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Minimum standards, insurance regulation and adverse selection: evidence from the Medigap market

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Abstract

This paper examines the implications of minimum standards for insurance markets. I study the imposition of binding minimum standards on the market for voluntary private health insurance for the elderly. The central estimates suggest that the introduction of the standards was associated with an 8 percentage point (25%) decrease in the proportion of the population with coverage in the affected market, with no evidence of substitution toward other, unregulated sources of insurance coverage. To explore possible factors contributing to the impact of the minimum standards, I develop comparative static predictions of the impact of imposing minimum standards in an insurance market with adverse selection. The observed changes in market equilibrium associated with the minimum standards are broadly consistent with these predictions, providing evidence of the existence of adverse selection in this insurance market. More importantly, they suggest that the presence of adverse selection—which in principle may provide an economic rationale for minimum standards—in practice may have exacerbated the declines in insurance coverage associated with the minimum standards.

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1. Introduction

Government intervention in insurance markets is both pervasive and varied. It runs the gamut from direct government provision of insurance to regulation of private insurance markets. A substantial theoretical literature has emphasized the potential for market failures in insurance markets—particularly adverse selection—that may provide an economic rationale for this extensive government intervention.

Economists have devoted considerably less attention, however, to considering how the consequences of the government intervention may themselves be affected by the nature of any market failures in the private market. This paper represents an attempt to investigate this issue by considering the imposition of minimum standards in private insurance markets. In principle, minimum standards may be a way to counteract the tendency for insufficient insurance coverage that market failures such as consumer misinformation or adverse selection can produce. In practice, I find the opposite: minimum standards appear to aggravate the insufficient insurance problem rather than to ameliorate it. Moreover, the very presence of adverse selection, whose effects the minimum standards might have in principle been able to counteract, may help explain the reduction in insurance coverage associated with the minimum standards. These findings highlight the importance of considering the nature of the private market equilibrium when evaluating alternative public policy designs.

Minimum standards are an increasingly common form of government regulation. They have been applied and proposed in homeowner's, automobile, and health insurance markets. Examples in health insurance markets include state requirements that mental health benefits be included in employer-provided health insurance packages and Federal proposals for a "Patients' Bill of Rights" that would impose minimum standards on HMOs. Yet we have virtually no empirical evidence on the effect of minimum standards in insurance markets.¹

I study the effect of minimum standards by examining the imposition of large, binding minimum standards in the voluntary, private supplementary health insurance market for the elderly. Such insurance is commonly known as "Medigap" or "Medicare supplement insurance". These insurance policies cover some portion of the considerable medical costs not covered by Medicare, the public health insurance program for the elderly in the United States. In the late 1970s and early 1980s, almost all states followed a federal "recommendation" to impose minimum standards on the non-group Medigap market. The regulations specified certain gaps in Medicare coverage that any non-group Medigap policy must cover. They did not require that individuals purchase these policies, nor did they regulate their price. The coverage of other gaps was left to the market.

The paper has two main components. First, I examine the effect of the minimum standards for insurance coverage. I present robust evidence of a large "quality–quantity" tradeoff. The imposition of minimum standards is associated with a long-run decline in

¹ An exception is Gruber (1994) who finds no evidence of an effect of state-mandated benefits for employer-provided health insurance on insurance coverage. He notes, however, that the mandates were not binding, and that this may explain the absence of an effect.

coverage in the regulated market of 8 percentage points (25%). This decline is particularly pronounced among non-whites, for whom I estimate a long-run decline in insurance coverage of 17 percentage points (95%). I find no evidence of substitution to the other potential sources of supplementary insurance coverage. I also present evidence that suggests that the minimum standards may also have been associated with substantial declines in non-mandated benefit coverage among the insured in the regulated market. These estimates suggest that the minimum standards, on net, increased individuals' exposure to medical expenditure risk, despite the fact that compliance with the minimum standards required individuals who remained in the market to purchase additional coverage.

Second, I examine what the impact of the minimum standards can tell us about the nature of the market equilibrium, and about the factors contributing to the large decline in insurance coverage associated with the minimum standards. In particular, I develop and test the comparative static predictions of the consequences of imposing minimum standards in insurance markets with adverse selection. This examination of the impact of an exogenous constraint on the market equilibrium offers a complement to the standard, cross-sectional approach to testing for adverse selection in insurance markets (see e.g. Chiappori, 2000; Chiappori and Salanie, 2000).

Using detailed data on the structure of benefits and premiums before and after the imposition of the minimum standards, I find several pieces of evidence consistent with the predicted effects of imposing minimum standards in an insurance market with adverse selection. Specifically, I find evidence that is consistent with the minimum standards producing a switch from a separating equilibrium to a pooling equilibrium and that would not have been anticipated from imposing minimum standards in other models of the private market. This finding suggests that adverse selection is present in the Medigap market. More interestingly, it suggests that adverse selection, a market failure that in principle may provide an economic rationale for minimum standards, in practice may have exacerbated the magnitude of the declines in insurance coverage associated with their imposition.

The rest of the paper is organized as follows. In Section 2, I provide background on the Medigap market and the specific nature of the minimum standards imposed. I also briefly discuss some theoretical predictions for the impact of the minimum standards. Section 3 presents the central empirical findings of the effect of minimum standards on insurance coverage. Section 4 develops and tests the comparative static predictions of the impact of minimum standards on an insurance market with adverse selection. The last section concludes.

2. Minimum standards in the Medigap market

2.1. The Medigap market

Virtually universal among the elderly in the United States, Medicare provides only partial health insurance coverage. In 1977, just before the minimum standards regulation, Medicare paid just under half of all health care expenses of the elderly. It is not surprising,

therefore, that about two-thirds of Medicare beneficiaries had private insurance to supplement Medicare (Cafferata, 1984). This Medigap insurance was obtained, in roughly equal proportions, from group and non-group sources.² The average annual premium for a non-group policy in 1977 was US\$568 in 1999 dollars.³

The non-group market, to which the minimum standards applied, was highly concentrated. In 1984, Blue Cross and Blue Shield plans accounted for three-quarters of non-group Medigap premiums. Three companies accounted for over 50% of the remaining non-group premiums. (U.S. General Accounting Office, 1986).

Medigap covers some of the “gaps” in Medicare. Medicare consists of two different programs. Medicare Part A (Hospital Insurance Program) covers some non-physician inpatient hospital care expenses, and some care in skilled nursing facilities or home health care. Medicare Part B (Supplementary Medical Insurance Program) primarily pays physician fees for covered services.

Gaps in Medicare coverage fall into three main categories. First, there are cost-sharing provisions for the health services that Medicare covers. These include separate annual deductibles and copayments for expenses covered by Part A and by Part B. The 20% physician (part B) copayment is uncapped. The hospital (Part A) copayment increases with the length of the hospital stay.⁴ As a result, the cost sharing provisions leave the elderly with substantial exposure to medical expenditure risk. Second, there are certain health services that Medicare covers only partially and/or with severe restrictions, such as care in a skilled nursing facility or home health care. Third, there are health services that Medicare does not cover at all, such as outpatient prescription drugs and hospital stays beyond 150 days.

Two factors make the Medigap market a particularly attractive setting for studying the consequences of minimum standards in insurance markets. First, before the states adopted minimum standards, the non-group Medigap market was essentially unregulated (Van Ellet, 1979; McCall et al., 1983). Most insurance markets have been heavily regulated for a long time, making it very difficult to isolate the consequences of one particular type of regulation. Second, market failures that result in insufficient insurance coverage (and therefore a potential economic rationale for minimum standards) may well be present in the Medigap market. Consumer misinformation, not only about medical risks but also about insurance needs, may be a problem for many Medigap consumers who must decide whether and how to supplement a public health insurance plan that they may not fully understand. Indeed, this was a major motivation for the minimum standards (see e.g.

² Author’s calculation based on data from the National Health Interview Surveys (NHIS) described in Section 3. Throughout this paper, I refer to health insurance purchased through a current or former employer or union as “group” insurance. I use the term “non-group” insurance to refer to non-employment related health insurance. This is purchased either directly through a private company or through a non-employment-related association such as the AARP. Non-group policies are sold on an individual basis. Group policies may include spousal dependents.

³ Author’s calculation based on data described in Section 3.5. Throughout this paper, dollar figures are reported in 1999 dollars—adjusted using the CPI-U—unless otherwise noted.

⁴ After the annual deductible, Medicare Part A fully covers all hospital inpatient expenses for 60 days, after which there is a copayment for hospital days 61–90, and another, higher copayment for hospital days 91–150. Beyond 150 days, Medicare coverage of hospital stays ceases.

Merritt and Potemken, 1982). There is also existing cross-sectional evidence that adverse selection may be present in the Medigap market (Ettner, 1997).

2.2. Minimum standards: the Baucus amendments

Starting in the late 1970s, a small number of states introduced minimum standards for non-group Medigap policies. In 1978, the National Association of Insurance Commissioners (NAIC) issued a set of model regulations for such minimum standards. The 1980 Federal Baucus amendments provided various forms of “encouragement” to the states to adopt these model regulations (Merritt and Potemken, 1982; McCall et al., 1983). Shortly thereafter, the remaining 42 states and the District of Columbia enacted minimum standards for non-group Medigap policies. Table 1 reports the first full year that the regulations were in effect in each state. Most states simply adopted the minimum standards in the model regulations. However, Table 1 indicates that eight states adopted regulations that restricted the allowable policy space even further. In the empirical work below, I find no evidence of a differential effect of the more stringent regulations.

The minimum standards applied only to non-group policies. They did not apply to policies purchased from a current or former employer or union (“group policies”). Policies that were converted from group policies to non-group policies, and renewals of existing non-group policies, were also not covered by the minimum standards. All non-group Medigap policies are sold on an annual basis.

Table 1
Implementation of minimum standards for non-group Medigap policies

First full year of regulations in effect	States	Percentage of national health interview Survey sample ^a
1974	CA*	9.7
1977	IL, CT, MN*	8.1
1979	RI, PA, WI*	9.1
1980	MA**	2.5
1981	GA, OR, FL, NH, NV, VT, NE, WY*	10.9
1982	IA, SC, AK, AZ, CO, AL, ND, UT, NJ, AR, VA*, WV*, NY*, WA, TN	27.0
1983	ME, HI, IN, KS, OK, OH, ID, MS, DE, KY, TX, MT, MO, SD, NM, LA, NC, MD	28.5
1984	MI, DC	4.3

Sources: The above table was compiled based on information in Van Ellet (1979), Merritt and Potemken (1982), McCall et al. (1983), U.S. General Accounting Office (1986), and conversations with state regulators in Massachusetts and Wisconsin.

^a This sample is described in detail in Section 3.

* Denotes regulation that established classes of policies each with their own minimum benefit standards. In all of these cases, the least comprehensive category had minimum benefit standards as strict or stricter than the Baucus requirements, and with the addition of other benefits came other requirements.

** Denotes standardization. Three policies, specified in detail, were the only ones that could be sold. The least comprehensive policy satisfied the Baucus criteria.

The minimum standards limited exclusions for pre-existing conditions to 6 months and specified a minimum set of benefits that policies must cover. Specifically, they required full coverage of the Part A copayments for hospital days covered by Medicare (days 60 through 150), and coverage of 90% of the cost of hospital stays beyond 150 days, at which point Medicare coverage ceases, for at least an additional 365 days. They also mandated full coverage of the Part B physician copayment, subject to a maximum deductible of US\$200 and a maximum benefit of no less than US\$5000 (in nominal dollars). Finally, the policy had to cover the annual deductibles in both Part A and Part B for the first three pints of blood used, but not the general Part A and Part B deductibles. Appendix A provides more detail on the gaps in Medicare coverage and on the specific requirements of the minimum standards.

Two concerns motivated the passage of the Baucus amendments. First, policy-makers were worried that the elderly were unable to make informed choices about their insurance coverage; in particular, it was feared that they overestimated the amount of coverage provided through Medicare and thus did not buy sufficient private coverage (see e.g. Merritt and Potemken, 1982; DeNovo and Shearer, 1978; U.S. Senate, 1978). The minimum benefit standards described above were designed to address these concerns. In addition, concern about fraud and abuse practiced by a very small segment of the industry motivated several other provisions of the Baucus amendments, such as allowing the purchaser a 30-day “free look” period during which the policy could be returned, and requiring the prominent display of cancellation and termination clauses. In a similar vein, the legislation established loss ratio targets for Medigap policies that required the insurance company to return on average at least 75% of premiums collected from association policies and 60% of premiums collected from individual policies. In contrast to the minimum benefit standards, these provisions affected only a few “rogue” companies and did not affect the vast majority of buyers in this highly concentrated market. (McCall et al., 1983; Merritt and Potemken, 1982; U.S. House of Representatives, 1978). In the empirical analysis, I therefore attribute estimated effects of the reforms to the minimum benefit standards.

2.3. *The “bite” of the minimum standards*

Data from the 1977 National Medical Care Expenditure Survey (NMCES) indicate that, prior to the enactment of the regulations, less than 7% of non-group policies in effect would have met the minimum standards that are measurable in these data. Ten years later, the 1987 National Medical Expenditure Survey (NMES) indicates the requirements were strongly enforced: 94% of individuals who had policies that were subject to the minimum standards met the measurable requirements. The most binding requirement was for coverage for 365 days beyond the first 150 hospital days—only 11% of non-group policies in 1977 would have met this requirement—followed by the requirement for full coverage of the Part B physician copayment, which only 52% of policies would have satisfied. In contrast, 70% covered the Part A copayments for hospital days 91–150, and 87% covered the Part A copayments for hospital days 61–90.

The potential out-of-pocket liability insured by the mandated benefits was substantial. The mandated coverage of the Part A hospital copayments provided insurance against rare

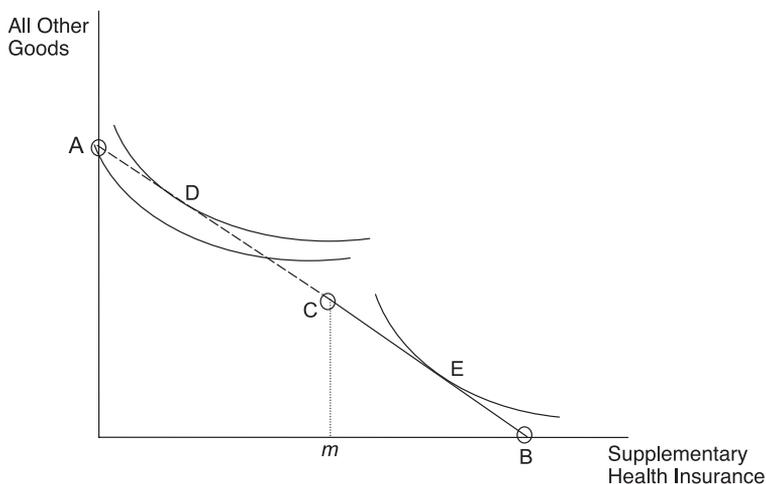


Fig. 1. The effect of minimum standards on the decision to purchase insurance.

but potentially catastrophic financial risks associated with long hospital stays.⁵ Moreover, mandated coverage of the 20% Part B copayment for physician charges insured an uncapped and potentially large exposed risk.

2.4. The expected impact of the minimum standards

Consider a 65-year-old, newly eligible for Medicare, who is deciding whether and how much supplementary health insurance to purchase, as shown in Fig. 1. The budget constraint is given by the line AB. Individuals who place a high value on insurance will purchase more comprehensive policies such as E, while those who value insurance less will choose a point such as D. Now suppose that the government imposes a minimum standard on the supplementary market. It does not require purchase of the supplementary insurance, but it mandates that any purchase must be of at least the amount m . The individuals' budget set is now restricted to the point A and the solid line CB.

In the baseline case of perfect competition, constant returns to scale, and perfect information, the regulation does not affect the relative price of health insurance. As a result, individuals whose insurance purchases already satisfy the minimum standards (i.e. they either purchase no insurance at point A or they purchase more than m , such as at point E) will experience no change in their consumption decisions. An individual who purchases less than m (for example, at point D), however, must now compare his utility from purchasing no insurance to his maximal utility from purchasing a policy that complies with the minimum standards. Assuming strictly convex preferences, if the individual chooses to

⁵ Data from a 20% sample of Medicare beneficiaries in 1984 indicate that only 0.1% of the elderly had hospital stays beyond 150 days. A stay of 365 days beyond the 150 days partially covered by Medicare would have cost an individual without private insurance US\$170,638 (assuming a hospital charge of US\$467.5 per day (American Hospital Association, 1978)).

purchase insurance, the optimal compliant policy is exactly the minimum required amount of insurance. As drawn, the individual now prefers purchasing no insurance (point A) to the optimal compliant policy (point C).

Once we move away from the benchmark model, three other factors may change the magnitude or even the direction of the expected impact of the minimum standards. First, the presence of consumer misinformation or irrationality—one of the major political motivations for the legislation—might produce larger declines in coverage associated with the minimum standards if consumers mistakenly believe that Medicare covers some or all of the mandated benefits.

Second, if we relax the assumptions of perfect competition and constant returns to scale, the minimum standards may be associated with increased costs or markups, thus raising prices and producing larger declines in insurance coverage. Markups could increase if there is substantial insurance company exit in response to the minimum standards, or if these standards, by restricting the product space, facilitate collusion among the existing companies. Per-policy costs could increase if there are substantial joint costs in producing insurance policies; the minimum standards, by requiring that non-compliant policies be discontinued, could raise the share of joint costs born by the remaining compliant policies.⁶

Third, if we relax the assumption of symmetric information to allow for adverse selection, the effect of minimum standards on the proportion of the population with the regulated insurance is ambiguous. In a simple adverse selection model such as that of [Akerlof \(1970\)](#), minimum standards can be welfare improving if the mandated minimum benefits are valued by each member of the insured population at or above his own actuarially fair price, but cannot be purchased at this price in the unregulated market. By bundling the purchase of any non-mandated benefits with the mandated benefits, the minimum standards now make the mandated benefits available at the insured-population average pooling price, and can thus produce increases in insurance coverage and in welfare.⁷ Of course, some individuals with private information that they are low risk conditional on the insurance companies' information may—if they have sufficiently low consumer surplus from the non-mandated benefits and value the mandated benefits at less than the insured-population average pooling price—choose to drop coverage altogether. As a result, the Medigap market could unravel, producing substantial—perhaps complete—declines in insurance coverage and reducing the scope for welfare gains. Because of the possibility of unraveling, the declines in insurance coverage may be substantially larger than what can be produced by full-information, demand-side responses alone in the benchmark model.

Finally, it should be noted that the above discussion has assumed that supplementary health insurance varies on only one dimension: quantity. In practice, Medigap policies are multi-dimensional. Policies that would not have met the minimum standards tended to

⁶ Of course, in an imperfect competition model, it is also theoretically possible that minimum standards could instead increase the proportion of the population purchasing the regulated product and enhance welfare (see e.g. [Ronnén, 1991](#)).

⁷ This is analogous to [Akerlof's \(1970\)](#) description of how a population-wide mandate for insurance coverage can be welfare improving if each individual values the insurance at or above his actuarially fair price but cannot purchase insurance at this price in the unregulated market.

cover a variety of non-mandated benefits. For example, in 1977, 98% of policies that would not have met the minimum standards covered the (non-mandated) Part A hospital deductible, and over one-fifth covered outpatient prescription drugs (also not mandated).⁸ Once we enrich the analysis to think of a three-good world—mandated insurance benefits, non-mandated insurance benefits, and all other goods—the minimum standards may also affect coverage of non-mandated benefits. Given the nature of the available data, I concentrate in the empirical work on the effect of the minimum standards on the proportion of the population covered by the regulated insurance. I will, however, also present some more suggestive results on the impact of the minimum standards on coverage of non-mandated benefits.

3. Effect of minimum standards on insurance coverage

This section estimates the impact of the minimum standards on insurance coverage. I concentrate on the impact on whether the individual has coverage for the regulated insurance or for other, unregulated, forms of insurance. I also briefly present some more suggestive evidence of the impact of the minimum standards on the intensive margin of coverage of non-mandated benefits among those who are covered by the regulated insurance.

3.1. *Data and empirical strategy*

I use repeated cross-sections from the National Health Interview Surveys (NHIS) to examine the effect of the minimum standards on the probability of being covered by non-group Medigap. The NHIS is an annual U.S. household survey. Supplementary questions on individuals' source of private health insurance (i.e. group or non-group), if any, were asked in the 1976, 1978, 1980, 1982, 1983, 1984, and 1986 NHIS. The earliest data therefore pre-date the introduction of the minimum standards in all but one of the states. The major drawback to the NHIS is that these data contain no information on health insurance premiums or on the benefits covered by the insurance. I will therefore use an alternative data source below to examine the effect of the minimum standards on these other dimensions.

The choice of the age group for the sample is a key issue. The conventional wisdom was that individuals at that time tended to purchase Medigap policies relatively soon after becoming eligible for Medicare at age 65, and then to renew them without change. I therefore begin by restricting the sample to individuals aged 65–68 who are covered by Medicare.⁹ In additional analyses described below, I examine the effect on other age groups.

⁸ Author's calculations based on 1977 NMCES.

⁹ I would like to further restrict the sample to those not on Medicaid and those without military health insurance. Unfortunately, data on these types of coverage are not available until the 1982 survey. Estimates of the effect of the reform using only data from 1982 and subsequent years do not differ from the estimates obtained using the whole sample and are not sensitive to whether those with Medicaid and military health insurance are excluded from the sample.

The binary dependent variable COVERAGE indicates whether the individual has non-group private health insurance, defined as insurance that was not “obtained through an employer or union.” I exploit the substantial variation detailed in Table 1 in the timing of different states’ adoption of the minimum standards to identify their effect on coverage rates in the non-group market. The empirical strategy compares non-group coverage rates after the reform has been imposed to non-group coverage rates prior to its imposition, while controlling for other possible confounding changes. The basic estimating equation is:

$$\text{COVERAGE}_{ijt} = \alpha + \text{STATE}_j + \text{YEAR}_t + X_{ijt}\beta + \lambda \text{ADOPT}_{jt} + \varepsilon_{ijt}. \quad (1)$$

STATE and YEAR are fixed effects that control respectively for any fixed differences across states in coverage rates and for any yearly changes in coverage rates that are common across states. X is a vector of covariates. It controls for observable compositional changes in the sample along dimensions that may be related to the propensity to hold non-group coverage. It consists of a series of dummies for age, gender, race (white or non-white), education (less than high school, high school graduate, some college, college graduate and higher), marital status (married or not), and self-reported health status (excellent, very good or good versus fair or poor).¹⁰ ADOPT_{jt} is an indicator variable equal to 1 if the individual in state j and year t is subject to the minimum standards regulation, and 0 otherwise. λ , the key parameter of interest, thus measures the estimated change in non-group insurance coverage rates associated with the implementation of the reform.

To examine the dynamics in the timing of the impact of the minimum standards, I enrich the basic specification to allow for separate short-term and long-term effects of the reform as follows:

$$\begin{aligned} \text{COVERAGE}_{ijt} = \alpha + \text{STATE}_j + \text{YEAR}_t + X_{ijt}\beta + \lambda_1 \text{ADOPT}_{jt,1} \\ + \lambda_2 \text{ADOPT}_{jt,2} + \varepsilon_{ijt} \end{aligned} \quad (2)$$

$\text{ADOPT}_{jt,1}$ is an indicator variable equal to 1 if it is the first or second year after adoption of the minimum standards in state j .¹¹ $\text{ADOPT}_{jt,2}$ is an indicator variable equal to 1 if it is three or more years after adoption of the minimum standards in state j .

The identifying assumption in Eqs. (1) and (2) is that, absent the reform, states who implemented the reform in different years would have had similar trends in Medigap coverage. Underlying trends in Medigap coverage do not pose a problem for the identification strategy, as long as there are not systematic differences across states in these trends that are correlated with the year in which states adopted the minimum standards. I conduct a partial test of this identifying assumption by examining whether there are significant changes in coverage rates in the periods prior to the state’s

¹⁰ I group health status this way because until 1982 the individual is given a choice of reporting their health status as “excellent”, “good”, “fair” or “poor.” In 1982 and in subsequent years, the individual also has the option of reporting “very good”.

¹¹ Because the data are, for the most part, biannual, I do not look at potential year-to-year differences in the effect of the reform.

Table 2
Effect of minimum standards on non-group coverage rate

	(1)	(2)	(3)	(4)
ADOPT (after adoption)	-0.051*** (0.014)	-0.053*** (0.014)	-	-
ADOPT ₁ (1 or 2 years after adoption)	-	-	-0.049*** (0.013)	-0.011 (0.034)
ADOPT ₂ (3 or more years after adoption)	-	-	-0.080*** (0.022)	-0.075* (0.039)
State fixed effects	YES	YES	YES	YES
Year fixed effects	YES	YES	YES	YES
Includes covariates	NO	YES	YES	YES
Ages includes in sample	65–68	65–68	65–68	65
R ²	0.031	0.048	0.048	0.062
N	17,649	17,317	17,317	4384

Coefficients in columns (1) and (2) are from OLS estimation of Eq. (1) using the 1976 through 1986 NHIS data. Coefficients in column (3) are from OLS estimation of Eq. (2) on the same data. The dependent variable is whether an individual has coverage in the non-group market. Standard errors are in parentheses. They are adjusted for the heteroscedasticity in the linear probability model and allow for an arbitrary covariance matrix within each state over time.

*Denotes significance at the 10% level.

***Denotes significance at the 1% level.

implementation of the reform relative to states that implemented at a different time. I therefore estimate the following:

$$\text{COVERAGE}_{ijt} = \alpha + \text{STATE}_j + \text{YEAR}_t + X_{ijt}\beta + \lambda_{-2}\text{ADOPT}_{jt,-2} + \lambda_{-1}\text{ADOPT}_{jt,-1} + \lambda_1\text{ADOPT}_{jt,1} + \lambda_2\text{ADOPT}_{jt,2} + \varepsilon_{ijt} \quad (3)$$

ADOPT_{jt,-1} is an indicator variable equal to 1 if it is 2 or 3 years prior to adoption and ADOPT_{jt,-2} is an indicator variable equal to 1 if it is 4 or more years prior to adoption. The omitted reference category is the year of adoption and the year prior to adoption (period 0).

3.2. Results

Table 2 presents the results of estimating Eqs. (1) and (2) by OLS. Columns (1) and (2) present the results of estimating Eq. (1) without and with covariates, respectively. They indicate that the reform is associated with a 5.1 to 5.3 percentage point decrease in coverage. This effect is statistically significant at the 1% level and is not sensitive in magnitude or significance to the inclusion of covariates.¹²

¹² As an alternative empirical strategy, I estimated the effect of the reform if the ADOPT variable is instead turned on for individuals who are 65 in the first year of the reform, 65–66 in the second year of the reform, etc., out to 65–77 in the 12th year of the reform. The estimated coefficient on ADOPT decreases to -0.017 with this alternative approach, although it remains statistically significant at the 5% level. The lower estimate is most likely due to the fact that some individuals purchase Medigap at ages 66 to 68, and are thus affected by the reform; however, this approach treats them as unaffected by the reform.

Column (3) examines the dynamics of the impact of the reform, using the specification in Eq. (2). The effect of the reform persists after it has been in place for 3 or more years, and indeed increases slightly. The reform is associated with a 4.9 percentage point reduction in coverage after 1 to 2 years and an 8.0 percentage point reduction after 3 or more years; these point estimates are statistically significantly different at the 10% level. In results not reported here, I am unable to detect any difference in the estimated effect of the reform for various time periods beyond 3 years.

The several-year lag before the full effect of the reform is felt is potentially driven by the decision to include individuals aged 65–68 in the sample. If, in fact, individuals only buy Medigap policies when they are first covered by Medicare at age 65, then as time since the regulation passes, the fraction of the sample purchasing their Medigap policy after the regulations went into effect is increasing over the first 3 years after the implementation of the regulation. To investigate this possibility, column (4) shows the results of re-estimating Eq. (2) on a sample of only 65-year-olds. The results for the sample of 65-year-olds indicate that the minimum standards are associated a long-run decline of 7.5 percentage points; this is statistically significantly larger (at the 1% level) than the estimated short-run decline of only 1.1 percentage point. This suggests that the larger long-run effect is not an artifact of including older ages in the sample. It may instead be due to a lag in enforcement, or to the dynamics of adjustment to a new equilibrium.

I examine whether the effect of the reform differs across observable characteristics of the individuals such as educational attainment, marital status, gender, race or health status. The only substantive or statistical differences—in either levels or proportions—are by race. The estimated short- and long-run effects of the reform for whites (who make up approximately 90% of the sample) are smaller (-0.045 and -0.070 , respectively) than for non-whites (-0.084 and -0.171 , respectively). All of these estimates are statistically significant at the 1% level and the estimated long-run effect of the reform is statistically significantly smaller for whites than for non-whites at the 5% level. Since non-whites are less likely to have non-group coverage prior to the reform than whites (18 percentage points versus 34 percentage points), the proportional effects of the reform are even larger for non-whites than for whites. Indeed, the estimates suggest that the long-run effect of the reform was to almost entirely eliminate non-group coverage among non-whites.

Race is also the only demographic characteristic along which there exists substantial differences in the amount of non-mandated coverage prior to the reforms. Specifically, data from the 1977 NMCES indicate that, prior to the reform, non-whites tended to have substantially less coverage of non-mandated benefits than whites. It makes sense in a model with rational consumers that there is a larger decline in coverage for the group that had substantially less coverage prior to the reform since the minimum standards are a greater proportional tax on smaller policies.

I also examine whether declines in non-group Medigap coverage associated with the minimum standards represent a net decline in insurance coverage or whether there is substitution toward alternative sources of supplementary insurance: public Medicaid and private group insurance.¹³ Table 3 reports the results of estimating Eq. (2) using first an

¹³ Prior to the minimum standards, just under 10% of the sample had Medicaid coverage. Group coverage rates were similar to non-group coverage rates. They remained roughly constant over the time period studied.

Table 3
Effect of minimum standards on coverage by alternative sources of supplementary insurance

	Group coverage	Medicaid coverage	Medicaid coverage; Sample limited to individuals with less than high school education
ADOPT ₁ (1 or 2 years after adoption)	0.011 (0.015)	0.009 (0.012)	0.017 (0.022)
ADOPT ₂ (3 or more years after adoption)	– 0.001 (0.013)	0.021 (0.015)	0.031 (0.027)
R ²	0.101	0.113	0.135
N	17,332	9224	3986

Coefficients are from OLS estimation of Eq. (2). Column headings give the dependent variable. The first column is estimated using the 1976 through 1986 NHIS data. Since information on Medicaid coverage is available only in 1982 and later years, the other two columns are estimated using the 1982 through 1986 NHIS data. Standard errors are in parentheses. They are adjusted for the heteroscedasticity in the linear probability model and allow for an arbitrary covariance matrix within each state over time. All regressions include a full set of covariates and state and year fixed effects. Sample is limited to those aged 65 to 68.

indicator for group coverage and then an indicator for Medicaid coverage for the dependent variable.¹⁴ I find no evidence of substitution to either source of coverage associated with the minimum benefit standards. The Medicaid results are robust to restricting the sample to those in the lowest education category (who presumably are mostly likely to be eligible for Medicaid). This lack of substitution is not surprising given that group coverage and Medicaid tend to be both more comprehensive and cheaper than non-group coverage. The non-group market, presumably, consists of individuals without access to group insurance or Medicaid.

Finally, I examine whether the regulations are associated with changes in coverage for existing non-group policyholders. Recall that individuals with existing policies could continue to renew them without becoming subject to the minimum standards, thus exempting them from the regulations. I therefore re-estimate Eq. (2) on the sub-sample of individuals who are 70 or older when the regulations went into effect and on the sub-sample of individuals who are 70–74 when the regulations went into effect.¹⁵ In results not reported here, there is no evidence that the reform affected coverage for either of these older groups in either the short or long run; the coefficients on the ADOPT variables are all small in magnitude and statistically insignificant. This is

¹⁴ I can only measure Medicaid coverage starting in 1982; the analysis of the effect of the minimum standards on Medicaid coverage is therefore restricted to data in 1982 and later years. The results for non-group coverage reported above are robust to a similar restriction.

¹⁵ For periods prior to the reform, the sample is limited to individuals 70 and over (or 70–74). For periods after the implementation of the reform, the sample is limited to individuals who would have been at least 70 (or 70–74) when the reform was implemented. Because of concern that the estimates may be biased by the aging of the sample within each state over time, I re-estimate Eq. (2) on the sub-sample of individuals who are 82 or older in each year; these individuals are all at least 70 in 1974 (the first year that regulations went into effect) in each year of data. The results are not sensitive to this alternative sample definition.

consistent with the conventional wisdom that individuals tended to buy their Medigap policies relatively soon after becoming eligible for Medicare at age 65 and then to renew them without change; the older individuals would therefore not have become subject to the regulations. It is also not suggestive of large supply-side changes in costs or in markups on the regulated insurance associated with the minimum standards; any such changes should affect the prices of Medigap policies and hence produce declines in insurance coverage among existing policyholders who were not directly affected by the regulation.

3.3. Specification checks

I performed an array of specification checks to test the robustness of the results in Tables 2 and 3 and to investigate the validity of the identifying assumption. Table 4 reports the results for several of the most important specification tests of the non-group coverage results; the specification tests for group coverage and Medicaid are not reported but are similarly supportive. The first column of Table 4 indicates that the results are robust to adding state-specific linear time trends to the basic specification in Eq. (2). The second and third columns show the results of estimating Eq. (3) without and with state-specific linear trends, respectively. There is no evidence in either specification of changes in non-group

Table 4
Effect of minimum standards on non-group coverage rate: specification checks

	Full sample (1)	Full sample (2)	Full sample (3)	States with reforms first in effect 1979 or later (4)	States with reforms first in effect 1981 or earlier (5)
ADOPT ₂ (4 or more years prior to adoption)	–	0.011 (0.018)	– 0.009 (0.045)	0.020 (0.029)	–
ADOPT ₁ (2 or 3 years prior to adoption)	–	0.0002 (0.014)	– 0.006 (0.019)	0.007 (0.017)	–
ADOPT ₁ (1 or 2 years after adoption)	– 0.045** (0.017)	– 0.049*** (0.014)	– 0.044** (0.019)	– 0.051** (0.021)	– 0.053*** (0.019)
ADOPT ₂ (3 or more years after adoption)	– 0.078** (0.032)	– 0.081*** (0.021)	– 0.075** (0.035)	– 0.070 (0.043)	– 0.081*** (0.022)
State-specific linear trends	YES	NO	YES	NO	NO
R ²	0.052	0.049	0.052	0.050	0.038
N	17,317	17,317	17,317	14,329	6950

Coefficients in columns (1) and (5) are from OLS estimation of Eq. (2) using the 1976 through 1986 NHIS data; the ADOPT variables are interpreted relative to the entire period prior to adoption. Coefficients in column (2) through (4) are from OLS estimation of Eq. (3) on the same data; the ADOPT variables are interpreted relative to period 0. The dependent variable is whether an individual has coverage in the non-group market. Sample is limited to those aged 65 to 68. Standard errors are in parentheses. They are adjusted for the heteroscedasticity in the linear probability model and allow for an arbitrary covariance matrix within each state over time. All regressions include a full set of covariates and state and year fixed effects.

**Denotes significance at the 5% level.

***Denotes significance at the 1% level.

coverage in periods prior to the reform relative to period 0 (the year of the reform and the year prior to the reform). This serves as partial confirmation of the identifying assumption that absent the introduction of the legislation, states would have had similar trends in Medigap coverage. It also suggests that the reforms were not adopted in response to pre-existing trends in non-group coverage rates.

The composition of states used to estimate the coefficient on any given $ADOPT_{jt,k}$ varies with k . For example, since the earliest year of data is 1976, the coefficient on $ADOPT_{jt,-1}$ (2 or 3 years before adoption), is identified only by individuals in states where the regulation's first full year in effect was 1978 or later. This could contaminate my results if the effect of the reform varies across states, or if the pre-period trends differ across states in ways not fully captured by a state-specific linear trend. To test for this, I re-estimate the model on two different balanced panels of states. In column (4), I re-estimate Eq. (3) using states in which regulations were first in effect in 1979 or later. In column (5), I re-estimate Eq. (2) using states in which regulations were first in effect in 1981 or earlier.¹⁶ The results are not sensitive to these restrictions.

3.4. Magnitude of the effect on non-group coverage

Prior to the introduction of the minimum standards, 33% of the sample had non-group coverage. The estimates therefore indicate that the imposition of the minimum standards is associated with a 15% decline in non-group coverage in the first 2 years after implementation and a long-run reduction in coverage of almost 25%.

These estimates are within the broad range of findings that would be consistent with a full-information, demand-side response to the minimum standards. Using detailed information on medical expenditures and sources of payment from the 1977 NMCES, I estimate that, ignoring moral hazard and adverse selection effects, the mandated Baucus benefits would have raised the expected payments (and hence an actuarially fair premium) for these policies by US\$168, or 30%. If the marginal utility of complying with the mandate is zero, this predicted premium increase represents a 30% net tax on the purchase of non-group insurance. Under this assumption, the 25% decline in non-group insurance coverage is consistent with estimates of the price elasticity of demand for health insurance, which lie in the range of -0.5 to -1 (Cutler, 1996).¹⁷ Of course, the marginal utility from the mandated insurance is likely to be positive, suggesting that the effect of the reform would be lower than the 15 to 30% decline in coverage predicted from a 30% net tax. On the other hand, accounting for administrative loads, insurance company profits and adverse selection suggests that the premium increase associated with complying with the mandated minimum benefits would likely be larger than the 30% calculated above.

¹⁶ There is not sufficient variation in the timing of adoption in this sample to look separately at effects in various pre-periods, as in Eq. (3).

¹⁷ Most estimates of the price elasticity of demand for health insurance are based on the demand response for comprehensive health insurance. The available evidence of the price elasticity of demand for supplementary health insurance suggests that it is in the low end of the range of estimated elasticities for comprehensive health insurance (Finkelstein, 2002a).

3.5. Suggestive evidence on coverage of non-mandated benefits and premiums

As discussed in Section 2, the minimum standards may also affect coverage of non-mandated benefits and premiums. Unfortunately, detailed data on the nature of benefits covered by an individual's Medigap policy and on premiums for these policies do not exist at the high, bi-annual frequency used to examine the impact of the minimum standards on insurance coverage. Such data are available, however, in the 1977 National Medical Care Expenditure Survey (NMCES) and its companion survey, the 1987 National Medical Expenditure Survey (NMES).¹⁸ The long time period between these two cross-sections, which spans the adoption of the minimum standards in almost all states, makes the results of this section necessarily more speculative than those in the previous section.

I use changes in benefit coverage and premiums for individuals with group Medigap insurance to try to control for other changes in the demand or supply of various Medigap benefits that may have occurred in the non-group market during this 10-year period. I limit the sample to Medicare recipients aged 65 to 71 who are policyholders of private health insurance and are not covered by Medicaid. The age cut is chosen in keeping with the results of the previous section, in which I found that individuals aged 65 to 68 were affected by the reform.¹⁹ I exclude individuals who are covered as dependents on group plans since such individuals cannot separately choose benefits that differ from those of the policyholder on the group plan. There are no dependents covered by non-group Medigap policies since such policies only cover a single individual.²⁰ I also limit the sample to those who are retired, defined as individuals who are not in the labor force.²¹ Finally, since the data are at the policyholder level, I exclude anyone who has both non-group insurance and group insurance (approximately 7% of the sample) because in such cases I cannot tell from which market a given benefit comes.

The empirical strategy is to compare changes in benefit coverage rates or in log premiums between 1977 and 1987 for privately insured individuals affected by the reform (i.e. those with non-group coverage) to changes for a control group of privately insured individuals who were not affected by the reform (i.e. those with group coverage). The basic estimating equation is:

$$Y = \beta_1 \text{AFTER} \times \text{NON} - \text{GROUP} + \beta_2 \text{AFTER} + \beta_3 \text{NON} - \text{GROUP} + X\beta_4 + \varepsilon. \quad (4)$$

The dependent variable is either the log of premiums or a binary indicator of whether the individual's health insurance coverage includes a given benefit. The premium is

¹⁸ Benefit information is obtained by contacting each individual's source of insurance for policy details and then coding up these details. This is considerably more reliable than self-reported benefit information.

¹⁹ These data do not contain information on state of residence. But anyone who is 71 or younger in 1987 was no older than 68 in 1984 (the last year that was the first full year for regulation to be in effect in any state) and therefore is in the age group that I found was affected by the reform in the previous analysis.

²⁰ The results in this section are not sensitive to including individuals who are dependents on group Medigap policies in the sample.

²¹ I make this restriction because federal legislation introduced in 1982 required that employers offer the same health insurance packages to employed workers under and over age 65. This is not a severe restriction as most individuals over 65 are retired. The results in the NHIS are not sensitive to this restriction.

Table 5
Mean benefit coverage rates and premiums in non-group and group market

Benefit coverage	Non-group market		Group market	
	1977	1987	1977	1987
Premiums (US\$1999)	568	831	1498	3369
Hospital deductible	0.99	0.91	0.95	0.87
Physician deductible	0.85	0.39	0.91	0.72
Outpatient prescription drug	0.27	0.21	0.79	0.91
Care in skilled nursing home	0.62	0.75	0.46	0.68
Inpatient psychiatric care	0.36	0.05	0.67	0.75
Home health care	0.19	0.05	0.28	0.53
<i>N</i>	362	368	188	264

Data are from the 1977 NMCES and 1987 NMES. All means are weighted. Note that individuals with group policies in 1977 consistent of only one-third of individuals with group or non-group insurance; this low fraction stems from the fact that individuals who are dependents on a group policy are not included in the sample; there are no dependents on non-group policies.

defined as the total annual per-policy premium; for the group market, it therefore includes employer and employee contributions. The data include measures of coverage for six different non-mandated benefits. Two benefits—coverage of the hospital (Part A) and physician (Part B) deductible—cover the remaining cost-sharing provisions in Medicare beyond those included in the mandated minimum package. The other four benefits cover home health care, care in a skilled nursing home, inpatient psychiatric care and out-patient prescription drugs.

NON-GROUP is an indicator variable that is 1 if the individual has a Medigap policy through the non-group market and 0 if the individual has a Medigap policy through the group market. AFTER is an indicator variable for the year 1987. X is a matrix of covariates, similar to that used in the preceding analysis, that controls for observed compositional changes that may be related to the propensity to hold various non-mandated benefits.²² The key variable of interest—AFTER \times NON-GROUP—measures changes in benefit coverage between 1977 and 1987 among those with non-group Medigap relative to changes in benefit coverage over the same period for individuals with group Medigap.

Table 5 presents mean premiums and mean coverage rates for the six benefits in the non-group and the group market in 1977 and in 1987. Premiums rose in real terms in both markets between 1977 and 1987, reflecting in part the increasing real cost of medical care. Between 1977 and 1987, benefit coverage rates in the non-group market are decreasing for all benefits except for care in a skilled nursing home. In the group market, benefit coverage rates are decreasing for the two deductibles but increasing for the other four benefits.

Table 6 reports the difference-in-differences estimates of the change in benefit coverage in the non-group market relative to the change in benefit coverage in the group market. Columns (1) through (3) report the results without covariates, with covariates, and with

²² It consists of dummies for gender, region of the country, whether the individual lives in an SMSA, race (white or non-white), marital status, education (less than high school, high school degree, some college, college degree or higher) and self-reported health status relative to others' their age. Age is also included linearly.

Table 6
Effect of minimum standards on non-mandated benefit coverage

Benefit coverage	Without covariates (1)	With covariates (2)	With covariates and with interactions between covariates and AFTER (3)
Hospital deductible	0.0007 (0.034) [N= 1042]	0.004 (0.036) [N=940]	- 0.006 (0.039) [N= 940]
Physician deductible	- 0.269*** (0.054) [N= 1045]	- 0.237*** (0.057) [N=943]	- 0.241*** (0.061) [N= 943]
Outpatient prescription drug	- 0.177*** (0.051) [N= 1130]	- 0.198*** (0.054) [N= 1015]	- 0.186*** (0.059) [N= 1015]
Care in skilled nursing home	- 0.091 (0.061) [N= 1165]	- 0.110* (0.064) [N= 1047]	- 0.103 (0.066) [N= 1047]
Inpatient psychiatric care	- 0.389*** (0.055) [N= 1165]	- 0.389*** (0.058) [N= 1047]	- 0.359*** (0.059) [N= 1047]
Home health care	- 0.396*** (0.054) [N= 1165]	- 0.404*** (0.057) [N= 1047]	- 0.389*** (0.058) [N= 1047]

Data are from the 1977 NMCES and 1987 NMES. Table reports the estimated coefficient on AFTER \times NON-GROUP from estimation of Eq. (4) by OLS. Different rows correspond to different dependent variables. Heteroscedasticity-adjusted standard errors are in parentheses.

* Indicates significance at the 10% level.

*** Indicates significance at the 1% level.

interaction effects between all of the covariates and AFTER; the estimates are not sensitive to the specification.

The first two rows of Table 6 indicate that the minimum standards are associated with a large and statistically significant decline in coverage for the physician deductible but no change in coverage for the hospital deductible. The last four rows indicate that the minimum standards are also associated with a substantial and statistically significant decline in the coverage of outpatient prescription drug benefits, inpatient psychiatric care, and home health care. The magnitude of the estimated declines in these non-mandated benefits is quite large, ranging from 20 to 40 percentage points depending on the benefit. There is weaker evidence of a decline in skilled nursing home care relative to the control group. In results not reported here, I find no evidence of systematic differences, either substantive or statistical, in the effect of minimum standards on non-mandated benefit coverage by observable characteristics such as self-reported health status, education, race, gender or marital status.

One way to gauge the magnitude of the change in total expected insurance payments associated with the minimum standards is to estimate the effect of the minimum standards on total insurance premiums.²³ Table 7 shows the results of re-estimating Eq. (4) using the log of the premium as the dependent variable. The first three columns—showing estimates using different control variables—indicate that the minimum standards are associated with an almost 50% decline in premiums in the non-group market relative to

²³ Assuming no changes in market structure, changes in premiums reflect changes in the expected payments from the insurance policy.

Table 7
Effect of the minimum standards on log premiums

	(1)	(2)	(3)	(4)	(5)
AFTER × NON-GROUP	− 0.481*** (0.098)	− 0.468*** (0.094)	− 0.454*** (0.099)	− 0.254** (0.107)	− 0.501*** (0.151)
AFTER	0.997*** (0.085)	0.982*** (0.081)	0.032 ⁽⁺⁾ (1.58)	− 0.933 ⁽⁺⁾ (1.51)	− 0.845 ⁽⁺⁾ (1.50)
NON-GROUP	− 0.881*** (0.082)	− 0.800*** (0.081)	− 0.813 (0.086)	− 0.574*** (0.094)	− 0.580*** (0.094)
Controls for individual characteristics	NO	YES	YES	YES	YES
Interactions between individual characteristics and AFTER	NO	NO	YES	YES	YES
Controls for each benefit	NO	NO	NO	YES	YES
AFTER × NON-GROUP × BENEFITS	−	−	−	−	0.105** (0.053)
R ²	0.491	0.534	0.545	0.551	0.553
N	1165	1047	1047	937	937

Table reports the results from estimation of Eq. (4) by OLS, with the log of the premium as the dependent variable. BENEFITS is a variable that measures the number of non-mandated benefits in the policy; it ranges from 0 to 6. Heteroscedasticity-adjusted standard errors are in parentheses. Data are from the 1977 NMES and 1987 NMES.

** Indicates significance at the 5% level.

*** Indicates significance at the 1% level.

⁽⁺⁾ This coefficient reflects the coefficient for the reference category, given all of the interactions of AFTER and individual characteristics described in the text.

the group market. This suggests that the decline in expected payments from the decline in non-mandated benefits substantially outweighs the increase in expected payments from the inclusion of newly mandated benefits. When additional controls are added for whether the policy covers each of the mandated and non-mandated benefits measurable in the data, column (4) indicates that the minimum standards are associated with an estimated 25% decline in premiums. This significant decline in premiums associated with the minimum standards—even after controlling for the benefit composition of the policy—suggests that there may have been further unmeasured declines in non-mandated benefits.

A net decline in premiums associated with imposing minimum standards can be reconciled with a number of different models of the unregulated insurance market. For example, in a full-information, demand-side response to the minimum standards, if the income effect of the price increase associated with upgrading policies to comply with the minimum standard is sufficiently large, the associated decrease in demand for non-mandated benefits among those who remain in the market can reduce the total expected benefit payments in the policy, thus reducing premiums.

However, the magnitude of the declines in even *measured* mandated benefits associated with the minimum standards appears to be much too large to be explained solely by the income and substitution effects of the demand-side mechanisms in a full information model of the Medigap market; the working paper version of this paper (Finkelstein,

2002b) provides the details behind this calculation. Nor can the decline in non-mandated benefits be explained by compositional changes in the pool of the privately insured associated with the minimum. As noted above, the minimum standards appear to be associated with *larger* declines in insurance coverage among individuals with *less* coverage of non-mandated benefits. This may suggest that supply-side factors such as adverse selection are also responsible; as we shall see in Section 4, in markets with adverse selection, minimum standards can produce an unraveling of the market for comprehensive insurance coverage, and hence substantial declines in non-mandated benefits (and thus in premiums). Or it may simply reflect the limits to using data over such a long time period to obtain a precise estimate of the magnitude.

Of course, observable differences in the characteristics of individuals in the group and non-group market prior to the reform also raise concerns about the appropriateness of using changes in benefit coverage in the group market as a control for the changes in benefit coverage that would have occurred in the non-group market absent the reforms. In particular, individuals in the group market are better educated than individuals in the non-group market; only 44% of individuals with group coverage in 1977 had less than a high school education, compared to 54% of those with non-group coverage; moreover, 16% had a college education or higher, compared with only 8% of those with non-group coverage. I can—and do—control for individuals' observable characteristics (as well as changes in the relationship between the observable characteristics and benefits coverage over time) in Tables 6 and 7. However, individuals in the group and non-group market may vary in ways that I cannot observe in the data and that are related to trends in insurance coverage. A primary concern for the analysis is that increased adverse selection pressures over this period from the large increase in the mean and variance of medical expenditures might differentially affect benefit coverage in the group and non-group market. However, increases in adverse selection pressures should produce declines in benefits subject to severe adverse selection pressures, such as prescription drug coverage, which experienced an increase in coverage in the group market, and are less likely to produce declines in deductible coverage, which is where the group market experienced large declines.

Two other indirect tests lend support to the use of individuals with group coverage as a reasonable control for individuals with non-group coverage. First, in the NHIS data I cannot reject the null that the year fixed-effects are the same in the group and non-group markets in state-years prior to the introduction of the reforms. Insurance coverage rates were thus following similar trends in the group and non-group market prior to the minimum standards. This is indirectly supportive of the identifying assumption that absent the reform, benefit coverage rates among the insured would have been on similar trends in the two markets.

Second, results using an alternative control group—older individuals with non-group coverage—yield similar results (where comparable) to those using the individuals with group coverage as the controls. Sufficiently old individuals in 1987 are likely to have purchased their non-group policy prior to the enactment of the minimum standards, and could therefore continue to renew these policies without being subject to the minimum standards. Moreover, they could change any benefit that was attached to the policy as a “rider benefit” without becoming subject to the minimum standards regulation. Conversations with several people familiar with the market in the late 1970s and early 1980s indicate

that coverage for the hospital or physician deductibles were commonly sold as riders, whereas riders for other benefits were rare. Therefore, I can only use changes in benefit coverage between 1977 and 1987 for old individuals in the non-group market as a control for confounding supply or demand changes in hospital or physician deductible coverage. The results (not shown) indicate an effect of the minimum standards on deductible coverage for young individuals with non-group coverage relative to older individuals with non-group coverage that is qualitatively similar to that found in Table 6 when individuals with group coverage are used as the control group. Specifically, I find no evidence of a decline in coverage of the hospital deductible in the treatment group relative to older individuals with non-group coverage, but a large (and statistically significant) decline in coverage of the physician deductible among the treatment group relative to this control group.

3.6. Implications for risk exposure

The empirical results point to substantial declines in insurance coverage—on two margins—associated with the minimum standards. Yet compliance with the minimum standards themselves provides, on average, substantial additional insurance coverage. It is therefore a priori unclear whether on net the minimum standards increased or decreased exposure to risk.

To quantify the change in risk exposure associated with the direct and indirect effects of the minimum standards, I simulate the risk distribution under alternative insurance arrangements. The estimates are based on the sample of 989 Medicare recipients in the 1977 NMCES who are not on Medicaid and who have private, non-group insurance.²⁴ The NMCES provides individual-level data on health expenditures and sources of payment for several different health expenditure categories. The simulations are done by adjusting the portion of particular expenses paid out-of-pocket and those paid by private insurance to reflect the change in insurance coverage. All of these calculations assume that total medical expenditures are unaffected by the change in insurance status.²⁵

I estimate that losing the pre-reform coverage is associated with a 60% increase in average out of pocket expenditures, from US\$545 to US\$866. For individuals who remain in the non-group market, upgrading the pre-reform plans as necessary to comply with the minimum standards is associated with a 22% decrease in average out of pocket expenditures, to US\$426. Given the estimate of a 25% decline in non-group coverage associated with the minimum standards, this suggests that, on net, the minimum standards were associated with at most only a US\$8.25 (less than 2%) decrease in out of pocket expenditures. This is an upper bound estimate of the decrease in out of pocket expenditures associated with the minimum standards since it ignores any declines in non-mandated coverage associated with the reform. The evidence in Table 7 of a net

²⁴ None of these people has a hospital stay beyond 150 days. So that the welfare benefit from the mandated coverage for such stays is not undervalued, I adjust the risk distribution in my sample to take account of the fact that data from a 20% sample of Medicare beneficiaries in 1984 indicates that 0.1% of the elderly have hospital stays in excess of 150 days.

²⁵ Moral hazard is unlikely to have as much effect on private insurance expenditures in the Medigap market compared to other insurance markets since most of the moral hazard costs of Medigap are born by the public Medicare program rather than by private insurers (Ettner, 1997).

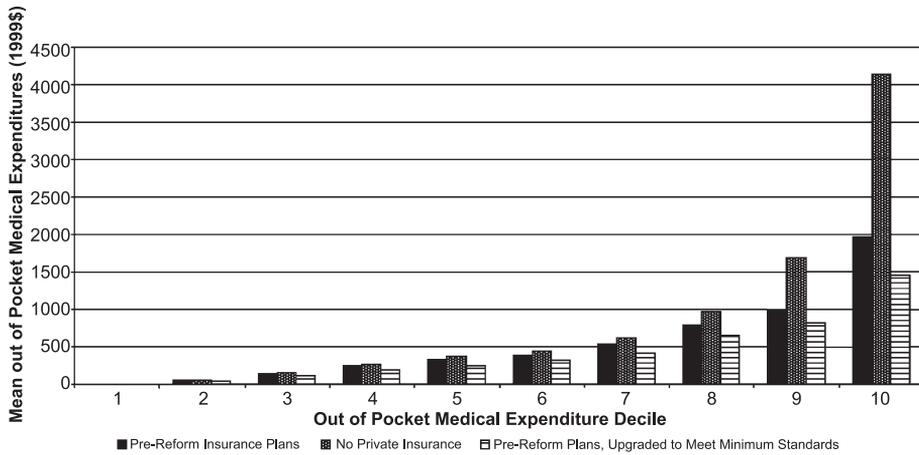


Fig. 2. Distribution of out of pocket medical expenditures under different insurance arrangements.

decline in premiums associated with the minimum standards suggests that in fact, expected benefit payments declined (and hence expected out of pocket expenditures rose) for those who remained in the market as well as for those who dropped out.

There also appears to have been a substantial increase in the right-tail of the distribution of out of pocket medical expenditures associated with the reform. Fig. 2 shows the distribution of out-of-pocket medical expenditures under different insurance arrangements. The solid black bars show this distribution for those with non-group private health insurance coverage prior to the reforms. A comparison of the solid black bars with the adjacent speckled bars shows the increased risk of out-of-pocket medical expenditures associated with losing pre-reform coverage. In particular, the distribution of out-of-pocket expenditure becomes substantially more right skewed.

The bars with horizontal lines indicate the medical expenditure risk distribution when pre-reform plans are upgraded as necessary to comply with the minimum standards; compared to the distribution under the pre-reform plans (solid black bars), out-of-pocket expenditures in the upgraded plans are lower at every expenditure decile. This comparison provides an upper bound on the increase in insurance associated with the minimum standards for those who maintained coverage since it ignores decreases in non-mandated benefits associated with the minimum standards. The estimated declines in non-mandated benefits and premiums suggest that the increase in insurance coverage for those who maintained coverage was substantially less than that indicated in Fig. 2, and probably negative.

4. The impact of minimum standards in insurance markets with adverse selection

The results thus far suggest that the reduced form impact of the minimum standards was to produce declines in insurance coverage. As discussed in Section 2, a variety of mechanisms could have produced this result. The evidence presented in Section 3 is not sufficient to distinguish among them. In this section, therefore, I develop additional

predictions of the effect of minimum standards in a model with adverse selection, and examine whether the evidence is consistent with these predictions. I also briefly consider the empirical evidence for other possible explanations.

4.1. Model and predictions

To generate testable predictions of the effect of minimum standards in insurance markets with adverse selection, I adopt the standard framework in which insurance markets are perfectly competitive and individuals differ only in their (privately known) probability of an accident. I use the Wilson (1977) “foresight” equilibrium, which is defined as follows:²⁶

Definition. A Wilson equilibrium is a set of policies such that when consumers choose contracts to maximize expected utility, each policy earns non-negative profits individually and there is no other set of policies outside of the equilibrium set which, if offered, would earn positive profits in the aggregate and non-negative profits individually, *after the unprofitable policies in the original set have been withdrawn.*

The italicized portion represents the refinement of the Rothschild and Stiglitz (1976) equilibrium definition; the refinement guarantees existence and allows for the possibility of a pooling equilibrium.

Fig. 3 illustrates the effects of imposing a minimum standard in a Wilson (1977) separating equilibrium. The vertical and horizontal axes indicate, respectively, income in states with and without an accident. The point E represents the individual’s endowment with no insurance. The 45° line represents points of full insurance. Movements to the northeast indicate increasing utility. The line HE (LE) represents the set of policies that earn zero expected profits when high (low) risk individuals buy them.

In a separating equilibrium, high risk individuals purchase policy α_H and get full insurance at their actuarially fair price; low risk individuals purchase policy α_L , which is the maximum amount of insurance they can purchase at their actuarially fair price while maintaining incentive compatibility for the high risk type. As drawn, the equilibrium is separating rather than pooling because low risk individuals prefer their allocation α_L to their most-preferred outcome on the market odds line EF, which is given by γ . I consider the impact of imposing minimum standards when the initial equilibrium is a separating equilibrium. This follows the standard practice in the cross-sectional literature (see e.g. Chiappori, 2000) and is consistent with the existing empirical evidence in health insurance in general (see e.g. Cutler and Zeckhauser (2000) for a review) and in the Medigap market in particular (Ettner, 1997).²⁷

²⁶ These effects also obtain with the Grossman (1979) equilibrium (Neudeck and Podczeck, 1996) but not with the Miyazaki (1977) equilibrium (Encinosa, forthcoming). I do not use the Rothschild and Stiglitz (1976) equilibrium concept because of the possibility that a minimum standard can produce non-existence of the equilibrium.

²⁷ Complete separation is not needed for the theoretical predictions. It is possible that, in a model with more risk types, there may be some pooling and some separation. All that is needed for the theoretical predictions is that there is some separation of risk types.

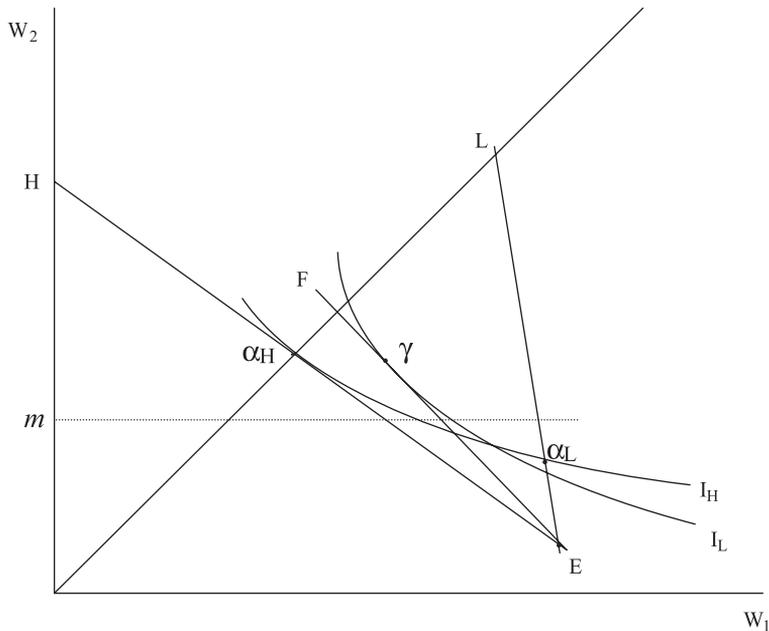


Fig. 3. Minimum standards in the Wilson (1977) model.

The minimum standards require that all individuals who purchase insurance must purchase at least the minimum amount m , which exceeds the incentive compatible amount of insurance low risk types receive at α_L .²⁸ Therefore, if the low risk type chooses to remain in the market, he must choose between purchasing either the minimum insurance amount m on the high risk indifference curve through α_H or his most preferred outcome on the market odds line, which is given by γ . For sufficiently large minimum standards, low risk individuals prefer the latter and the result is a pooling equilibrium with both types buying policy γ .²⁹ There is no profitable deviation from γ , which remains profitable after the unprofitable contracts are withdrawn. By the single crossing property, there are policies above EF and below EL which, if offered in addition to γ , would attract low risk types and not high risk types and thus earn positive profits. However, once this is offered, policy γ —which now attracts only the high risk types—becomes unprofitable and would be withdrawn; high risk types would then purchase the remaining policy, making it unprofitable. Thus, sufficiently high minimum standards can result in the destruction of a separating equilibrium and a

²⁸ The case where the minimum standards require less insurance than that provided by the least-comprehensive policy purchased in equilibrium is uninteresting and, based on the evidence in Section 2, empirically not relevant.

²⁹ As discussed in Section 2, the minimum standards in the Medigap market required a substantial increase in insurance coverage. It is therefore reasonable to expect that the low risk type might prefer γ , thus producing a collapse to a pooling equilibrium. Whether in fact they do is an empirical question that I examine below.

resulting pooling equilibrium in which the market for very comprehensive policies has been destroyed.³⁰

This model suggests several testable empirical predictions. I derive four testable empirical predictions for the case that seems empirically relevant based on the nature of the minimum standards. Specifically, the minimum standards are sufficiently large that the low risk type chooses to pool with the high risk type but are sufficiently small that there remains a substantial component of non-mandated insurance coverage.

Since these predictions are based on a model of unobserved heterogeneity in risk type, it is worth noting at the outset that individuals may also differ in other unobserved ways, such as their amount of risk aversion or their price elasticity of demand for health insurance. The finding in Section 3 of differential responses by race may be an indication of such heterogeneity in preferences. However, heterogeneity in preferences alone is insufficient to explain the empirical results thus far. For we would expect that those with low tastes for insurance should be the ones to drop out rather than upgrade their plans to comply with the minimum standards. Such individuals presumably were buying less of the non-mandated coverage prior to the reform. The results by race were consistent with this: we found minimum standards were associated with larger declines in insurance coverage among non-whites, who tended to have substantially less coverage of non-mandated benefits. Thus heterogeneity in tastes alone should produce increases rather than decreases in the non-mandated benefit coverage among those who remain in the market. This is not to say that heterogeneity in tastes is not present in the market but rather that, in trying to understand the large declines in insurance coverage on the extensive and intensive margins, we must look to other explanations.

We now turn to the predictions of the asymmetric information model.

4.1.1. Prediction #1: increase in plan concentration

The collapse from a separating to a pooling equilibrium entails a change from an equilibrium in which multiple policies are purchased to an equilibrium in which a single policy is purchased. A less knife-edge version of this prediction—once, for example, we allow for consumer heterogeneity in risk aversion—is that the minimum standards should produce an increase in the market concentration of plan types, where different plan types are defined by which non-mandated benefits they cover.

4.1.2. Prediction #2: increase in relative price of more comprehensive plans

The collapse from a separating to a pooling equilibrium entails a complete destruction of the market for comprehensive, full-insurance plans. We can relax this knife-edge prediction by assuming that there are more risk types and that there is not complete separation of risk types by plan. The model then predicts that, in response to the minimum standards, the lowest risk individuals covered by each plan type will move from more comprehensive to less comprehensive plans. Cutler and Zeckhauser (2000) discuss the implications of such a change for the relative pricing of health insurance contracts; they

³⁰ Indeed, if the minimum required insurance exceeds the amount γ that low risk types wish to buy at the market odds price, the result is a pooling equilibrium at the minimum requirement and a complete destruction of the market for any more comprehensive coverage.

note that since the distribution of medical spending is substantially right-skewed, such a change in the distribution of people across plans should produce an increase in premiums on more comprehensive plans relative to those on less comprehensive plans.

4.1.3. *Prediction #3: unraveling of the high-end market*

The complete destruction of the market for comprehensive full-insurance plans associated with moving from a separating to a pooling equilibrium suggests, in practice, that we should observe a substantial decline in coverage by high-end products. In other words, the model predicts a substantial decline in coverage for non-mandated benefits.

4.1.4. *Prediction #4: differential declines in non-mandated benefits*

As discussed, Medigap insurance provides coverage against a variety of different (although related) risks, such as visits to the doctor, stays in the hospital, and prescription drug expenditures. The model predicts a substantial decline in non-mandated benefits only if they cover a risk that meets two criteria. First, the non-mandated benefit must cover a risk for which, prior to the minimum standards, the low risk types were constrained from having full insurance coverage. Second, the minimum standards must require an increase in the amount of insurance coverage for this risk. These two conditions are necessary if the minimum standards are to violate the incentive compatibility constraint.

Before discussing the evidence for each of these predictions, it is worth noting one additional set of predictions that the available data do not permit testing. The model makes starkly different predictions for the effect of minimum standards for individuals with different private information about their risk type. It is individuals with private information that they are high risk who experience declines in non-mandated benefits, since these are the individuals who had comprehensive insurance coverage. And it is only individuals with private information that they are low risk who may drop out of the market altogether in response to the minimum standards.³¹ To test this prediction would require being able to distinguish in the data between individuals who have private information that they are high risk and those who have private information that they are low risk with respect to the non-mandated benefits. For example, individuals on long-term drug therapies would know that they are likely to be high users of the prescription drug benefits and therefore high risk. Unfortunately, the health information in the data does not permit construction of such precise measures. I examined whether declines in insurance coverage differed by self-reported health status, and found no evidence of differential effects; however, self reported health status is likely to be too broad and vague a measure of health to serve as a good proxy for private information regarding the risk of high expenditures on the non-mandated benefits.

³¹ High risk individuals are made better off by the minimum standards—since by revealed preference they prefer the pooling policy to the full-insurance policy at the high-risk actuarially fair price which they could otherwise continue to purchase; there is therefore no reason for them to drop out of the market. However, low risk individuals are made worse off by the minimum standards since, by definition, they prefer the original separating equilibrium to any outcome on the pooling line.

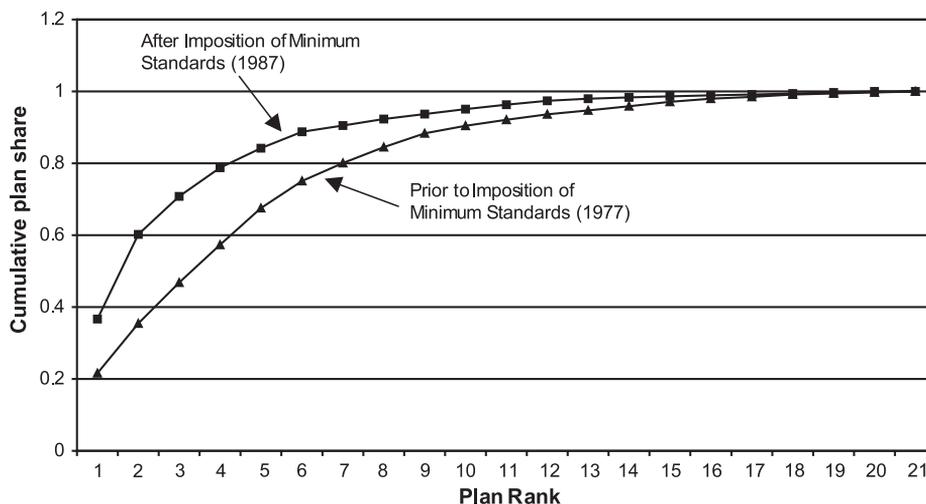


Fig. 4. Market share of non-group plans.

4.2. Evidence

4.2.1. Prediction #1: increase in plan concentration

The stylized prediction of the [Wilson \(1977\)](#) model that the minimum standards can produce a collapse from a separating to a pooling equilibrium suggests that we should detect a decrease in the amount of dispersion in plan types associated with the introduction of the minimum standards. The empirical evidence from the 1977 NMCES and the 1987 NMES supports this prediction. Obviously, the entire policy space, and hence policy dispersion, will shrink mechanically when minimum standards are imposed. However, there is no mechanical reason for any change in the dispersion of non-mandated benefits included in different plans. I therefore define a plan based on which of the *non-mandated* benefits measurable in the data are covered. This produces about 20 different plans purchased in a given year and market.

The data indicate that, between 1977 and 1987, the Herfindahl measure of plan concentration almost doubled in the non-group market (from 0.11 to 0.21) while remaining constant in the group market (at 0.12).³² [Fig. 4](#) shows plan market share by plan rank (from highest to lowest market share) in the non-group market prior to the introduction of the minimum standards (1977), and after their introduction (1987). The empirical cumulative distribution function of plan shares in the non-group market in 1987 lies everywhere above the 1977 empirical cumulative distribution function; there is no such clear ranking of the two periods in the group market (not shown). Using [McFadden's \(1989\)](#) test for first order stochastic dominance, I am unable to reject the null hypothesis

³² An increase in plan concentration does not necessarily indicate an increase in insurer market concentration. Insurers tend to sell multiple plans and therefore the increased prevalence of some plans does not necessarily favor certain firms.

that the 1977 distribution of plan shares in the non-group market first order stochastic dominates the 1987 distribution in the non-group market. I can reject this null in the group market, however, at the 10% level.

This is fairly compelling evidence in favor of the adverse selection model. For the prediction of the adverse selection model of a decrease in plan dispersion associated with the minimum standards is not one that emerges naturally from models based on other explanations, such as a full-information demand-side response to the minimum standards, consumer misinformation, or changes in costs and markups associated with the minimum standards.

4.2.2. Prediction #2: increase in the relative price of more comprehensive plans

To test the prediction of the model that premiums should rise on more comprehensive policies relative to less comprehensive policies, I re-estimate the impact of the minimum standards on log premiums (i.e. Eq. (4)) with the addition of an interaction term between the variable reflecting the effect of the minimum standards ($AFTER \times NON-GROUP$) and a variable measuring the number of non-mandated benefits in the policy ($BENEFITS$). $BENEFITS$ ranges from 0 to 6 and averages 3.4; it proxies for the comprehensiveness of the plan. The regression also includes indicator variables for whether each measurable mandated and non-mandated benefit is covered by the policy. The final column of Table 7 shows the results. As predicted, the interaction term in column (4) is positive and significant, indicating that the minimum standards are associated with larger premium rises (or, more accurately, smaller premium decreases) on more comprehensive plans relative to less comprehensive plans in the non-group market relative to the group market.

This is also fairly compelling evidence in favor of the adverse selection model. Again, while it may be possible to construct an explanation for this finding using one of the other three explanations under consideration, the prediction of a rise in the relative price of more comprehensive plans does not emerge naturally from any of these other models.

4.2.3. Prediction #3: unraveling of the high end market

The suggestive evidence in Section 3.5 of substantial declines in non-mandated benefits among those who remain in the regulated market is consistent with their being unraveling of the high-end coverage market. Indeed, as discussed above, the magnitude of the declines in non-mandated benefits is too large to be consistent with a full-information demand-side explanation. It could, however, be explained by the substantial unraveling that can be produced in the adverse selection model. Substantial unraveling of the market for comprehensive coverage is also consistent with the finding that, on net, the minimum standards are associated with a *decrease* in per-policy premiums. Of course, as noted, the empirical framework makes it difficult to estimate the magnitude of the declines in non-mandated benefits precisely. Moreover, other factors such as consumer misinformation or increases in supply-side costs or markups could also generate larger declines in non-mandated benefits than what can be explained by a full-information, demand-side response. The evidence of unraveling is therefore only weak evidence in favor of the adverse selection model.

4.2.4. Prediction #4: differential declines in non-mandated benefits

The empirical setting offers a relatively weak test of this prediction. Specifically, consider the market for insurance against doctor visits and for insurance against the first 150 days in the hospital separately. Medicare has a separate deductible and co-payment for each of these risks. The minimum standards mandated that everyone be covered for the co-payments associated with doctor visits and with hospital stays, but not the deductibles. As discussed in Section 2, the requirement for coverage of the co-payments for doctor visits was the more binding requirement (about half of individuals with non-group Medigap had coverage of the doctor co-pay prior to the reform compared to 70% to 87% coverage of the hospital co-pay for days 61 through 150). Almost everyone (98%) had coverage for the (non-mandated) hospital deductible, and fewer people (85%) had coverage for the (non-mandated) physician deductible. The higher coverage rates for the hospital stay risk than for the physician visit risk is consistent with an equilibrium in which restrictions on coverage for physician visits serve as a way to screen individuals according to their risk type, but coverage for the first 150 days of hospital stays is not used as a screen. In such a setting, the imposition of the minimum standards would cause the market for comprehensive coverage for physician visits (i.e. coverage for the physician deductible) to unravel. It would not, however, produce unraveling in the market for comprehensive coverage for the first 150 days of hospital stays (i.e. coverage for the hospital deductible) since the minimum standards do not interfere with screening on this risk, since screening was not being done.

This provides an explanation consistent with the finding in Section 3.5 that the minimum standards were associated with declines in the (non-mandated) physician deductible but not in the (non-mandated) hospital deductible. However, this is a fairly weak test of the model, for it is unclear, ex-ante, whether the 70% to 87% coverage for the hospital co-payment is sufficiently large to indicate that there is no screening on this risk dimension. Ex post, however, the results are consistent with their being no screening on this risk dimension.

4.3. Implications and alternative explanations

The above results are broadly consistent with the theoretical predictions of how minimum standards are likely to alter the equilibrium of a market with adverse selection. This suggests that adverse selection is present in the Medigap market. It is thus complementary to [Ettner \(1997\)](#) who finds evidence of adverse selection in the Medigap market using the traditional cross-sectional empirical test of whether high-risk individuals purchase more insurance. One limitation to this cross-sectional approach, and a potential advantage of testing comparative static predictions instead, is that it is notoriously difficult to distinguish adverse selection and moral hazard in the cross-section (see e.g. [Chiappori, 2000](#)).

In addition, the match between the model's predictions and the empirical evidence suggests that the model may aid in our understanding of the large declines in insurance coverage on both the extensive and intensive margins associated with the imposition of the minimum standards. For the unraveling mechanism associated with the change from a separating to a pooling equilibrium can produce larger declines in insurance coverage on

both the extensive and intensive margins than what a full-information demand side response based on income and substitution effects would predict.

It is important to emphasize, however, that evidence in favor of this model does not rule out a role for alternative explanations in contributing to the observed effects of the minimum standards on insurance coverage. As discussed in Section 2, alternative explanations or additional contributing factors include a full-information demand-side response, the role of consumer misinformation, and supply-side increases in costs or markups associated with the minimum standards. However, none of these models generate the predictions associated with moving from a separating to a pooling equilibrium, such as the increase in the relative price of more comprehensive plans or the decrease in plan dispersion. It therefore seems likely that adverse selection contributed to the declines in insurance coverage associated with the minimum standards; it may not, however, have been the only factor.

The available evidence does not rule out a role for demand-side price and income effects. And it is not possible to rule out a role for consumer misinformation as well, as it is difficult to generate precise, testable predictions for how consumer misinformation would affect the impact of minimum standards. If we believe that less educated individuals are more likely to be misinformed, the lack of differential declines in insurance coverage among the less educated might be viewed as unsupportive of a consumer misinformation model.

However, the empirical evidence does not appear supportive of minimum standards producing an increase in costs or markups. As discussed in Section 3, the lack of an effect of the regulations on existing policyholders—who are not directly subject to the regulations but should be affected by any changes in costs or markups—is not consistent with the minimum standards increasing costs or markups. In addition, a comparison of loads on insurance policies (defined as the excess of average premiums over average claims, as a percentage of average claims) before and after the introduction of the minimum standards indicate that the load on non-group policies fell slightly between 1977 and 1987, from 60% to 53%, while rising slightly in the group market, from 42% to 47%. The decline in the load in the non-group market, both in absolute terms and relative to the group market, is not consistent with increased industry concentration or costs associated with the minimum standards.

5. Conclusion

This paper has examined the consequences of imposing large, binding minimum standards on a voluntary private health insurance market. Despite the widespread application of minimum standards in insurance markets, their theoretical effects on insurance coverage are ambiguous, and little is known empirically of their consequences. I find that in practice, minimum standards appear to exacerbate rather than ameliorate the problem of insufficient insurance coverage that they are designed to address.

The empirical evidence indicates that the minimum standards are associated with a substantial decline in insurance coverage. The central estimate suggests a 25% long-run decline in insurance coverage in the regulated market associated with imposing

minimum standards; these declines are particularly pronounced among non-whites. There is no evidence of substitution from the regulated market to alternative sources of insurance. Additional evidence suggests that the minimum standards may have also been associated with reduced coverage for many of the non-mandated benefits among those who retain insurance. Although these decreases in insurance coverage are somewhat offset by the requirement of the minimum standards that anyone in the regulated market must have coverage for the mandated benefits, I estimate, that the minimum standards were, on net, associated with an increase in risk exposure.

The empirical evidence is broadly consistent with several theoretical predictions for the comparative static effects of imposing minimum standards in an insurance market with adverse selection. This suggests that adverse selection is present in this market, providing a complement to traditional cross-sectional tests for adverse selection. The evidence also suggests that adverse selection may help explain the observed impact of the minimum standards. This is particularly intriguing since it suggests that the presence of adverse selection in this insurance market—which might in principle provide an economic rationale for government intervention in the form of minimum standards—in practice contributed to the declines in insurance coverage associated with the minimum standards.

This highlights the importance—when considering alternative policies—of thinking about how the impact of government intervention on the private market may be affected by the nature of any private market failures. For example, a natural alternative to minimum standards in the voluntary Medigap market is for the government to extend the mandatory coverage requirements in the Medicare program. The results in this paper suggest that in evaluating the merits of mandatory coverage, it is important to consider how the level of coverage provided by the public program may affect the adverse selection equilibrium in the private market for supplementary coverage. I regard this as a fruitful direction for further work.

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Appendix A. Gaps in Medicare (1977–1987)

Bolded benefit gaps are those that the minimum standards required non-group policies to provide.

I. Cost Sharing Provisions in Medicare

A. Part A (Hospital)

1. Annual Deductible. (US\$341 in 1977; US\$764 in 1987)

2. **Copayment for hospital days 61–90 (US\$85 per day in 1977; US\$191 per day in 1987)**
 3. **Copayment for lifetime reserve hospital days 91–150 (US\$170 per day in 1977; US\$382 per day in 1987)**³³
 4. **Annual Deductible for first three pints of blood used in the hospital**
- B. Part B (Physician)
1. Annual Deductible (US\$165 in 1977; US\$110 in 1987)
 2. **20% Copay for approved physician charges**³⁴
 3. **Annual Deductible for first three pints of blood used**
- II. Services Covered Only Partially/With Restrictions By Medicare
1. Care in a Skilled Nursing Facility
 2. Home Health Care Visits
 3. Inpatient psychiatric care
- III. Services Not Covered By Medicare
1. Outpatient prescription drugs
 2. Dental care
 3. Vision Care
 4. Hearing Care
 5. Preventive care: routine physical examinations, diagnostic tests and some immunizations
 6. Care in custodial (not skilled) nursing homes
 7. **Hospital stays beyond the lifetime reserve of 150 days**³⁵
 8. Physician charges above the “reasonable” rate reimbursed by Medicare Part B³⁶

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³³ Beyond 90 days in the hospital, Medicare Part A provides a “lifetime reserve” of an additional 60 days that will be covered (with copayments) only once in a person’s lifetime.

³⁴ The regulation requires that the Medigap policy cover the 20% Part B copay for approved physician charges, subject to a maximum deductible of US\$200 and a maximum benefit of no less than US\$5000 (in nominal dollars).

³⁵ The regulation requires that the Medigap policy pay 90% of coverage of stays above the lifetime reserve maximum for a lifetime maximum of 365 additional days.

³⁶ The “reasonable charge” is defined as the lowest of the doctor’s charge, the customary charge, or the prevailing charge in the area.

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