Anatomy of a Slow-Motion Health Insurance Death Spiral

H.E. Frech III[1]

[1] Ph.D., Department of Economics, University of California, Santa Barbara
Santa Barbara, CA. 93111
Office (805) 893-2124, FAX (805) 893-8830
frech@econ.ucsb.edu

Michael P. Smith[2]

[2] Ph.D., Compass Lexecon
1999 Avenue of the Stars, Suite 1150
Los Angeles, CA 90067-4628
Office (310) 728-2028, FAX (310) 728-2070
msmith@compasslexecon.com

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Abstract

Adverse selection death spirals in health insurance are dramatic, and so far, exotic economic events. The possibility of death spirals has garnered recent policy and popular attention because the pricing regulations in the Affordable Care Act of 2010 make health plans more vulnerable to them (though some other aspects of the ACA limit them). Most death spirals tracked in the literature have involved selection against a group health plan that was dropped quickly by the employer. In this paper, we empirically document a death spiral in individual health insurance that was apparently triggered by a block closure in 1981 and developed slowly because the insurer partially subsidized the block. Indeed, we show that premiums rose dramatically from around the time of the block closure to at least 2009 (the last year of available data). By 2009, some, but very few policyholders remained in the block and premiums were roughly seven times that of a yardstick we developed. The history of this slow-moving event is directly relevant to current policy discussions because of both adverse selection in general and the particular problems induced by closing a block.

Keywords: Adverse Selection, Death Spiral, Health Insurance, Affordable Care Act, Asymmetric Information, Community Rating, Underwriting

JEL Numbers: I14, I11, D82, G22

1. INTRODUCTION

Adverse selection in health insurance has received growing interest and attention in recent years, particularly with the enactment of the Affordable Care Act (ACA) in 2010. In the extreme, adverse selection can lead to a dynamic "death spiral." This is a vicious circle where increasing premiums in a plan lead low-risk plan members to drop out. As the plan experiences a higher loss rate, the insurer raises premiums again. This leads to an accelerated cycle of premium increases and plan departures so that eventually only very high-risk plan members, if any, remain. Subsequently, the insurer is likely to incur increasingly large losses on each policy and the plan "dies."

There is a literature reporting evidence of adverse selection in health insurance, mostly based on a positive correlation of health care use and the generosity of the plan.[1] More closely related to our work, there is also a small literature tracking actual episodes of specific death spirals. Cutler and Reber (1998) and Sutton, Feldman and Dowd (2004) describe two different death spirals that happened relatively quickly, both lasting only three years.[2] Both cases involved group insurance and involved open blocks.

In this paper, we track empirically a very slow death spiral that spanned at least 28 years, from 1981 to at least 2009. Our data run from 1973 to 2009, so we can examine pre-spiral information as well. The spiral occurred in a block of individual (non-group) health insurance and began around the time the insurer closed the block to new policyholders in 1981. The block was the Coordinated Health Insurance Plan (CHIP) sold by Prudential.

This spiral is relevant to current health care policy. In particular, several features of the ACA increase the vulnerability of health plans to adverse selection and death spirals. This has

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1 Both moral hazard and adverse selection can cause this positive correlation, so isolating adverse selection can be difficult. See, e.g., Pauly (1971) and Thomasson (2004).
2 Pauly, Mitchell and Zeng (2007) investigate an alleged death spiral of eight years, also in a group plan environment. They argue convincingly that that episode was, in fact, not an adverse selection death spiral.

raised public awareness of the problem of adverse selection.[3]   Because of this issue, the ACA

included both subsidies and individual mandates to mitigate the problem.

2. BACKGROUND

2.1 Health Insurance

The market for health insurance has changed over the years. Early forms of "contract

medicine" have been traced back as far as 1721 in Boston, but the modern era began with Blue

Cross hospital insurance and Blue Shield physician insurance in the 1930s. Soon after that,

commercial insurers entered the market. There was also a small sector of "prepaid group

practices," which would now be called health maintenance organizations (HMOs), such as

Kaiser Permanente or Health Insurance Plan of New York.

Up to about 1980, most health insurance was what is now called "indemnity" insurance.[4]

Indemnity insurance paid health care bills, in total or in part, with almost no cost controls and no

effective networks. Competition in health insurance focused primarily on premiums. Varying

across areas, the Blue plans had historical and regulatory advantages, including lower preferred

rates from providers, lower or no premium taxes and lower reserve requirements (Frech and

Ginsburg 1978). These advantages have declined over time resulting in a somewhat more

competitive environment for the Blue plans (Mobley and Frech 2007, p. 168).

After roughly 1980, managed care introduced a new form of competition – constraining

utilization and negotiating lower prices to help control costs. By the mid-2000s, HMOs and

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3 Googling "health insurance death spirals" on June 17, 2014, led to 311,000 hits. Nine of the first 10 hits
concerned possible death spirals caused by the ACA.

4 We use "indemnity" in its modern meaning as insurance that pays bills with little or cost containment,
distinguishing it from managed care insurance. Two usages common in the 1970s are now obsolete.   First,
"indemnity" often meant fixed dollar payments per unit of service (Newhouse and Taylor 1971; Pauly 1971; Frech
and Ginsburg 1975). Second, Blue Cross and Blue Shield once distinguished indemnity benefits from "service
benefits," based on a contractual and regulatory nuance (Starr 1982, pp. 291-292).

preferred provider organizations (PPOs) dominated. By 2005, PPOs accounted for over 60 percent of the group health insurance market (Mobley and Frech 2007, p. 163).

The individual (non-group) health insurance market is substantial, covering an estimated 4.9 percent of those under age 65 in the U.S., or about 12.7 million people, as of 2007. This percentage declined from 1970 to 1996, but has remained fairly stable since then (Cohen et al. 2009, pp. 9-10). Individual health insurance policyholders are on average healthier than those who are uninsured, roughly comparable in health to group insurance policyholders (Morrisey 2008, p. 294).

2.2 Premiums and Loss Ratios over Time

Competition in health insurance, while imperfect, has been strong and consistent enough to force the health insurers to charge premiums that closely follow benefits paid out (losses) over long time periods. The key issue is that the level of competition has remained roughly consistent over time. Historically, long-run variation in health insurance pricing is dominated by variation in medical care costs. The 20-year period from 1975 to 1995 has been analyzed in the literature with regard to the relationship between premiums and medical costs. Over that period, the observed loss ratio (i.e., the ratio of medical claims paid to premiums) for the health insurance industry was generally high and fairly constant.[5] For group health insurance, the loss ratios for the years 1975, 1980, 1985, 1990, and 1995 were 89, 81, 75, 85, and 87 percent, respectively.[6] For individual health insurance, the loss ratio exhibited less volatility over the period and slowly increased, with corresponding loss ratios for the same years of 51, 61, 60, 65, and 67 percent,

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[5] Economists sometimes use the inverse of the loss ratio, the loading ratio, because it can represent the "price of insurance." See Frech (1979) or Morrisey (2008, p. 292).

[6] Some of the variation seen over time appears to be a result of the underwriting cycle.   It was especially pronounced for Blue Cross/Blue Shield insurance from at least the 1960s to the 1980s, but has apparently moderated since. For more on the cycle in health insurance, see Gable, Formisana, Lohr and DiCarol (1991), Grossman and Ginsburg (2004) and Born and Santerre (2008).

respectively (Morrisey 2008, p. 292). Most of the difference between premiums and medical

claims paid reflects administrative expenses incurred by the insurer, such as claims processing,

utilization review, marketing and so on, rather than profits. Profits in health insurance are

generally small relative to premiums.[7]   Marketing and communications costs are higher in

individual insurance and benefits are generally lower, leading to a lower loss ratio relative to

group insurance.

More detailed market survey data illustrates the stability of insurance loading over the

long run. The average annual premium for individual health insurance plans in the U.S.,

including both single and family plans,[8] was $476 in 1977 and increased to $5,131 in 2010, a

compound annual growth rate (CAGR) of 7.47 percent.[9] By comparison, total personal health

care expenditures per capita increased by a CAGR of 7.46 percent over the same period.[10] Thus,

the growth in premiums has tracked the growth in medical costs.

Insurers' expectations are probably partly adaptive—based on past experience. Further,

state regulation induces adaptive expectations because it is necessary to justify premiums by past

experience and expected future trends, themselves partly based on recent past experience. The

combination of partially adaptive expectations in practice and a policy to limit subsidies to a

block experiencing adverse selection can generate an adverse selection death spiral. Both of

these elements apparently existed in the episode we examine here.

2.3 Guaranteed Renewability in Individual Insurance

7 Robinson (2004, p. 18) reports that profits for five large profit-seeking health insurers, over 2000 to 2003 ranged
from -0.8 percent to 10.2 percent of premiums, with a majority below 7.0 percent.
8 Using the combined single and family data allows a longer time span of data.
9 The earliest market survey data reports the average premium only for single and family policies combined. Thus,
the average premium for the later point in time must be similarly defined (Cafferata 1983, Table 6; Kaiser 2010, p.
4). Using an alternative source for market survey data available for 2009 results in a CAGR in average premiums of
6.86 percent (AHIP 2009, Table 2).
10 U.S. Department of Health and Human Services, Centers for Medicare & Medicaid Services (2011).

Guaranteed renewability is an important feature of most individual health insurance plans.[11] It is intended to protect policyholders from the risk that their premiums will increase substantially or that they will be dropped by their insurance carrier if their health status deteriorates. This is sometimes called reclassification risk or health status risk. Guaranteed renewability has been a common feature in individual health insurance since at least as early as 1968 (Reed and Carr 1970). Even before being included in the Health Insurance Portability and Accountability Act (HIPAA) of 1996, guaranteed renewability was often required by state regulators and was common in any case. Most of the policies we observed from the 1980s, including CHIP, incorporated guaranteed renewability. A clear economic definition of the feature is offered by Vip Patel and Mark Pauly:

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11 We, and economists generally, use "guaranteed renewability" to include the slightly weaker concept of "conditional renewability." In both concepts, the insurer holds most of the health status risk because the risk of a major insurer dropping out of a state is much smaller than the risk of an individual developing a serious health problem. See Frech (1996, p. 143), Pauly and Herring (1999, p. 18) and the Health Insurance Portability and Accountability Act (HIPAA) of 1996. Formally, CHIP was conditionally renewable. Therefore, a policy could only be ended by CHIP completely leaving a state.

> Guaranteed renewability is a contractual feature in which the insurer agrees both to sell another policy to the insured person (if that person wishes to buy) at the end of the term of the current policy period and to charge a premium for that policy that is not affected by any individual loss experience or change in the insured person's circumstances during the term of the current policy. (Patel and Pauly 2002, p. w281)

For guaranteed renewability to reduce risk, premiums must be based on the experience of the entire block of business.[12] Guaranteed renewability is connected to adverse selection and possible death spirals in two ways. First, guaranteed renewability increases the vulnerability of a block or a plan to closed block adverse selection.[13] The plan is contractually prevented from improving its risk profile by dropping individuals with high costs, raising their premiums or moving them into a different block. Second, by raising premiums well above what was reasonably expected by enrollees, serious adverse selection undermines the economic value and purpose of the guaranteed renewability.

3. ADVERSE SELECTION AND DEATH SPIRALS

3.1 Concepts and Literature

In the health insurance context, adverse selection (sometimes referred to as anti-selection or biased or negative selection) can arise in insurance blocks because of the tendency of higher risk consumers to purchase insurance in a particular block and stay in the block and, symmetrically, lower risk consumers to avoid that block or to drop out of the block.[14]

Adverse selection occurs because consumers are better informed about their risk of future claims than the insurer. This is an example of asymmetric information. Adverse selection is

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12 Guaranteed renewability approximates John Cochrane's "time-consistent" health insurance in protecting against health status risk. But, with guaranteed renewability a consumer is tied to his current insurer and cannot switch without paying higher premiums. See Cochrane (1995).

13 Interestingly, in an open block, guaranteed renewability reduces adverse selection. See Pauly et al. (2011).

14 We use the term "higher risk" and "less healthy" to refer higher expected medical claim costs, not higher variance.

present in other markets, such as the market for used cars, but the term "adverse selection" appears to have first been used in the context of insurance markets.[15]

As for timing, adverse selection can occur when a policy is issued to a new policyholder (as unhealthier consumers choose a plan) or at renewal (as healthier consumers are more likely to lapse). Adverse selection that occurs at renewal is sometimes called "adverse retention" by economists (Altman, Cutler and Zeckhauser 1998; Cutler, Lincoln and Zeckhauser 2010). What we might call "classic" adverse selection occurs because of asymmetric information; consumers know more about their riskiness than insurers do (Pauly 1974; Rothschild and Stiglitz 1976; Frech 1996, pp. 142-143).

Adverse selection can also occur as a result of policy, even without asymmetric information, if insurers do not fully differentiate rates to reflect known risk. Many historical episodes of adverse selection reported in the economic literature resulted from this conscious policy (Handel 2013; Lo Sasso and Lurie 2009; Lo Sasso 2011; Parente and Bragdon 2009; Clemens 2013; Frech 1996, pp. 139-140; Thomasson 2004; Cutler and Reber 1998, pp. 452-453).

The death spiral undermines the economic value and purpose of guaranteed renewability. Consumers who become high health risks after the spiral begins may be unable to obtain alternative insurance at reasonable prices so they may become locked in—facing high and rising premiums. When there is a spiral, the promise of protection from health status risk has not been honored. Adverse selection is recognized by actuaries (e.g., Bluhm 1993) and regulators (e.g., North Dakota 2009) in the health insurance industry. Since the ACA guarantees issue, the extreme version of the lock-in problem should not occur.

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15 Akerlof (1970, p. 493) cites explicit use of the term from a 1964 insurance textbook.

3.2 The Closed Block Problem

If a carrier stops selling policies to new policyholders in a given plan, the carrier is said to have "closed the block." The closing of a block virtually guarantees that there will be serious adverse selection because stopping the flow of new low-health-risk policyholders into the pool will necessarily increase the average and overall riskiness of the block. Up until the implementation of the ACA, new individual insurance policyholders were typically medically underwritten (i.e., had their health status evaluated), so they were likely to be relatively healthy or to be charged higher premiums if they were not relatively healthy.[16] In contrast, a pool of existing policyholders becomes less healthy or higher risk as time progresses in two ways. First, the predictive value of underwriting "wears off" as some policyholders develop health problems. Second, healthier policyholders are more likely to lapse through adverse retention. Thus, closing a block ensures serious adverse selection and probably a death spiral as it eliminates the addition of lower-risk policyholders to offset the rising risk of the existing pool (Bluhm 1993).[17]

The block closure problem is especially serious in individual health insurance because consumers normally leave and enter blocks of individual insurance more frequently than in groups. Individual insurance is often used between jobs that offer group insurance or when moving to a job that does not offer group insurance.

The problems associated with closed blocks, and in particular, death spirals, are well understood within the insurance industry. The following is from a National Association of Insurance Commissioners (NAIC) report:

> When carriers stop actively selling a block of business, the result is
> a closed block, which can experience rate spirals as those who can

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16 Group insurance commonly uses waiting periods for pre-existing conditions, not higher premiums. Individual insurance, including the CHIP plan, sometimes used higher premiums.

17 Under the ACA regulatory system, the reverse is possible. Closed blocks of less complete insurance could experience positive selection if higher risk consumers move to ACA-approved plans. As we shall see later, this appears to have happened.

> pass medical underwriting purchase other coverage, leaving a pool
> of risk that becomes progressively sicker. (NAIC undated)

Similarly, a task force from the American Academy of Actuaries published a report addressing

the "closed block problem" in the individual health insurance market. The report was presented

to the NAIC in 2004 following five years of work by the task force. The report states:

> One of the major issues in [the individual health insurance] market
> is the relatively large size of rate increases relative to trend. Often
> the cause of this is attributed to what has become commonly
> labeled as the "closed block problem." No completely satisfactory
> solution has yet been found for this problem, although recently
> individual states have used various regulatory techniques in an
> attempt to address the issue. (American Academy 2004)

The American Academy of Actuaries's comment about high premium "rate increases relative to

trend" appears to be focused on closed blocks. As described above, increases in overall national

average premium rates for individual insurance have tracked increases in medical care costs over

long time periods. Averaged over the entire U.S., premium rate increases have not deviated

substantially from the trend of medical costs.

Insurance regulatory bodies also recognize the potential problems associated with closed

blocks. For example, the North Dakota Commissioner of Insurance provides a description of

death spirals and their link to closed blocks:

> Death spiral – This is a term used to describe the effect on a group
> of health policies when there are large and/or frequent rate
> increases. When there is a rate increase, a portion of the
> policyholders may decide that they can obtain cheaper health
> insurance elsewhere. It is likely that the more healthy lives within
> the group of policyholders will be the ones who seek coverage
> elsewhere. The remaining group of policyholders will be, as a
> group, less healthy. The resulting less-healthy group of lives will
> experience higher claims, resulting in requests for additional rate
> increases. Each time this happens, more "healthy" lives will
> terminate their policies, leaving the remaining lives even "less

healthy" as a group. This scenario is mitigated, or even eliminated if there is a continued stream of healthier, new lives joining the group of policyholders. This scenario is accelerated, and worsened if there are no new policies being sold, i.e., the group of policies becomes a "closed block," and a "death spiral" for that block of policies can result. (North Dakota 2009)

This problem also has been recognized by legislative policy. For example, in 1993 the California legislature passed AB 1743 "to address the problems experienced by people who have health coverage under 'closed' plans and find themselves subjected to spiraling rate increases" (California Assembly 1993, p. 1). This bill enacted California Insurance Code § 10176.10, which requires that health insurance carriers must inform the California Insurance Commissioner within 30 days of closing a block and cannot provide misleading information about the active or closed status of a plan. Arkansas also has taken legislative action related to closed blocks (Arkansas 2006). The California statute also requires health insurance carriers to "pool the closed block's experience with all appropriate open forms for purposes of renewal rate determination" (California Assembly 1993, p. 2). This was not an option for CHIP because the insurer did not have other appropriate "open forms" (i.e., open blocks) for rate determination.

4. THE COORDINATED HEALTH INSURANCE PLAN DEATH SPIRAL

4.1 Rise and Fall of the CHIP Plan

In 1973, Prudential began selling its CHIP plan to individuals and families. The CHIP plan used underwriting and age and sex rating. There were originally several variants of the plan, but they can all be described as major medical plans with, at the beginning, relatively generous, complete benefits. Later, versions with larger deductibles, as high as $5,000, were added. While there is no bright line here, we would not consider a $5,000 deductible plan generous. Since the plan had no provider network or managed health care features, it would be

classified as "indemnity" insurance. There was no lifetime maximum benefit for most medical care, but there were limits on mental health benefits. Outpatient psychotherapy was limited to $500 per year. Total lifetime benefits for mental illness and functional nervous disorders were limited to $20,000. The plan paid hospital charges, pharmaceuticals and physician charges.

The CHIP plan was reasonably successful in the market before the block was closed. At its maximum in 1976, the annual inflow of new enrollees into the plan was over 200,000. Even in 1981, the year of the closure, the annual inflow was over 75,000. Prudential closed the CHIP block in December 1981. Prudential did not have other individual blocks that it could combine with the CHIP block for rating purposes. Figure 1 shows the annual number of U.S. CHIP policies in force during the 1973 to 2008 period (the last year of available data). As of 2008, there were only 46 policies in force in California and only 681 nationally. The dramatic decline in the number of policies after the block closure in 1981 is obvious from the figure. There also was a slight decline in the number of policies during the last couple of years before the closure.

4.2 CHIP Premium History

As expected, annual premiums for CHIP policyholders increased dramatically following the block closure in 1981. Figure 2 illustrates how CHIP premiums increased over time for a representative individual as he aged. A small part of the increase is simply due to aging, since the CHIP policies are age rated. The figure shows the annual premium each year 1980 to 2009 for a male in Los Angeles, California (ZIP Code beginning with 900) who was 32 years old in 1980, and thus was 61 years old in 2009. The figure is based on rating in the standard (lowest) risk class and a $100 deductible standard major medical ("Plan A") policy. The premiums in the figure are taken from Prudential's rate tables and actuarial memoranda, adjusted to reflect the

caps on premium increases that Prudential implemented in certain years (discussed in more detail below).[18]

What is evident from the figure is the enormous increase in annual CHIP premiums for this representative person from $526 in 1980 to $117,361 in 2009, as he aged from being 32 years old to being 61 years old. The rates increased by a factor of 223.2. This includes both aging and rate increases. While we do not know whether or not there were any individuals exactly meeting this rating description by 2008, we know that there were 46 policies in force in California and that CHIP members were paying over $100,000 per year. Based on the age rating factors in the 2009 CHIP rate tables, we calculate that aging alone, from 32 to 61 years, accounts for rates increasing by a factor of 3.1.[19] Thus, the pure rate increase without the effect of aging over this period was a factor of roughly 72.

By comparison to the rest of the health insurance market, recall from above that the average annual market premium for all policies increased from $476 in 1977 to $5,131 in 2010, or a factor of less than 11. While these market average figures do not account for aging and age rating, recent survey data indicates that the average annual premium for an individual aged 60-64 in 2009 (comparable in age to the representative person in the figure who is 61 in 2009) was only $5,755 (AHIP 2009, Table 2). Note that the average premiums reported in the survey data can be somewhat influenced by changes in the mix of enrollees or types of plans. However, the differences between the CHIP and survey premiums are so large that they cannot be explained by changes in mix. Some of the difference probably comes from the lower deductible in this particular CHIP plan than in the average plan in 2009.

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18 The premium history is broadly similar across states (Frech 2011). We present premium data for California only.
19 The 3.1 age-rating factor for the representative individual in Figure 2 is not the maximum possible in the CHIP plan. The CHIP premium rate tables provide rates for ages ranging from under 28 years old to 64 years old, a larger range than used in Figure 2. In 2009 the rate in California under the $100 deductible "Plan A" policy for a 64 year old male was 3.8 times the rate for a male under 28 years old.

To analyze increases in CHIP premiums more generally and to compare to our benchmark, we created an index of CHIP premiums. We used Prudential's reported average rate increases from its filings with state insurance departments up through 1989. To the extent Prudential applied different percentages across different deductible levels consistent with deductible leveraging (discussed below), the different percentages would be reflected in the average percentage increase across policy types. Because of variation in premium increases across states, we report here the premium index for premiums in California. We also incorporate the effect of premium rate increase caps implemented by Prudential beginning in 1990 and described below. Details are reported in Frech (2011).

Figure 3 shows the index of actual CHIP premiums in California from 1973 to 2009. The dramatic increase in premiums is apparent from the figure, as is the effect of Prudential's caps on premium increases, and subsidies to the block, that were particularly strong during the 1990s. After 2000, there were management policy decisions to relax the caps and attempt to reduce the subsidy. Still, the caps had a large effect, even as late as 2008. For the representative individual charted in Figure 2, his uncapped annual premium in 2009 would have been $205,438, much higher than his actual capped annual premium of $117,438 that year. Figure 3 shows a smaller increase in rates over time than Figure 2 because Figure 3 excludes the effect of aging.

4.3 A Yardstick for CHIP Premiums Absent an Adverse Selection Spiral

To isolate the amount of increase in CHIP premiums attributable to the dynamics of the block closure rather than health care market trends, we constructed an index to represent how the CHIP premiums would have increased absent the block closure. The premium increases attributable to the adverse selection spiral are represented by the difference between the yardstick

premium index and the actual CHIP premium index. Thus, to the extent the yardstick premium

index overstates the increase in premiums that would have occurred in CHIP without the adverse

selection spiral, our approach will understate the magnitude of the spiral effect.

The yardstick index for CHIP premiums is based on an estimate of changes in medical

costs from data on personal health care expenditures per capita.[20] These data are published by

the U.S. Department of Health and Human Services separately for each state on an annual basis

for the period 1980 to 2004 and nationally on an annual basis for the period 1960 to 2009.[21]

These data incorporate changes in costs due to medical cost price inflation, changes in utilization

by consumers, and changes in services offered by providers. As with the actual premiums paid,

an index of personal health care expenditures per capita can be created for the relevant period.[22]

4.3.1 Deductible Leveraging

The index of personal health care expenditures per capita will not reflect expected

premium rate increases because it does not account for deductible leveraging, where claim costs

rise by a greater percentage than medical costs. This happens when claim costs rise, but the

deductible is fixed. Consider a simple example credited to actuary Harvey Sobel (Buck

Consultants 2010).[23] Suppose that a $100 deductible plan experiences $10,000 of medical costs

per member. The insurer's losses are $9,900 per member. If there is a 10 percent increase in

medical costs and the deductible is fixed, medical costs per member will rise to $11,000 and the

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20 Growth rates are similar across groups and types of insurance. Newhouse, Schwartz, Williams and Witsberger
(1985) find that the cost *growth rate* for managed care has been similar to that for indemnity insurance, even though
the *levels* differ. They also find that the cost growth rates of various categories of health care have been similar.
21 Growth after 2004 for California is estimated using national data. While national data is available for more recent
years, our analysis is limited to the period ending in 2009.
22 The expenditure data by state and for the full period includes persons of all ages. National data show little
difference in the growth rates for all ages versus persons age 19-64. From 1987 to 2004, the compound annual
growth rate for all ages was 6.5 percent while for persons age 19-64 it was 6.6 percent (U.S. Department of Health
and Human Services, Centers for Medicare & Medicaid Services 2011).
23 This example assumes a point distribution of spending (i.e., all members spend the same amount on health care).
Our calculations use a distribution of spending (i.e., spending varies across members).

insurer's losses rise to $10,900 per member. Medical costs rise 10 percent, and claim costs rise by a greater percentage, 10.1 percent. To keep up, the insurer would have to raise premiums by a higher percentage (10.1 percent) than the change in medical costs (10 percent). The difference, here 0.1 percent, is due to deductible leveraging. The higher the deductible, the more leveraging there is. Consider the same medical costs and trend, but impose a fixed deductible of $1,000. Now the insurer's losses change from $9,000 to $10,000, for a trend of 11.1 percent, of which 1.1 percent is due to leveraging. If the deductible increased at the same rate as the expected expenditure, there would be no deductible leveraging. If the deductible increased at a faster rate than the expected expenditure, premiums would grow slower than medical care costs. This is called "buy-down."

We have incorporated estimates of deductible leveraging in our yardstick premium index.[24] The deductible leveraging adjustment is a weighted average adjustment based on the changing distribution of policies across the different deductible levels within CHIP. The adjustment turns out to be small, averaging between 0.5 and 1.5 percent per year for California. For comparison, the compound average growth rate of U.S. personal health care spending per capita was 7.6 percent per year over the same time period.

4.3.2 Market Verification of the Yardstick Premium Index

If the health insurance market is reasonably competitive (or the degree of imperfection is reasonably stable) in most locations, premiums would increase by roughly the rate of increases in claims costs, adjusted for deductible leveraging. Even imperfect competition prevents firms from consistently earning returns that are far in excess of normal returns, and the insurers' and investors' aversion to losses prevents firms from consistently earning returns below normal

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24 We thank Jim Toole for his assistance in calculating the appropriate adjustment for deductible leveraging. For details see Frech (2011, Appendix C).

returns. Thus, premiums should rise approximately in line with increases in costs, as we have

seen historically. As a result, growth in personal health care expenditures per capita, with an

adjustment for deductible leveraging, is a reasonable proxy for premium growth rates for policies

not subject to a death spiral.[25]

One can check the reasonableness of this yardstick premium index by comparing it to

actual market data in several ways. First, the national growth rate of the personal health care

expenditures per capita tracks the national growth rate in average premiums for individual

insurance reported in market surveys. For example, AHIP and its predecessor Health Insurance

Association of American (HIAA) have conducted surveys of premiums in the individual health

insurance market for a number of years. Over the period 2002 to 2009, the average annual

premium paid by single (as opposed to family) individual insurance policyholders in the U.S.

under age 65 increased from $2,070 to $2,985, for a compound annual growth rate (CAGR) of

5.4 percent (Musco and Wildsmith 2002, Table 2; AHIP 2009, Table 2). Over the same period,

personal health care expenditures per capita in the U.S. increased from $4,761 to $6,796, for a

CAGR of 5.2 percent (U.S. Department of Health and Human Services, Centers for Medicare &

Medicaid Services 2011). This measure accounts for all spending on personal health care by

individuals and insurance companies; it does not adjust for deductible leveraging. Adjusting for

deductible leveraging during this period using a weighted average of different CHIP deductible

levels, the CAGR would be approximately 6.3 percent.[26] Therefore, the growth in personal

health care expenditures per capita with an adjustment for deductible leveraging is reasonably

close to the growth in average premiums over this period, and even slightly higher (6.3 percent

versus 5.4 percent). The fact that the yardstick appears to slightly overstate premium growth

25 Other literature similarly uses health care expenditure data as a proxy for premium growth rates. See, e.g., Newhouse, Schwartz, Williams and Witsberger (1985).
26 The average deductible leveraging adjustment for the period 2003 to 2009 is 1.1 percent (Frech 2011).

without a spiral would, as described above, tend to understate the CHIP premium increase attributable to the adverse selection spiral.

Similar consistency is found over a longer period, as described above. The average annual individual insurance premium (combined single and family policies) in 1977 was $476 (Cafferata 1983, Table 6). Comparable data (combined single and family policies) for 2010 show an average annual premium was $5,131 (Kaiser 2010, p. 3). This translates into a CAGR of 7.47 percent over the period 1977 to 2010. Over the period 1977 to 2010, personal health care expenditures per capita increased from $655 to $7,049, for a CAGR of 7.46 percent.[27] Over the period 1982 to 2009 the deductible leveraging adjustment is on average 1 percent so the total CAGR of health care expenditures with deductible leveraging is approximately 8.5 percent over the period 1977 to 2010. These comparisons show that the personal health care expenditure series growth rate well approximates the growth rate in market individual health insurance premiums even without an adjustment for deductible leveraging. The comparisons are consistent with the long-term stability of loss ratios discussed above. Note that accounting for deductible leveraging increases the yardstick premium index, thus resulting in a smaller CHIP premium increase attributable to the adverse selection spiral.

Figure 4 shows the yardstick and actual CHIP premium indexes for California for the 1973 to 2009 period. The actual and yardstick premium indexes are both scaled to be equal to 100 in 1981. The figure reflects that CHIP premiums rose dramatically relative to the yardstick index through the 1980s after the block was closed at the end of 1981, consistent with a classic death spiral. The rate of premium increases then declined through the 1990s. During that period, the rate of premium increases (though not the level of the premiums) was roughly in line with

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27 Over such a long period, one would expect consumers to offset the effect by increasing deductibles. If the deductible increased at the same rate as medical costs, there would be no deductible leveraging.

increases in the yardstick index. CHIP premiums rose dramatically again relative to the

yardstick index beginning in 2001. By 2009, actual CHIP premiums were roughly seven times

the level of the yardstick premiums.

4.4 Why Was the Spiral so Slow for CHIP?

The basic story of the closed block and the resulting adverse selection death spiral is

quite clear. But, compared with the few other death spirals investigated in the literature, the

death spiral for CHIP proceeded much slower; this was truly a slow-motion death spiral. The

reason for this is that the CHIP block was subsidized by Prudential to varying degrees following

the block closure. The extent of the subsidy varied with differing management approaches, but

the subsidy appears to have been larger from about 1990 to 2000, as evidenced by the slower rate

of increase in CHIP premiums during this period relative to the periods immediate before and

after.[28]

As mentioned above, Prudential imposed caps on its annual premium rate increases

beginning in 1990 and extending through at least 2009. The exact amount of the annual caps

varied by state, but generally took the form of limiting the rate increase for any individual to the

lesser of (1) a given percentage increase, (2) a fixed dollar amount or (3) an increase to the rate

level in the firm's rate table. Table 1 summarizes the annual CHIP rate increase caps in

California. Rate increases were capped at much lower percentages in the 1990s than the 2000s.

Further, in the 1990s, there were dollar amount caps as well as percentage caps. These caps

correspond well to the much slower premium growth rates in the 1990s and faster growth rates

beginning in 2001 reflected in Figure 4.

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28 Rate filing documents also indicate that CHIP premiums were increased less than would have been justified
based on the block's loss experience at least as early as 1986.

5. CONCLUSIONS AND POLICY IMPLICATIONS FOR THE ACA

5.1 Conclusions

Documented adverse selection death spirals are rare. The ones tracked in the literature have

involved rapid selection against group health plans that were dropped quickly by the employers.

We empirically document a different type of death spiral in individual health insurance that

appears to have been triggered by a block closure in 1981. The spiral developed very slowly

because the insurer partially subsidized the block. Indeed, we show that premiums rose

dramatically from around the time of the block closure to around 1990, when the insurer capped

premium increases and subsidized the block more. Then, from about 2001 on, the caps were

relaxed and the premium increase was again dramatic. By 2009 very few policyholders

remained in the block and premiums were roughly seven times that of a yardstick free of adverse

selection we developed. Some actual premiums in the closed block exceeded $100,000 per year

for a single individual by the end of the period examined. The history of this slow-moving event

is directly relevant to current policy discussions around the ACA because of both adverse

selection in general and the particular problems induced by closing a block.

5.2 Selection in the ACA

The ACA requires modified community rating that requires the same premium for

consumers of the same age, regardless of gender or differing levels of risk. Further, the ACA

compresses rate bands for age substantially, imposing a maximum age-related spread of 3.0

(Kaiser 2013). The average age-related spread observed in the market is around 4.5. The result

is a large increase in premiums for young people, estimated at over 50 percent for males aged 25

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to 36 (O'Connor 2013, p. 20). This causes adverse selection on age, even though it is observable. Of course, adverse selection is mitigated by the individual mandates.

As we have seen, closing a block creates adverse selection and, without a subsidy, probably a death spiral. The ACA creates many closed blocks in two different ways. First, some plans were grandfathered; allowed to continue, but not to accept new enrollees. Second, some plans were simply prohibited after 2013. Both categories include existing insurance for individuals and small groups that does not comply with the ACA regulations on pricing (modified community rating), expansive types of benefits that must be included and guaranteed issue (Kaiser 2013). First, we focus on the plans that were grandfathered as of March 23, 2010. Grandfathered only for existing enrollees, these plans cannot issue new policies. Thus, given the logic and experience explained above, one might expect adverse selection death spirals to occur in many of these plans.

On the other hand, the existence of ACA-approved plans as an option changes matters considerably—even reversing the conclusion. As mentioned above, the option of ACA-approved plans could lead to favorable selection in the grandfathered plans if the relatively old and unhealthy consumers switch out of the grandfathered plans. This is possible if the ACA-approved plans, on average, are more generous and relatively less expensive than the grandfathered plans. If so, the selection will be against the ACA-approved plans and in favor of the grandfathered plans.

Second, the ACA regulations led to mass cancellations of individual and small group health insurance plans that were not grandfathered in 2013 (Cohen 2013). This outcome was predicted because only about 30 percent of those with individual insurance are protected by grandfathering (Interim Final Rules 2010, p. 41932). The mass cancellations led to political

pressure to allow the plans to continue.[29] The Administration responded with an apology and a

fix, granting states permission to allow continuation of the cancelled plans for one year and

possibly longer (Cohen 2013).[30]

Where the states allow it, continuing the cancelled policies works much like the

grandfathered plans. On average, it could create adverse selection against the ACA-approved

plans as the consumers most likely to switch from their noncompliant plans to ACA-approved

plans are those who are older and relatively less healthy.

Early aggregate data show that selection against the ACA-approved plans has indeed

happened. For example, the overall percentage of enrollees who have used health care and have

serious health conditions is reported to be 27 percent in the ACA-approved exchange plans and

21 percent in the ACA-approved off-exchange plans, compared to 12 percent in the

grandfathered plans and 16 percent in the continued (originally cancelled) plans (Mathews and

Weaver 2014). The differences are not driven by age differences. A similar pattern also obtains

among young enrollees (age 26-30).

The ACA includes elements designed to mitigate selection problems: mandates,

subsidies, risk adjustment, transitional reinsurance and risk corridors (Leida 2013; Collins 2013).

We believe that the risk corridor program is probably the most relevant to selection against the

exchange-based plans. Roughly speaking, it taxes the insurers with low loss ratios and

subsidizes the insurers with high loss ratios. Originally designed to be revenue neutral, it will

lead to a net subsidy if the entire exchange sector experiences a financial loss (Norris, van der

Heijde and Leida 2013). Whether or not the risk corridor program is the main mechanism, a

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29 Many large group policies will be noncompliant with ACA regulations by the end of 2014. Because sponsors
(mostly employers) can adjust the plans, mass cancellations may not occur.
30 Eighteen states, including California, New York and the District of Columbia, have announced that they will not
allow the continuation. Nineteen states have announced that they will go along with the Administration and allow
continuation of the cancelled plans (Lucia, Kieth and Corlette 2013; Leida 2013).

subsidy may be necessary to prevent an adverse selection death spiral for the entire ACA program. With this in mind, the Administration recently suggested other possible ways of increasing the subsidies to the ACA-approved plans (Pear 2013). Of course, the individual mandate and the subsidies for insurance purchased through the exchanges both help to reduce adverse selection.

5.3 Pressure on the Regulations

Modified community rating and guaranteed issue regulations distort prices and increase adverse selection. This puts greater pressure on regulations and probably requires tax subsidies to individuals and insurers. The resulting system makes implementation of the ACA more difficult than it would be with more incentive-compatible pricing (Zweifel and Breuer 2005; Pauly 2010; Bhattacharya et al. 2013).[31] Critically, the issue of incentive-compatible pricing is a matter of degree.

For example, Australia has recently moved towards risk-related premiums to mitigate adverse selection. Australian private supplemental insurance had been slowly declining, from about 50 percent of the population in 1985 to about 32 percent in 2000, about 1.2 percent per year (Frech, Hopkins and MacDonald 2003). During that time period, regulations required community rating. In July 2000, community rating was liberalized by allowing "lifetime community rating." In lifetime community rating, sometimes called entry-age rating, premiums depend on the age at which the consumer enrolls.[32] Liberalizing the premium regulations led to a reversal of fortune, with the percent of the population covered rising rapidly from 32.2 percent in

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31 Generally, incentive compatibility is "a characteristic of mechanisms (economic systems) whereby each agent knows that his best strategy is to follow the rule, no matter what the other agents do" (Ledyard 2014). In our context, incentive-compatible pricing gives appropriate incentives for consumers to purchase optimal insurance and give insurers appropriate incentive to offer insurance to all types of consumers. See Herring and Pauly (2006).

32 Lifetime community rating is also used in German private health insurance and U.S. Medicare Part B.

the first quarter of 2000 to 43.0 percent in the second quarter (Frech, Hopkins and MacDonald 2003, p. 59). Further, the liberalized rating, along with an increased tax subsidy, ended the slow spiral. After the reform, the percentage holding supplemental insurance remained essentially flat (Ellis and Savage 2008, p. 264) while the proportion of young people enrolled rose (Buchmueller 2008). Thus, a partial liberalization of the Australian rating regulations made the system more incentive-compatible and stopped a slow spiral.

One can also avoid adverse selection by simply forcing nearly everyone into a single plan. Economic research has shown this to be highly inefficient (Bundorf, Levin and Mahony 2012). Indeed, reducing the inefficiency inherent in limited (often zero) individual choice in employment-based plans is sometimes cited as a major policy goal of the individual exchanges (Dafny, Ho and Varela 2013).

In summary, we have documented a dramatic, slow-moving health insurance death spiral and applied the broad lessons of that episode to the Affordable Care Act (ACA) of 2010. We have shown that the design of pricing rules and some implementation decisions have made the ACA vulnerable to adverse selection, putting pressure on regulation and complicating implementation.

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Anatomy of a Slow-Motion Health Insurance Death Spiral

Four Figures and One Table

H.E. Frech III[1]

[1] Ph.D., Department of Economics, University of California, Santa Barbara
Santa Barbara, CA. 93111
Office (805) 893-2124, FAX (805) 893-8830
frech@econ.ucsb.edu

Michael P. Smith[2]

[2] Ph.D., Compass Lexecon
1999 Avenue of the Stars, Suite 1150
Los Angeles, CA 90067-4628
Office (310) 728-2028, FAX (310) 728-2070
msmith@compasslexecon.com

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Figure 1

Figure 2

Figure 3

Figure 4

Table 1