The Effects of Rate Regulation in the Market for Medicare Supplemental Insurance

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I. Introduction

In most health insurance markets, regulations prevent insurers from using easily observable information about potential enrollees when setting premiums. During the 1990s, many states regulated the individual and small group insurance markets, preventing private insurers from using information about individual health when setting premiums for coverage. In the employer-sponsored market, the source of coverage for the vast majority of the under 65 population, the out-of-pocket contributions set by employers are not allowed to vary by individual health. Similar restrictions apply to publicly funded sources of coverage which are delivered by private insurers including Medicare Part C (a private alternative for traditional Medicare coverage) and Medicare Part D (the prescription drug benefit which is also administered by competing private insurers). These types of rating restrictions will also apply to coverage sold in the health insurance exchanged created by the Patient Protection and Affordable Care Act.

While the purpose of rating restrictions often is nominally "to increase pooling in health insurance markets", economic theory predicts otherwise. The existence of asymmetric information between insurers and consumers creates inefficiency in insurance markets (Rosthchild and Stiglitz, 1976). Rating restrictions, by preventing insurers from using information about individual risk in setting premiums which individuals use when purchasing coverage, effectively create a situation of asymmetric information. Thus, while the purpose of these regulations is to make coverage more affordable for high risks, they may have serious consequences for efficiency.

In this paper, we examine rate restrictions for private insurance supplementing publicly funded Medicare coverage. Although the Medicare program provides universal coverage for adults age 65 and over and also covers certain disabled Americans, the coverage is incomplete. Due to cost sharing and the absence of coverage for some services, Medicare covers approximately half of total health expenditures for covered beneficiaries. As a result, most beneficiaries obtain supplemental insurance through a variety of publicly and privately financed sources. The impact of supplemental coverage on efficiency in health care delivery, however. is controversial. While supplemental coverage provides beneficiaries with greater financial protection, it also counteracts the effectiveness of cost sharing as a mechanism for cost control in the Medicare program. And, although the magnitudes of the estimates vary, research indicates that the Medicare program bears a significant portion of the increased cost of additional utilization created by supplemental coverage (Atherly 2001).

Beginning in the early 1990s and extending through the 2000s, a number of states passed legislation restricting insurance rating practices in the already highly regulated private market for insurance supplementing Medicare coverage, which is often referred to as Medigap insurance. Many of these regulations were targeted at coverage for disabled beneficiaries. Medicare coverage has significant shortcomings for this population (Cubanski and Neuman 2010). While the disabled are more likely to have Medicaid to supplement their Medicare coverage (42% of the non-elderly disabled population have Medicaid compared with 11% of the elderly), they are less likely to have other forms of supplemental coverage. As a result, 23% of the disabled have no supplemental coverage compared to 12% of the elderly. The disabled were three times more likely than the elderly to indicate they had a problem paying health care costs and that they had spent less on basic needs to pay for health care in the past 12 months.

The laws we study were intended to address these issues by making coverage more affordable for disabled beneficiaries.

II. Background

In 2012, the Medicare program covered 41.9 million people age 65 or older and 8.8 million younger adults with permanent disabilities (CMS 2012). While Medicare is generally recognized as the primary source of health insurance for people 65 and over in the U.S., its role in providing coverage for disabled Americans is less well known. The program was established in 1965 to cover people 65 and over and then expanded in 1972 to nonelderly adults with permanent disabilities who have received social security disability insurance (SSDI) for at least 24 months and to individuals with end-stage renal disease (ESRD). In 2001, Medicare began covering people with amyotrophic lateral sclerosis (Lou Gehrig's Disease).

Medicare coverage, however, has important gaps.[1] High cost sharing or incomplete coverage for some services and a lack of coverage for others, most notably prescription drugs prior to the implementation of the Part D drug benefit in 2006, expose beneficiaries to significant financial risk. In 2006, Medicare covered 55% of beneficiaries' total health care spending.

The vast majority of beneficiaries obtain supplemental coverage from a variety of publicly and privately financed sources (KFF 2009). State Medicaid programs provide publicly-financed supplemental coverage

[1] Medicare is technically two separate programs with Parts A and B providing coverage primarily for in-patient and out-patient services, respectively. Despite a small premium for Part B, the vast majority of beneficiaries enroll in both parts.

for many low-income and disabled beneficiaries (15%), and employers provide supplemental health insurance as a retirement benefit for many retirees (33%). Those not covered by these programs rely on highly regulated, private insurance markets to obtain supplemental coverage. Medicare Part C (MA) is a voluntary, private replacement for the combination of traditional Medicare coverage and supplemental insurance, while "Medigap" coverage is a private policy that supplements Medicare. In 2008, 17% of Medicare beneficiaries had Medigap and 24% were enrolled in a private Medicare Advantage plan. In 2008, 10% of beneficiaries had no supplemental coverage.

II.A. Regulation of Insurance Supplementing Medicare

The market for private insurance supplementing the publicly funded Medicare benefit quickly emerged after the introduction of Medicare in 1965 (Cafferata 1985). In response to evidence of marketing abuses on the part of some insurers and concerns over the ability of older adults to make effective choices in this context, some states began introducing minimum standards for non-group Medigap policies in the 1970s. In 1978, the National Association of Insurance Commissioners (NAIC) issued a set of model regulations for this type of legislation, and, in 1980, Congress amended the Social Security Act to establish a system of voluntary certification of Medicare supplemental policies intended to promote such regulations (McCall, Rice et al 1986). The "Baucus Amendments" set minimum benefit levels and minimum loss ratios and created disclosure requirements for Medigap products. In states with policies at least as stringent as the federal standards, policies regulated by the state were deemed to meet the federal requirements. In states without such policies, the statute established a voluntary certification program under which insurance companies were allowed to market policies as Medigap insurance if their policies met the federal standards. By 1986, only 4 states did not have regulation as stringent as the federal standard (GAO 1996).

The Omnibus Reconciliation Act of 1990 (OBRA-1990), amending Section 1882 of the Social Security Act, more aggressively shifted the responsibility for regulation of the Medigap market from the state to the federal level and made requirements mandatory rather than voluntary (Fox, Rice et al. 1995). The Act mandated standardized benefits by restricting the sale of insurance supplementing Medicare to a set of 10 predefined plans, identified as plans A-J (McCormack, Fox et al. 1996). The legislation also created a 6-month open enrollment period for 65 year olds newly entering the program, requiring guaranteed issue and prohibiting the use of health information in rate setting during this period. The open enrollment period at age 65 also applied to disabled beneficiaries who enrolled in Medicare prior to age 65 when they turned 65. The Act explicitly prevented insurers from cancelling or not renewing policies

solely on the grounds of the health status of the individual or for any reason other than non-payment or misrepresentation (guaranteed renewability) and allowed beneficiaries to suspend a Medigap policy for up to 24 months upon receipt of Medicaid coverage. The OBRA-90 regulations applied to policies issued after November 5, 1991.

After the implementation of OBRA of 1990 in 1992, a number of states passed more legislation containing more stringent regulation of insurer rating practices (Bundorf and Simon 2006). While the specific features of the laws vary across states, they can be characterized based on two types of provisions: 1) guaranteed issue and open enrollment requirements and 2) rating restrictions. Table 1 summarizes these provisions and identifies the states adopting each type of provision.

Some states expanded the federal open enrollment and guaranteed issue provisions. The open enrollment period established by OBRA-1990 applies only to the aged, and many states established an open enrollment period during which insurers were required to issue a policy (guaranteed issue) for the disabled. Most states establishing open enrollment periods for the disabled restricted open enrollment and guaranteed issue to the 6-month period after initial eligibility for Medicare. Others, in contrast, expanded open enrollment periods beyond the time of initial eligibility to either annual or continuous open enrollment either for the disabled only, for the aged only, or for both types of beneficiaries.

States also adopted regulations restricting the extent to which insurers could vary premiums based on individual characteristics. In some states, these restrictions applied only the aged beneficiaries. Two states banned rating based on gender outside of open enrollment and 4 other states required community rating among the aged, essentially extending community rating beyond the initial open enrollment period for aged beneficaries. Four states banned the use of the "age-attained" method of pricing in which the premium for a policy increases predictably with age.

Many states adopted regulations restricting premium variation for policies covering disabled beneficiaries. The states which established open enrollment periods for the disabled also placed restrictions on the rates insurers could charge for coverage during the open enrollment period. Some required community rating among the disabled; insurers could not differentiate among the disabled in pricing but the rates for the disabled could deviate from those of the aged. Other states also required community rating among the disabled and pegged the rate insurers could charge the disabled to those of aged beneficiaries. While the aged rate to which premiums for the disabled were pegged varied across states, these laws generally require that the community rate for the disabled be no greater than

that for a particular group of aged beneficiaries. Finally, a group of states required community rating across both aged and disabled beneficiaries.

II.B. The Medicare Advantage Program

For beneficiaries who are not eligible for coverage through an employer or state Medicaid program, the alternative to Medigap insurance is a Medicare managed care plan or "MA". The Medicare Advantage program, formally Medicare Part C, was established by the Tax Equity and Fiscal Responsibility Act of 1982. The Act authorized Medicare to contract with private plans to provide Medicare covered services for Medicare beneficiaries, and allowed Medicare enrollees to replace traditional Medicare with coverage from a qualified private plan. Participating plans sign an annual contract with the Centers for Medicaid and Medicare Services (CMS) agreeing to provide benefits to beneficiaries and receive a capitated payment from CMS for each beneficiary who enrolls. Historically, CMS linked plan payments to the level of Medicare spending among FFS enrollees in a geographic area. Payments were set at 95% of the adjusted average per capita cost (AAPCC) in the county, with adjustments for each enrollee made based on age, sex, Medicaid enrollment, institutional residence, employment status, and eligibility based on disability (Pope, Kautter et al. 2004). Plans must provide a minimum level of benefits equivalent to that of Medicare, may, and often do, provide additional benefits, such as lower cost-sharing or additional covered services, and may charge beneficiaries a premium for enrolling, although the premium must be community-rated within a given service area.

The Balanced Budget Act of 1997 made a variety of changes to the program, including allowing types of plans other than HMOs to participate, changing the plan payment formula to encourage plans to enter in historically low payment geographic areas, and requiring CMS to improve its risk adjustment methods (McGuire, Newhouse et al. 2011). The Act also extended the federally established open enrollment period to beneficiaries involuntarily disenrolling from MA plans under certain conditions such as the withdrawl of a plan from the market.

Table 2 presents trend in sources of supplemental coverage for Medicare beneficiaries.

III. Rate Regulation in Insurance Markets: Theory and Evidence

Insurers selling coverage in competitive markets will charge premiums reflecting observable information about the enrollee's likely utilization of care, resulting for relatively high premiums for high risks and

lower premiums for low risks. Laws limiting the extent to which insurers may vary premiums with individual health status are intended to lower premiums for high risks by raising premiums for high risks.

The degree to rate regulation generates inefficiency depends on the price responsiveness of consumers purchasing coverage. If consumers are not price responsive, coverage will be unchanged relative to a competitive market and there will be little inefficiency associated with the transfer policy. The policy will generate a transfer from more to less health enrollees.

If consumers are price responsive, in contrast, rate regulation can lead to inefficiency. Low risks will purchase less coverage or go without insurance and high risks will purchase more coverage than is optimal. The implications for the existence and form of equilibria depend largely on the degree of price responsiveness of different risk types and the extent of heterogeneity in preferences within risk types. Thus, at best, restricting insurer rating practices generates a transfer between low and high risks. And in settings in which consumers are price responsive, rating restrictions could generate significant distortions in coverage. The net welfare effects of these distortions ultimately depend on the magnitude of the changes for different groups and the extent to which the market unravels.

A number of studies have examined the effect of rate regulation on adverse selection in individual markets for primary, rather than supplemental coverage by studying the experience of states which adopted laws restricting insurer rating practices in the individual and small group markets. Most studies have found that, while these laws have a relatively small effect on overall rates of coverage, the lack of an overall effect represents the combination of an increase in coverage among high risks and a reduction in coverage among low risks. For example, Davidoff, Blumberg et al. (2005) find that reforms in the small group market which restricted rating variance increased rates of coverage among high risks by 4.5 percentage points and reduced rates of coverage by 1.7 percentage points among low risks. Other studies of the small group (Buchmueller and DiNardo 2002; Monheit and Schone 2004; Davidoff, Blumberg et al. 2005; Simon 2005) and individual (Pauly and Herring 2007; Lo Sasso and Lurie 2009) markets have reporting similar findings. The reports suggest that the negative effects of community rating on coverage for low risks are offset by positive effects for high risks. Clemens (2012), in contrast, reports more dramatic declines in rates of insurance coverage resulting from the implementation of community rating laws. His results are consistent with a case study which found that Community rating led to collapse of the individual market in New Jersey (Monheit et al. 2004). Clemens (2012) suggests that the earlier literature, which focused on the effect of the regulation in the years immediately

subsequent to its adoption, was unable to detect the full effect of rate regulation because it took multiple years for the market to unravel.

The literature also suggests that rate regulation of one type of insurance product will affects demand for substitutes. Buchmueller and DiNardo (2002) suggest that the lack of an overall effect on rates of coverage in the small group market was generated by a shift from indemnity to HMO coverage among low risks, and Lo Sasso and Lurie (2009) find a similar shift in response to rate regulation in the individual market.

The primary hypotheses we test is that laws requiring pooling of heterogeneous risks increase rates of Medigap coverage among high risks and reduce rates of coverage among low risks. The net effect on overall rates of coverage depends on the magnitude of the effect for the different groups. Our second hypothesis is that MA plans serve as substitutes for Medigap coverage. Thus, as the price for Medigap coverage increase (decreases), Medicare beneficiaries will substitute into (away from) MA plans.

IV. Empirical Methods

We use a differences-in-differences approach to estimating the effects of the laws by examining changes in coverage patterns in states adopting laws relative to those in states not adopting laws.

IV.A. Data Sources

The primary data source for our analyses is the 1993 to 2006 Medicare Current Beneficiary Survey. The MCBS is an annual survey of approximately 12,000 Medicare beneficiaries, sponsored by the Centers for Medicaid and Medicare Services. The survey provides information on health status, health care use and expenditures, health insurance coverage, and socioeconomic and demographic characteristics. We use the Cost and Use files which include complete expenditures and source of payment data for all health care services, including those not covered by Medicare. The survey also provides relatively detailed information on private insurance status, collecting information on up to 5 private supplemental plans, including the date the coverage began, and is linked to CMS files for information on enrollment in MA plans.

We restrict our analyses to beneficiaries enrolled in Medicare Parts A and B for 12 months with no employer-sponsored supplemental, Medicaid or “other” insurance during the year. The “other” category includes small government programs such as VA coverage. We also exclude beneficiaries with

end-stage renal disease. We dropped states adopting laws prior to 1993 as well as states with very small numbers of sampled beneficiaries.

We merge the MCBS with information on the county-level payment by CMS to MA plans. (ref) The study sample characteristics are presented in Table 3.

IV.B. Laws

As discussed earlier, while many states adopted laws during the period spanning the early 1990s through late 2000, the specific features of the laws vary across states. In our analysis, we focus on 3 types of laws for which adequate numbers of states adopted similar laws during the time period of our analyses. Since we are able to measure insurance coverage beginning only in 1992, we cannot examine the effects of laws adopted prior to 1993 using our differences-in-differences design. Recall that the federal regulation established a 6-month open enrollment period with guaranteed issue upon eligibility based on age during which insurers are required to charge community rates. The three types of laws we examine expand upon this provision as follows:

- Community Rating among Disabled Beneficiaries.
  These laws require insurers to charge community rates among the disabled population although the community rate for the disabled may differ from those charged to aged beneficiaries. The vast majority of states adopting community rating among the disabled also adopted an open enrollment period with guaranteed issue for the disabled at the point of initial eligibility. One state (CA) expanded the open enrollment period beyond initial eligibility and in most states the law applies to all plan letters.
- Community Rating among Disabled Beneficiaries with Rate linked to that of Aged Beneficiaries.
  These laws also require community rating among the disabled but link the community rate to that of the aged population. The specific way in which the rate is linked the aged population varies across states but most states require that the disabled rate be no greater than the rate for 65-year olds or the average of rates for all beneficiaries age 65 and over. One state pegs to disabled rate to the rate for 75-year olds. These states also generally adopted an open enrollment period with guaranteed issue for the disabled at the point of initial eligibility, and one state (IL) extended the open enrollment period to annually.

- Community Rating across the Aged and Disabled

These states extended the federal protections (guaranteed issue, guaranteed renewability and a 6 month open enrollment period) to the disabled at the time of initial eligibility and required insurers to community rate across all beneficiaries. Three states applied the law retroactively (CT, MA, NY) and 3 states offered open enrollment for both aged and disabled beneficiaries on an annual basis (ME, NY, CT).

IV.C. Model Estimation

We estimate models of the following form:

$$I_{i,s,t} = \alpha + \beta_1 law_{s,t} + \beta_2 X_{i,t} + \beta_3 AAPCC_{s(c),t} + S_s + T_t + \varepsilon_{i,s,t}$$

I represents insurance coverage of individual i in state s and time t. We measure insurance coverage using indicators of Medigap, MA and no supplemental coverage based on point-in-time (January 1) coverage. Thus, insurance coverage in year t reflects coverage coming into the year t. Insurance coverage categories are not mutually exclusive because many beneficiaries report multiple sources of coverage. Law is binary indicator of whether one of the three types of rate regulation laws was in place in state, s, in year, t. X is a vector of individual characteristics including sex, marital status, racial minority indicator, urban area indicator, education and income. AAPCC is the county-level payment made by CMS to MA plans which is intended to control for the generosity of the alternative to Medigap coverage in the individual's market. The model also includes state and year fixed-effects. We estimate a linear probability model, and the standard errors are adjusted for clustering at the level of the state. We estimate the model separately for each insurance type and separately among the aged and disabled and by risk-type among the disabled. Standard errors are adjusted for clustering by state.

V. Results

V.A. Differences across Groups in Expected Spending

The theoretical basis of our analysis is that the laws require insurers to pool individuals of differing risk. In this section, we examine empirically whether the groups pooled by regulation are characterized by differences in expected spending. In particular, laws requiring community rating among the disabled will generate changes in coverage of the type we predict only if predictable variation in spending covered by supplemental insurance exists among disabled enrollees. Similarly, laws pooling the aged

and disabled will affect coverage only if the expenditure risk faced by supplemental insurers differs between the two groups.

In Figure 1, we provide some empirical evidence on this issue. The figure presents predicted spending on services covered by supplemental insurance for aged and disabled Medicare beneficiaries by age group. We develop these estimates by using the MCBS to estimate a model of expenditures covered by supplemental insurance as a function of age, sex and indicators of 6 self-reported conditions. We restrict the estimation sample to Medicare beneficiaries with a source of supplemental coverage other than Medigap or MA, either employer-sponsored supplemental coverage or Medicaid. This is based on the rationale that access to these sources of coverage is exogeneously determined. In the case of employer-sponsored supplemental coverage, eligibility is based on employment history. In the case of Medicaid, eligibility is determined by state regulation. In preliminary analyses, we compared the health status of beneficiaries with and without these alternative sources of coverage and found that our study sample of beneficiaries in the market for either Medigap of MA coverage is on average healthier than beneficiaries with Medicaid and less healthy than beneficiaries with employer-sponsored coverage. We estimate separate models for the aged and disabled and then use the model to predict covered expenditures for the study sample, conditional on age, sex, and the presence of chronic conditions. The figure plots the distribution of predicted spending covered by supplemental insurance by source of Medicare eligibility (aged or disabled) and age.

The figure presents two key results. First, mean covered spending substantively differs between the aged and disabled. Average predicted expenditures are $2,861 for the disabled compared with $1,607 for the aged, suggesting that pooling the two groups would increase premiums for the aged and reduce them for the disabled. In addition, significant heterogeneity in predicted expenditures exists among the disabled population based on the presence of chronic conditions. Interestingly, there appears to be less variation among the aged than the disabled. This finding suggests that pooling among the disabled may have differential effects on low- and high-risk disabled groups.

The vast majority of the laws requiring pooling among the disabled, however, limit the restriction to the open enrollment period at the point of initial eligibility. Thus, characteristics of beneficiaries at the time of initial eligibility, rather than at the current point in time, as in Figure 1, are more relevant for assessing the potential impact of pooling among this group. One piece of information we have about disabled beneficiaries at the time they became eligible for Medicare coverage is the age at which they enrolled. Using a similar approach to that which we used to develop the estimates we presented in

Figure 1, we examine the relationship between age of eligibility among the disabled and expected future expenditures. In particular, we estimate a model of expenditures covered by supplemental insurance on a sample of disabled Medicare with employer-sponsored supplemental or Medicaid coverage as a function of age at point of eligibility for Medicare, current age, sex, and year. We then use the model to predict covered supplemental expenditures among the study sample, conditional on sex and age at eligibility. The results are presented in Table 4.

Significant heterogeneity exists among the disabled population in expected covered expenditures based on sex and age at eligibility (Table 3). Mean supplemental expenditures in the estimation sample are highest for people who become eligible at younger ages – over $8,000 for both men and women. Mean supplemental expenditures are lowest ($2,365) for women who become eligible at age 50-59 and are similar for men and women who become eligible between ages 60-64 ($2,508). Controlling for age and sex at the time we observe these expenditures, magnifies these differences.

Based on these results, we identify disabled beneficiaries as either low or high risk based on age of eligibility for Medicare. We test two categorizations of high risk beneficiaries: 1) female beneficiaries who become eligible when they were less than 40 years old, and 2) all beneficiaries who became eligible when they were less than 40 years old and female beneficiaries who become eligible between the ages and 40 and 49.

V.B. Effects of Laws on Aged and Disabled

We find that laws pegging Medigap premiums for the disabled to those for the aged increase rate of Medigap coverage among the disabled and reduce rates of coverage among the aged (Table 5). Rates of Medigap coverage increase by 9.4 percentage points among the disabled. The estimates suggest that approximately half the increase in Medigap coverage resulted from people switching from MA plans to to Medigap. The remainder represented an increase in coverage (a reduction in the proportion of beneficiaries with no supplemental insurance). Laws pegging premiums for the disabled to those for the aged were also associated with a decline in Medigap coverage for the aged. A decline of 7.6 percentage points in Medigap point among the aged was accompanied by an increase of 4 percentage points in the proportion of beneficiaries with no supplemental coverage. Although once again, this increase in coverage appears to reflect a combination of increase in MA coverage and an increase in rates of no supplemental only the increase in the proportion with no coverage is statistically significant at conventional levels.

We find no evidence that laws requiring community rating of Medigap premiums across the aged and disabled affected rates of coverage among either the aged or disabled. In both cases, the estimate is close to zero and imprecisely estimated. This result is puzzling because, in theory, the effects of this type of law should be similar to those of laws pegging the premiums of the disabled to those of the aged. There are two possible explanations. It is possible that the absence of an effect is due to the short pre-period for these laws; most were passed in 1993 or 1994. In addition, many of the laws in this category applied to only a subset of plan letters. The estimates do suggest that the passage of this type of community rating law was associated with a 6.4 percentage point reduction in MA enrollment among the disabled with a corresponding increase in the proportion of disabled beneficiaries with no supplemental coverage. While we hypothesized that MA enrollment might decline in response to the passage of a law, the mechanism for the effect was substitution between Medigap and MA. However, we find no evidence of a corresponding increase in Medigap coverage indicating that this is not the mechanism driving the result. We also find no evidence that laws prohibiting risk rating among the disable affected rates of Medigap coverage among either the aged or disabled, although their passage was once again associated with a reduction in MA coverage among the disabled.

The AAPCC, a proxy for plan generosity in the form of either lower out-of-pocket premiums or more generous benefits, was associated with an increase in MA enrollment among the disabled and a corresponding decline in the proportion of beneficiaries without supplemental coverage. In the case of aged beneficiaries, in contrast, an increase in the AAPCC was associated with an increase in MA coverage and a decline in Medigap coverage as well as a reduction in the proportion of beneficiaries without supplemental coverage.

Table 6 presents the results of models examining difference by risk type among disabled beneficiaries in the effects of laws requiring pooling among this group. We estimate the models only on disabled beneficiaries, and we alter our main empirical specification to include an indicator of high risk and the interaction of each type of law with the indicator of high risk. We estimate the models using two alternative definitions of high and low risk beneficiaries. In the first we identify the demographic group with the highest expected spending, female beneficiaries who enrolled in Medicare when they were less than 40 years of age, as high risk. In the second, we also include male beneficiaries who became eligible for coverage when they were less than 40 years of age as well as females who

We find evidence that laws requiring community rating among disabled beneficiaries increase rates of Medigap coverage among high risk beneficiaries and reduce rates of supplemental coverage among low

risk disabled beneficiaries. The estimates indicate that rates of supplemental coverage, both the in the form of Medigap and MA plans, are lower among the high risk than the low risk disabled. The main effect of implementing a law requiring pooling among the disabled is a reduction between 5.5 and 8.5 percentage points in Medigap coverage, depending on the risk definition. The interaction of the law indicator and the high risk indicator, however, indicates that the effect of the law differs between low and high risk groups. In particular, the implementation of a law requiring pooling among these groups is associated with an increase of between 18 and 39 percentage points among high risks relative to low risks, depending on the risk definition. While the results strongly suggest that the implementation of the law had differing effects on the low and high risk disabled, the estimates also suggest that the implementation of the law had similar effect on rates of MA enrollment, which was not predicted by our theoretical framework.

VI. Discussion

Our findings can be summarized as follows:

- Laws which link Medigap premiums for the aged to those for the disabled increase rates of coverage for the disabled and reduce rates of coverage among the aged.
- Effects are concentrated among states adopting laws pegging the disabled premium to the premium for the aged rather than among states adopting laws requiring comprehensive community rating.
- Some people substitute between Medigap and MA in response to a price change while others gain or lose coverage. Approximately half of the decline (increase) in Medigap coverage for the aged (disabled) was offset by a change in MA coverage.
- Laws requiring community rating among disabled beneficiaries increased Medigap coverage among the high-risk disabled and reduced coverage among the low-risk disabled, with a zero net effect.

VII. Conclusion

- Laws requiring insurers to price coverage similarly for heterogeneous risks lead to distortions in insurance markets.
    - Regulations establishing open enrollment with guaranteed issue and community rating increased coverage among disabled Medicare beneficiaries at the expense of the aged.
    - Laws requiring pooling among disabled beneficiaries generated a similar type of effect.
- Medigap and MA plans serve as supplemental coverage substitutes for Medicare beneficiaries.

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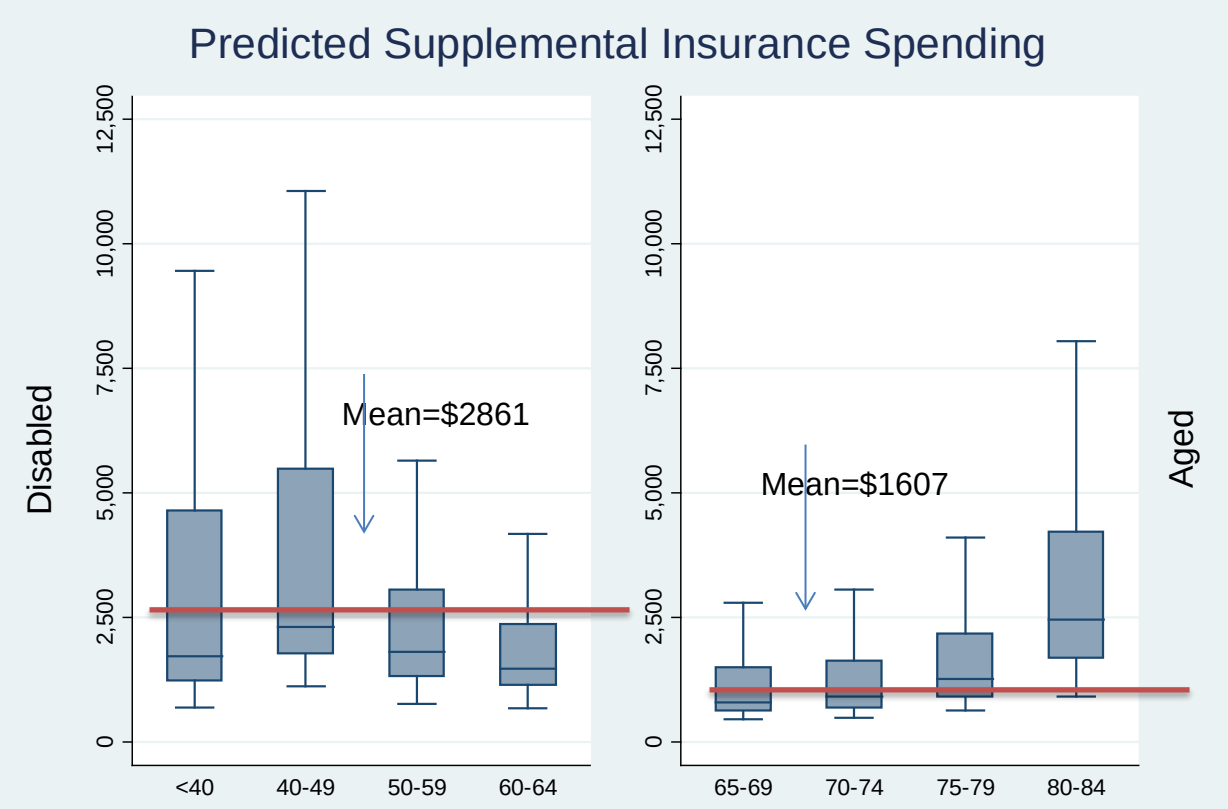
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Figure 1: Predicted Supplemental Insurance Spending by Eligibility Type and Age



Note: Median, 25th and 75th, 5th to 95th Percentiles Shown

ESI or Medicaid supplemental insurance as a function of age, sex, indicators of 6 chronic conditions. Model estimated separately for the aged and disabled. Predictions generated for sample without either ESI or Medicaid, conditioning on age, sex and the presence of chronic conditions. Figure plots the distribution of the predictions by eligibility status and age.

Table 1: Medigap Insurance Market Regulation

Rate Regulation	Open Enrollment (OE) and Guaranteed Issue (GI)				
	Same as Federal	OE and GI among the disabled at time of initial eligibility	Expanded OE and GI		
			Disabled Only	Aged Only	Aged and Disabled
Regulations Applying to Aged Medicare Beneficiaries					
No Gender Rating	ID (99) AR (06)				
No Age Rating	AR (90)				
Ban on Attained Age Policies	GA (90) WA (90) FL (93) ID (95)				
Community Rating Among the Aged	WA (96) OH (09)			CT (94) CA (00) WA (05)	
Regulations Applying to Disabled Medicare Beneficiaries					
Community Rating Among the Disabled		OK (92)* PA (92) NC (98) CO (03) WI (03) FL (09)	CA (00)*		
Community rating among the Disabled (rates pegged to aged)		NH (92)‡ KS (93) OR (93) NJ (95)* MO (98) SD (99) MD (06)*	IL (08)		
Regulations Applying to Both Aged and Disabled Beneficiaries					
Community Rating Across Aged and Disabled		MN (93) MA (94)* VT (97)			ME (93)* NY (93)+ CT (94)+*
No Rating Restrictions		IL (89) TX(92)* MD (03)*			NY (92)+

* Applies to a subset of plans only

+ Retroactive

‡ Adopted, but clarified later

Table 2: Trends in Supplemental Coverage among Aged and Disabled Beneficiaries
(Point-in-time estimates of any coverage as of January 1 of indicated year. Estimates do not sum to 100% due to individuals reporting multiple sources of coverage)

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Disabled														
Medicaid	36%	38%	40%	41%	40%	37%	39%	41%	41%	44%	43%	45%	44%	43%
ESI	16%	15%	15%	14%	14%	16%	15%	14%	15%	15%	15%	17%	16%	17%
Medigap	10%	9%	9%	8%	7%	7%	6%	6%	6%	7%	6%	6%	5%	6%
MMC	4%	2%	4%	4%	6%	9%	11%	10%	10%	9%	7%	7%	8%	11%
Other	5%	4%	3%	5%	6%	6%	6%	6%	9%	10%	8%	6%	6%	8%
None	36%	35%	33%	32%	32%	31%	29%	28%	26%	26%	27%	27%	29%	27%
Aged														
Medicaid	9%	10%	10%	10%	9%	9%	10%	10%	10%	10%	10%	11%	11%	11%
ESI	35%	34%	34%	34%	34%	33%	34%	32%	33%	34%	36%	37%	36%	39%
Medigap	38%	38%	38%	37%	35%	33%	33%	32%	34%	34%	33%	33%	33%	33%
MMC	9%	8%	10%	11%	15%	18%	20%	21%	18%	16%	15%	15%	16%	19%
Other	4%	4%	4%	4%	4%	4%	5%	5%	7%	8%	7%	7%	6%	6%
None	13%	13%	12%	12%	11%	11%	10%	11%	11%	12%	11%	11%	11%	10%

Table 3: Study Sample Characteristics

	Disabled		Aged	
	Mean	**SD**	**Mean**	**SD**
Medigap	0.13	0.33	0.55	0.50
MMC	0.11	0.31	0.24	0.43
ESI	0.00	0.00	0.00	0.00
Medicaid	0.00	0.00	0.00	0.00
No Supplement	0.77	0.42	0.23	0.42
No Health Rating w/in Disabled	0.01	0.10	0.01	0.09
CR (both across and pegged laws)	0.29	0.45	0.31	0.46
AAPCC	55.18	18.75	60.00	16.54
Married	0.36	0.48	0.49	0.50
Non-White	0.23	0.42	0.10	0.30
In MSA	0.69	0.46	0.70	0.46
HS Diploma	0.61	0.49	0.62	0.48
Income	18.16	21.85	28.29	77.88
Income^2	806.91	9711.67	6865.11	884821.80
1993	0.09	0.29	0.07	0.26
1994	0.09	0.28	0.07	0.26
1995	0.08	0.27	0.07	0.25
1996	0.07	0.26	0.07	0.25
1997	0.07	0.25	0.08	0.26
1998	0.07	0.26	0.08	0.27
1999	0.07	0.26	0.08	0.27
2000	0.07	0.26	0.08	0.27
2001	0.07	0.26	0.08	0.26
2002	0.07	0.25	0.07	0.26
2003	0.06	0.24	0.07	0.25
2004	0.06	0.24	0.06	0.25
2005	0.06	0.24	0.06	0.24
2006	0.06	0.24	0.06	0.24

Table 4: Predicted Supplemental Insurance Expenditures by Sex and Age at Eligibility among Disabled Medicare Beneficiaries

Age at Eligibility	Proportion of Study Sample	Mean Supplemental Expenditures (Estimation Sample)	Mean of Predicted Supplemental Expenditures (Prediction Sample)
<40 Female	17.5%	$8,153	$12,541
40-49 Female	10.5%	$5,493	$5,245
50-59 Female	13.9%	$2,365	$2,218
<40 Male	26.7%	$8,127	$6,803
40-49 Male	13.4%	$4,629	$2,923
50-59 Male	13.5%	$3,323	$2,831
60-64 Both	4.5%	$2,508	$1,789

Table 5: Effects of Rate Regulation on Insurance Coverage of Disabled and Aged Medicare Beneficiaries

	DISABLED			AGED		
	(1)	(2)	(3)	(4)	(5)	(6)
Variable	Medigap	MMC	No Supplement	Medigap	MMC	No Supplement
CR With Peg	0.0940	-0.0490	-0.0531	-0.0766	0.0395	0.0408
	[0.0326]***	[0.0252]*	[0.0344]	[0.0162]***	[0.0234]	[0.0159]**
CR Across Aged/Disabled	-0.00491	-0.0642	0.0645	-0.00274	0.0107	0.00237
	[0.0219]	[0.0250]**	[0.0291]**	[0.0151]	[0.0302]	[0.0191]
No Health Rating w/in Disabled	0.0137	-0.115	0.0964	0.0589	-0.0652	-0.00654
	[0.0831]	[0.0463]**	[0.123]	[0.0520]	[0.0402]	[0.0165]
AAPCC ($100)	0.000860	0.00392	-0.00487	-0.00464	0.00601	-0.00135
	[0.000873]	[0.000933]***	[0.000914]***	[0.000795]***	[0.000745]***	[0.000604]**
Female	0.111	0.0206	-0.129	0.0656	0.00307	-0.0692
	[0.0208]***	[0.0129]	[0.0233]***	[0.0109]***	[0.00540]	[0.00867]***
Married	0.00811	0.0553	-0.0601	0.0663	0.0322	-0.0968
	[0.0202]	[0.0281]*	[0.0272]**	[0.0126]***	[0.0106]***	[0.00859]***
Minority	-0.0803	-0.00385	0.0822	-0.228	0.0484	0.175
	[0.0176]***	[0.0246]	[0.0275]***	[0.0298]***	[0.0198]**	[0.0336]***
Urban Residence (in MSA)	-0.0214	0.0770	-0.0575	-0.0521	0.123	-0.0545
	[0.0164]	[0.0307]**	[0.0377]	[0.0239]**	[0.0262]***	[0.0134]***
HS Diploma	0.00855	0.0311	-0.0389	0.127	-0.0102	-0.105
	[0.0149]	[0.0161]*	[0.0213]*	[0.0102]***	[0.00638]	[0.0105]***
Income	0.00263	0.000728	-0.00315	0.000809	-0.000309	-0.000459
	[0.000513]***	[0.000678]	[0.000861]***	[0.000142]***	[7.81e-05]***	[0.000124]***
Income^2	-2.30e-06	-2.52e-06	4.45e-06	-6.16e-08	2.48e-08	3.33e-08
	[1.02e-06]**	[1.20e-06]**	[1.61e-06]***	[1.13e-08]***	[4.97e-09]***	[1.02e-08]***
Observations	6,881	6,881	6,881	57,780	57,780	57,780
R-squared	0.095	0.213	0.139	0.177	0.288	0.099

Model includes state and year fixed effects.
Robust standard errors in brackets

*** p<0.01, ** p<0.05, * p<0.1

Table 6: Effects of Rate Regulation on Insurance Coverage among Disabled Medicare Beneficiaries

	High Risk = Female < 40 at Enroll			High Risk = Female < 40, Female 40-49, Male < 40 at Enroll		
	(1)	(2)	(3)	(1)	(2)	(3)
	Medigap	MMC	No Supplement	Medigap	MMC	No Supplement
No Health Rating w/in Disabled	-0.0545	-0.125	0.175	-0.0848	-0.136	0.217
	[0.0674]	[0.0466]**	[0.107]	[0.0395]**	[0.0543]**	[0.0840]**
No Health Rating High Risk	0.392	0.0698	-0.461	0.181	0.0406	-0.223
	[0.0452]***	[0.0285]**	[0.0482]***	[0.0947]*	[0.0227]*	[0.0952]**
CR Law	0.0164	-0.0657	0.0447	0.00731	-0.0656	0.0551
	[0.0247]	[0.0246]**	[0.0292]	[0.0297]	[0.0353]*	[0.0360]
CR Law High Risk	0.00756	0.0503	-0.0646	0.0219	0.0137	-0.0401
	[0.0409]	[0.0302]	[0.0466]	[0.0300]	[0.0437]	[0.0367]
High Risk	-0.0620	-0.0883	0.150	-0.0416	-0.0634	0.105
	[0.0299]**	[0.0236]***	[0.0355]***	[0.0181]**	[0.0233]**	[0.0179]***
Observations	6,881	6,881	6,881	6,881	6,881	6,881
R-squared	0.098	0.217	0.145	0.097	0.219	0.147

Model includes individual characteristics listed in Table 4 and state and year fixed effects.

Robust standard errors in brackets

*** p<0.01, ** p<0.05, * p<0.1