insurer, will bear the expense of diabetes after age sixty-five regardless of when the illness arises. Thus, Medicare already has an interest in preventing diabetes long before it becomes the insurer. Only if the original insurer continued to owe this insured's lifetime coverage with no right to raise premiums would the insurer bear the full incentive to prevent diabetes.[26]

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25.   To make the example concrete, suppose that diabetes care costs $10,000 per year, and obesity increases the incidence of diabetes by five per one hundred people per year, so that five (more) of every one hundred obese people insured manifest diabetes each year (than would otherwise). An insurer of 100,000 obese sixty-year-olds expects 5,000 additional incidences of obesity per year for the next five years. The expected extra expense the first year is $50 million—the product of spending $10,000 on the first 5,000 incidences. The second year, an additional $50 million of claims will materialize, for a total of $100 million. The third year will see claims of $150 million, the fourth of $200 million, and the fifth of $250 million. Then the entire cohort obtains Medicare coverage. The insurer breaks even by charging the obese group a total of $50+100+150+200+250 million, or $750 million. Divided over five years and 100,000 insured people, the annual premium component for this risk is $1,500. When the cohort joins Medicare, and an additional 5,000 incidences arise during that first year, the Medicare expenditure per obese individual for the extra diabetes will be $3,000 for the first year only.

26.   Continuing the concrete example of the prior footnote, if this cohort has a life expectancy of seventy years, then the insurer must establish this group's additional premium so

An approach that is more abstract but also more appropriate from the perspective of probability theory would be to assume that health insurance contracts involve a single premium payment and last for the insured's lifetime, rather than have periodic payments for renewable terms. A lifetime insurer would bear the full cost of onset because the insurer would continue to provide coverage until death.

As unrealistic as the idea of a single lifelong insurance contract may be, it transfers to the insurer the risks of disease without the distortions created by the interaction of chronic diseases with renewable insurance terms. Unlike insurers under term contracts, who know that Medicare will eventually assume coverage of chronic disease, the lifetime insurer bears the risk of chronic diseases in the same way as that of curable diseases. Whereas the onset of chronic disease produces adverse selection in term contracts, lifetime coverage precludes questions of changes of generosity of coverage, of departure from the pool, or introduction to the pool.

III. Avenues for Improvement

Pursuing the theoretical ideal must not stop at recognizing that it is unrealistic. The goal should be exploring avenues for approaching the ideal. The features of the ideal insurance scheme would need to increase the exposure of insurers to chronic disease. The next paragraphs discuss a few of the possible options: the extension of insurance terms, insurer clearinghouses, and the statistically correct compensation of prior insurers for averted disease.

A. Longer Insurance Terms

An additional improvement, though perhaps trivial, would be a mandate or simply an incentive for longer insurance terms. Longer terms would reduce the magnitude of the expectation that chronic disease claimants will move to a subsequent insurer. Changing the duration of insurance terms from one year to ten years or longer might significantly improve current incentives. For such a proposal

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that the insurer can pay for a sequence of claims from this cohort that start at $50 million and increase by $50 million per year over ten years, going from $50 to $500 million. The annual premium must be $2,750 (i.e., the first and tenth years' expenditures aggregate to $550 million as do the other pairs, thus the calculation is five times $550 million divided by 100,000 insured people over ten years). Contrast this with the above-mentioned premium of $1,500, which lets the insurer break even when Medicare takes over the cohort at age sixty-five.

to become realizable, the insurance environment would need to address adaptability to changes in the lives of the insured so that marriages, relocations, changes of employers, and similar shifts do not disrupt the longer insurance contracts.

B. Insurer Clearinghouses

A prior analysis of this problem proposed that insurers form clearinghouses.[27] Although the detailed specifications of the clearinghouses are still open, their function would be to reimburse a prior insurer for an expenditure that produces long-term benefits. For example, an insurer who covers an expenditure that reduces the onset probability of a disease by an amount that amortizes the expenditure in a few years would be entitled to receive compensation from the clearinghouse if the insured changed to a new insurer soon after the procedure. This compensation would encourage insurers to make longer-term calculations.

Drawbacks of clearinghouses include that they present administrative difficulties, may raise antitrust issues, and do not foster innovation. Insurance clearinghouses would be associations of competitors. Thus, they would increase the dangers of collusion that antitrust law seeks to minimize. Also, the clearinghouse would need a process to determine which procedures to reimburse and the brevity of the period during which it would compensate insurers for a switch of the insured to a new insurer. Determining these system features is not intuitive.

More importantly, the clearinghouse would determine which expenditures qualify for reimbursement. Thus, the incentive to maintain the health of the insured would not be generated by the relationship between insured and insurer but by the clearinghouse, which would transfer that incentive to the insurer. Hence, the insurer would not have the incentive to innovate in reducing onset probabilities. Innovations would only be reimbursed *after* the clearinghouse adopted them. The importance of innovations should need no stressing.[28]

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27.   *See* Avraham, *supra* note 1.

28.   Let us return to the example of gastric bypass. Insurers lacked the incentive to induce their insured to undergo the procedure. If insurers were fully incentivized to encourage the insured to have gastric bypasses, what would be the reduction in cases of diabetes? How many other procedures would be developed? The importance of innovation is illustrated most vividly in industries that have ceased to be heavily regulated, such as air travel and telephone service, where reduced regulation not only increased competition but also increased customization, organization, and types of offerings, such as tighter airplane and gate management, frequent flier miles, and calling plans.

C. Statistically Correct Compensation

The last alternative presented here is statistically correct compensation of the insurer for the chronic disease averted during the insurer's tenure. The next paragraphs describe the proposal and the next Part offers an illustration of such a calculation.

The social harm from debilitative disease tends to exceed the cost of its treatment because the cost of the disease includes all the individual's suffering and lost productivity. Thus, insurers who prevent disease should arguably have a stronger incentive than economizing the avoided treatment expenses. Nevertheless, the industry structure of a sequence of insurers that receive only current premiums does not compensate insurers for the avoided expenses after the relationship with an insured ends. Insurers entitled to receive the treatment expenses that they averted will have a fuller incentive to take long-term measures of prevention and to support innovation in preventive health. Insurers should be entitled to a *fee for avoided chronic expenses* (FACE), a fee that would compensate insurers for the future chronic disease expenses that did not materialize during the period of coverage by the insurer. The fee would be ongoing and end with the cure of the relevant disease or the cohort's death, adjusting for aggravations of health and changes of the insured cohort's choices about coverage.

While not easy, calculating averted treatment costs is nonetheless possible. Determining avoided expenses requires the baseline expectation of occurrence. This compares the occurrence of chronic disease in the beginning of each age segment or cohort to its end. The objective is to determine the expected incidence of the disease in every age range. An insurer who experiences increases of disease that are smaller than expected should be entitled to the expenditures this pool of insured will avoid.

To calculate the fee, consider that for some period one insurer provides coverage to a group of insured from a single age cohort. Compare the incidence of the disease in this group at the beginning of that period to its end. If the incidence increased as expected, then this insurer has not averted disease. If the incidence of disease increased less than expected, then the insurer deserves credit for averting disease, whether intentionally or not. The insurer should continue to participate in the benefit flowing from the lower incidence of the disease in that particular group, even if subsequent insurers avert no more disease.

The healthy and the sick may be easy to identify. Much harder to identify are those who would be sick *but for* preventive health measures. Even if identifying whose disease the insurer has averted is

impossible, compensating the insurer for averted expenses is possible. The impossibility of identifying the individuals whose disease was averted merely changes the specific charge to a proportional charge on all the members of the group who remain healthy.

Note that the proposed fee corresponds to a windfall gain for subsequent insurers that the current system produces. When a subsequent insurer covers an unusually healthy cohort, the subsequent insurer enjoys surprisingly few claims and, therefore, surprisingly great profits. The proposed payment of averted chronic expenses to prior insurers tends to correspond to the subsequent insurer's windfall.

The financial details of the insurer's FACE claim depend on that insurer's contract. Each insurer should be entitled to the expenses that, according to that insurer's contract, would have been spent on those who would have obtained the disease during this insurer's coverage.

The proposed fee must address the phenomenon of the disease accelerating to reach the expected incidence under a subsequent insurer. Did the prior insurer merely postpone disease or truly avert it? The initial insurer's interests are in conflict with those of the subsequent insurers. The initial insurer will likely argue that the subsequent acceleration is the subsequent insurers' fault, whereas the subsequent insurers will likely argue that the initial insurer merely postponed the disease. The initial policy position of the FACE fee can temporarily sidestep the issue, consider that the subsequent insurer is not at fault, and end the payments to the initial insurer. A more sophisticated next step might be to allow the initial insurer to demonstrate fault by subsequent insurers. Changes in the choice of coverage by the healthy pool also deserve attention. The effect is different if the pool switches to less or more coverage.

If the unusually healthy cohort increases coverage, even after the proposed fee, the subsequent insurer benefits. The fee for avoided chronic expenses is calculated according to the prior insurer's lesser coverage, whereas the subsequent insurer charges premiums based on the expected disease under the more generous coverage. Yet disease remains below expectations. The subsequent insurer's actuarial model makes the insurer expect more disease than the healthy cohort exhibits. The insured pool's choice to increase coverage implies greater premium payments but the surprising rarity of disease means the insurer spends surprisingly little on care. If the pool had maintained the same coverage that it had with the prior insurer, then the fee payable to the prior insurer would cancel out the subsequent insurer's gain, and the increased coverage produces

an overcompensation that favors the subsequent insurer. The subsequent insurer's surprising gain is a result of the low incidence in combination with the cohort's choice for more coverage. Although initially this proposal may ignore this issue, the appropriate treatment should increase the fee and apportion the gain between the initial insurer and the subsequent one.

The opposite problem is clearest in its extreme, where all the healthy discontinue their coverage, producing no premiums to be shared with the prior insurer. Even if the healthy merely reduce their coverage, then the subsequent insurer may not receive enough premiums (after disease coverage) to cover the fee for the prior insurer. To the extent this materializes as an issue, two potential solutions appear. Subsequent insurers could surcharge the members of the unusually healthy cohort to compensate the previous insurer. Other insured would pay the basic premium. Members of the unusually healthy cohort would pay a fee beyond the premium for their (reduced) coverage. That fee would be the incremental amount actuarially necessary to compensate the prior insurer. Subsequent insurers could, alternatively, have the right to limit their payment to the prior insurer at the level justified by the new premium. The latter approach is inferior, because it exposes the prior insurer to adverse selection (since if the healthy reduce their coverage, the prior insurer is undercompensated).

Some final points before visiting the illustration confirm that the proposal maintains the insurers' incentives to cure disease and further reduce it. A subsequent insurer who reduces the incidence of the disease receives the full benefit from reducing the disease and curing it. The incentive to continue averting disease exists because the subsequent insurer is also entitled to a fee from subsequent insurers for further reductions of disease incidence.

The proposal does not interfere with the incentive to cure disease. Any insurer has the full incentive to cure disease. A new cure does not produce an obligation to compensate a prior insurer. On the contrary, the development of a cure would end the prior insurer's right to a fee; a cure would end the expenditure. The members of the prior insurer's cohort who would have developed the disease would have received the cure. Therefore, that group's expenditures would have ended, and the fee claim of the prior insurer ends. Notice that this does not reduce the incentive to cure the disease. Developing a cure benefits the subsequent insurer by ending the obligation. By contrast, the current regime does not produce a full incentive to develop a cure, since without a cure the insurer will evade some future expenses.

IV. Illustration of Averted Disease

Assume a cohort of one thousand individuals insured by InitCo from age thirty until age thirty-five. Suppose the expected diseased incidence at age thirty is 4 percent and is 5 percent by age thirty-five, corresponding to a 0.2 percent annual incidence. Care costs $5,000 annually. This group of individuals should have forty individuals subject to the disease at its beginning and fifty at its end. The expectation is that ten will obtain the disease during the five years of coverage.

The same cohort's expected disease incidence from ages thirty-five to eighty-five will go from 5 percent to 15 percent, resulting in an additional one hundred individuals obtaining the disease during the next fifty years, increasing by 0.2 percent annually. Suppose that all the members of this pool, upon reaching age 35, switch their coverage away from InitCo.

Calculating the actuarially correct incremental annual premium of InitCo starts with the number of expected diseased, forty. Multiply that by the cost of their annual care, $5,000. The result, $200,000, is the expected annual expenditure of InitCo on the initially diseased members of its pool if the incidence did not increase. Over the five years of the period, that expenditure equals $1 million. Since InitCo expects ten new individuals to join the ranks of the diseased over the five-year period, that would correspond to expected coverage for two and a half years, or $12,500, for a total for the ten individuals of $125,000. Thus, the aggregate expected expenditure by InitCo over the five years is $1,125,000. Spread over the one thousand individuals, this implies a premium of $1,125 per person for the five-year period. Divided over the five years, the annual premium that InitCo should charge is $225.

A. Social Gain

Suppose that this insurer, InitCo, causes the disease's prevalence rate to slow during the period it provided coverage. Instead of this cohort's disease prevalence increasing from 4 percent to 5 percent, it increases from 4 percent to 4.5 percent. Instead of ten new insured people who manifest the disease, only five do. First, observe that the short term of the coverage does not give the initial insurer the full incentive for long-term disease reduction. Suppose that those five insured whose disease did not occur have absolutely avoided the disease, so its occurrence will thereafter continue to be five insured, or 0.5 percent below expectations in this pool.

Assume individuals live to age eighty-five. The five averted diseases would have occurred on average at age 32.5. The average duration of averted disease is 52.5 years. Since the annual cost of the disease is $5,000, the total averted expenditure is $1,312,500 (the product of multiplying five by 52.5 and by 5,000).

Compare this to the financial benefit of the insurer on whose term the disease was averted. This pool is insured with InitCo for five years. The five individuals whose disease was averted have average disease duration of 2.5 years, for a total averted expense of $62,500 (the product of multiplying five by 2.5 and by 5,000).

The insurer saves under $63,000 by averting disease in these five insured, whereas society has gains well over $1.25 million from disease avoidance. The more than twenty-fold deficiency in the investment incentives is striking even when focusing on a disease without a high cost of care and a term of insurance longer than the average of under four years.

B. Fee Calculation

Suppose that the proposed regime of statistically correct compensation were in force when the pool changed insurers at age thirty-five. Subsequent insurers who cover the surprisingly healthy pool pay the fee for averted chronic expenses (FACE) to InitCo. That fee is equivalent to the averted disease expenditures that would have been covered by InitCo.

For simplicity, assume a single subsequent insurer. Whether we partition the subsequent contracts in shorter terms or a single term, the result is the same. Assume, therefore, SeqCo covers this pool from age thirty-five to the terminal age of eighty-five. Disease will again expand by ten individuals every five years, or 0.2 percent per year, with the same cost of $5,000. The only difference from the previous calculation of aggregate social averted expenses is that coverage by SeqCo begins at age thirty-five. SeCo provides coverage for fifty years to the forty-five people already diseased at the beginning of coverage and does not have to spend for fifty years the annual $5,000 cost of care on the five individuals whose disease was averted. Thus, the averted disease expenditure is $1.25 million (the product of multiplying five by fifty and by 5,000). Adding the incentive of InitCo shows that this scheme gives InitCo the full monetary gains from averting the disease.

Notice that the FACE fee per insured per year is trivially small—this is truly a modest proposal. Dividing the $1.25 million saved by SeqCo over the fifty additional years one thousand insureds remain

in the pool indicates that the fee per insured per year is $25. Thus, even if the pool is dispersed and receives coverage by several insurers, InitCo should be entitled to $25 per year per insured from each subsequent insurer.

CONCLUSION

This Essay analyzed the mismatch between the need for long-term prevention of the onset of chronic disease and the reality of annual insurance contracts that reduce the prevention incentives of the insured without fully placing them on insurers. Three avenues for improvements were discussed: longer term insurance, insurer clearinghouses, and prior insurers' entitlement to the statistically correct fee for avoided expenses after the end of that insurer's term (the fee for averted chronic expenses, or FACE). The most appealing seems to be the last: if prior insurers had the right to a fee for the disease they prevented, then the prior insurer would have a fuller incentive to reduce the probability of its onset. The change gives the full incentives to innovate and prevent disease without significant administrative complexity or changes in the insurance infrastructure.