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Does Limiting Allowable Rating Variation in the Small Group Health Insurance Market Affect Employer Self-Insurance?

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Abstract

The Affordable Care Act (ACA) imposes adjusted community rating in the small group market, which employers can avoid by self-insuring, raising concerns about adverse selection. We evaluate the impact of limiting allowable rating variation on employer self-insurance across industries with varied health risk, using cross-state variation in pre-ACA rating regulations, the nationally-representative 2008–2013 KFF/HRET Employer Health Benefits survey, and a triple-difference regression approach. We find that lower-risk employers subject to laws limiting allowable premium rating variation have a predicted probability of self-insurance that is about 18 percentage points higher than otherwise-similar higher-risk employers, suggesting that these selection concerns are warranted.

Keywords

health insurance; self-insurance; adverse selection; rating regulations

I. Introduction

The 2010 Patient Protection and Affordable Care Act (ACA) introduced significant changes to the regulation of private health insurance products for the nonelderly US population. While these reforms have arguably been most pronounced to date in the individual market, the ACA also includes many changes affecting the small group market. The small group market is the portion of the market for employer-sponsored insurance comprised of policies sold to employers with typically fifty or fewer workers.¹ About 13.5 million workers and dependents were covered by small group market policies in 2015 (MarkFarrah Associates

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¹While we use the term “employer” rather than the term “firm” throughout this paper to avoid confusion between an employer/firm offering health insurance coverage to its workers and an insurer/firm selling coverage to employers, there is an important distinction between the terms “firm” and “establishment” here. An “establishment” refers to a single location, while the term “firm” refers to a business entity which could include multiple establishments under common ownership or control. The number-of-employees

2016). Moreover, the small group market represents the potential market for employer-sponsored insurance coverage for the vast majority of employers, as approximately 96% of US employers have fifty or fewer workers (Kaiser Family Foundation 2014).

The ACA imposes new guaranteed issue and adjusted community rating regulations on both individual and small group market policies. As of 2014, insurers cannot deny coverage, cannot adjust premiums based on health status or gender, and can only vary premiums within limits according to age, family composition, geography, and tobacco use. Additionally, plans are subject to new minimum essential health benefits requirements, metallic tier levels associated with actuarial values, federal premium tax assessments, and risk adjustment. While enrollment in these newly regulated policies in the individual market has grown to nearly 10 million (ASPE 2015), the implementation of these regulations has largely been delayed in the small group market and will take effect over the next several years.²

The ACA's adjusted community rating regulations impose an implicit cross-subsidization from lower cost enrollees to higher cost ones. However, economic theory has long indicated that pooling heterogeneous risks in community rated insurance markets is not stable (Rothschild and Stiglitz 1976). Thus, the notion that employers with relatively healthier workers may be uninterested in purchasing insurance at community rated premiums raises concern for the stability of the small group market once the ACA regulations are fully implemented.³ Whereas the individual mandate to purchase health insurance and income-based federal premium subsidies attempt to reduce these adverse selection concerns in the individual market, the fact that the employer mandate does not apply to employers with fewer than 50 workers and the ability of employers to offer coverage yet avoid these rating regulations by "self-insuring" their health plans creates an important loophole in the small group market.

Employers generally purchase "fully-insured" coverage by paying a fixed premium to a private health insurer to transfer the liability of the future medical claims incurred by their workers to that insurer. In contrast, employers that self-insure, or self-fund, their health benefits instead retain this financial liability and pay the cost of all medical claims incurred by their workers throughout the year. These self-insured employers often contract with a managed care organization for administrative services (such as creating a provider network and processing claims) and purchase stop-loss or reinsurance coverage that limits their liability for high-cost individuals or aggregate claims. However, an important distinction

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thresholds to define the small group market use the firm's size rather than the establishment's size, and so our use of the term "employer" here applies to firms rather than establishments. Moreover, our empirical analysis primarily uses the KFF/HRET Employer Health Benefits Survey, and it is a firm-level survey.

²Despite the fact that these regulations were originally intended to apply to small group market policies sold beginning January 1, 2014, most small group market plans are not yet subject to these regulations because they are grandfathered (i.e., they existed and have not been significantly changed since March 23, 2010) and/or because the Department of Health and Human Services gave states and issuers the flexibility to renew non-compliant plans through as late as October 1, 2016 (HHS 2013; HHS 2014). Details on states' decisions related to these delays are provided in Lucia et al. (2014). Moreover, issuers can effectively delay the impact of regulations for an additional year by renewing an annual policy just before the new regulations take effect (O'Donnell 2013).

³The Rothschild and Stiglitz (1976) separating equilibrium, if it exists, is characterized by healthy groups being covered by partial insurance plans (as opposed to being uninsured). The ACA, however, imposes a floor in partial-coverage plans equal to a 60% actuarial value, so the standard separating equilibrium into two different plans may no longer be feasible with this additional constraint.

between the fully-insured and self-insured markets is that self-insured health plans are exempt from state insurance regulations under the Employee Retirement Income Security Act (ERISA) and are also not subject to many of the regulations imposed by the ACA including the adjusted community rating regulations.

There has therefore been considerable speculation that the ACA's adjusted community rating regulations may result in an increase in selective self-insurance among employers in the small group market with relatively healthier workers and, in turn, concern about the possible implications for adverse selection into the fully-insured small group market with resulting higher premiums (Weaver and Mathews 2013; Lucia, Monahan and Corlette 2013). Such concerns have been exacerbated by a recent estimate that 65 percent of small group employers that offer insurance coverage are expected to face premium increases due to the ACA's rating regulations (CMS Office of the Actuary 2014), qualitative evidence suggesting increased consideration of self-insurance among small employers (Gabel et al. 2013; Yee, Christianson, and Ginsburg 2012), and anecdotal reports of increased marketing of self-insurance and related products to smaller employers (Farr 2014; Hall 2012). Furthermore, increased rates of self-insurance among smaller employers could have potentially problematic implications for these self-insured businesses and their workers if enrollees incur high claims and employers do not have adequate reserves or reinsurance to pay them.

Our Paper's Contribution

Despite this level of speculation and concern, very little is known about what actually influences self-insurance decisions among smaller employers and, specifically, the effects of regulations limiting experience rating on employer self-insurance decisions. The goal of this paper is to therefore provide empirical evidence on the relationship between the degree of experience rating allowed in the small group market and employers' decisions to self-insure. Because the implementation of the ACA's adjusted community rating reforms has been delayed in the employment-based market, we instead exploit cross-state variation in small group market rating regulations and allowable rating factors that existed prior to the ACA. Such variation exists because states had primary regulatory jurisdiction over small group market rating regulations prior to the ACA. We expect that employers with relatively healthier workers will be more likely to self-insure when experience rating is more limited and fewer rating factors are allowed, due to the fact that they stand to benefit more from avoiding these premiums that are pooled with employers with relatively sicker workers. Likewise, employers with relatively sicker workers will be less likely to self-insure because they benefit more from premiums reflecting more limited allowable rating variation that are thus cross-subsidized by employers with relatively healthier workers.

To test this hypothesis, we examine employer-level data from the restricted-use version of the Kaiser Family Foundation/Health Research and Educational Trust (KFF/HRET) Employer Health Benefits Survey for 2008 through 2013. This nationally-representative dataset includes rich information about employer and plan characteristics, including whether its health benefits are self-insured. However, this dataset does not include detailed information on the actual health status of workers within each employer (nor does any other dataset of which we are aware). We therefore construct an industry-level measure of relative

health risk, based on pre-existing chronic health conditions (while controlling for age and gender), from workers in the Medical Expenditure Panel Survey's Household Component (MEPS-HC), and merge that industry-level health risk measure to the employer-level KFF/HRET data. That is, if policies are experience rated (or self-insured), an employer in an industry with a lower relative risk score would be quoted a lower premium (or face lower expected self-insured spending), compared to employers in an industry with a higher relative risk score with a comparable demographic profile. We then test for differences in the effect of health risk on self-insurance across states with stricter pre-ACA limits on rating variation (i.e., more pooling), compared to those that permit broader experience rating. We evaluate the impact of rating limitations on the subset of slightly larger small group market employers, defining employers with 25 to 50⁴ workers that offer coverage as the treatment group subject to small group market regulations, and use slightly larger employers with 51 to 100 workers that offer coverage (which are not subject to these rating regulations) as a comparison group. Using this triple-difference estimator for identification, we find evidence, as expected, that employers in industries with lower health risk are more likely to self-insure when they are subject to premiums with stronger limitations on experience rating.

Regarding the organization of the remainder of the paper, we first provide additional detail on self-insurance, summarize the relevant existing literature, and describe the underlying economic framework. We then present our empirical model and results. We conclude by considering these findings in the context of the forthcoming implementation of the ACA's adjusted community rating regulations in the small group market and by briefly discussing options for state and federal policymakers to consider to alleviate the adverse selection into the small group market resulting from selective self-insurance.

II. Background and Related Literature on Employer Self-Insurance

The majority of US workers with employer-sponsored coverage are enrolled in self-insured health plans (Kaiser Family Foundation 2015). While self-insurance is much more common among larger employers, approximately 10% of employers with 25 to 100 workers are self-insured in our dataset (described below). While much of the prior research evaluating the causes of employer self-insurance has focused on larger employers, the focus of this paper is instead to better understand factors related to self-insurance among these smaller employers and, specifically, the extent to which rating regulations in the small group market differentially affect employer self-insurance among employers with relatively healthier or sicker workers. This paper therefore builds on and contributes to two bodies of literature: one focused on the adverse selection effects of community rating in insurance markets and

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⁴Plans sold to employers with as few as 1 or 2 workers (depending on the state) were actually affected by these regulations during this time period. However, we focus on employers with 25 to 50 workers because these slightly larger small group market employers are more likely to offer coverage and to self-insure, because they are more similar to the control employers with 51 to 100 workers, and to avoid confounding due to the fact that tax credits to offer insurance took effect during the time period for some small businesses with fewer than 25 employees; that is, we wish to avoid contaminating these analyses with any independent effects of the tax credits on the health insurance offer decisions of these very small employers. Additionally, a few states capped the maximum size of small groups affected by state rating regulations to be less than 50 (typically 25 or 35). In these cases, we instead define the affected employers as those with 25 to less than or equal to the state's maximum size and, similarly, define control employers as those with greater than the state's maximum size to those with up to and including 100 workers. We conduct sensitivity analyses by instead excluding employers located in these states from our models and the results are qualitatively unchanged.

another focused on understanding the factors related to employers' decisions to self-insure, particularly among smaller ones.

Regarding the former, several studies have evaluated the adverse selection effects of rating and issue reforms in the 1990s on insurance coverage and premiums in the individual and small group markets. These papers find evidence consistent with the expectation that regulations limiting experience rating increase coverage among sicker groups and decrease coverage among healthier groups. Buchmueller and DiNardo (2002) find that strong small group market community rating regulations resulted in a shift toward higher rates of coverage among older persons, though they did not observe significant effects on overall coverage rates. Simon (2005) finds that small group market insurance reforms resulted in overall slight reductions in offer rates and slight increases in premiums among smaller employers. Further, she finds larger coverage reductions among employers with healthier employees and evidence of coverage increases among employers with sicker employees. Pauly and Herring (2007) and Lo Sasso and Lurie (2009) find evidence of similar heterogeneous effects of community rating regulations in the individual market. Both studies find that stronger community rating in the individual market led to increased coverage rates among sicker people and decreased coverage rates among healthier people. Taken together, these studies suggest that there are likely to be differential effects of regulations limiting allowable rating factors on an employer's likelihood of self-insuring depending on the relative health risk of the employer's workers. Though we are unaware of any recent studies that assess the effects of limited allowable rating on self-insurance, Park (2000) finds higher rates of self-insurance among small employers in states that had enacted strong small group market rating regulations in the early 1990s, but she does not test for differential effects across employers.

Regarding the studies focusing on self-insurance, they can generally be grouped into an older set of papers motivated primarily by states enacting benefit mandates and premium taxes in the 1970s and 1980s, and a more recent set of papers focused more generally on evaluating the growth in self-insurance. Generally, much of the older work finds that state benefit mandates and premium taxation rates did not have strong effects on self-insurance, particularly in the later part of the time period (e.g., Gruber 1994; Jensen, Cotter, and Morrissey 1995; Acs et al. 1996; Hing and Jensen 1999; Park 2000). More recently, Brien and Panis (2011) and Eibner et al. (2011) document higher rates of self-insurance among larger employers, employers with unionized workers, and employers in certain industries. Feldman (2012) hypothesizes that advances in risk assessment tools have encouraged more employers to self-insure due to better information about the likely risk they face. Eibner et al. (2011) and Buettgens and Blumberg (2012) predict 2016 small group market employer self-insurance decisions using the RAND COMPARE and Urban Institute's HIPSM microsimulation models, respectively. They predict that the availability of low-attachment stop-loss insurance policies will have important implications, with significantly higher rates of self-insurance if such policies are widely available, leading to adverse selection into the fully-insured small group market. While these reports suggest the potential for adverse selection and higher premiums in the small group market via selective self-insurance of relatively healthier employers, there is little to no evidence on the actual effects of insurance

regulations on employer self-insurance decisions, particularly among smaller employers (Chollet 2012; Lucia et al. 2013). Our analysis helps to fill this void.

III. The Economic Decision to Self-Insure and the Effect of Rating Regulations

Consider an employer that offers health insurance benefits to its workers. In deciding whether to be fully-insured or self-insured, the employer essentially compares the premium for a fully-insured policy to the net costs of self-insuring.⁵ For a self-insured employer, the costs include both the direct expected costs of employee medical spending plus an additional risk premium associated with the uncertainty in bearing these random expenditures. Employers can decrease some of this uncertainty by purchasing experience-rated stop-loss coverage, so that the total direct costs of self-insuring include the expected “uncovered” spending plus the stop-loss coverage’s experience-rated premium. For an employer facing experience-rated fully-insured premiums, the decision to self-insure results in a relatively simple comparison of this uncertainty in uncovered spending to the difference in direct costs of the fully-insured plan’s administrative overhead and the stop-loss plan’s administrative overhead.

For an employer instead facing fully-insured premiums where experience rating is limited, this decision to self-insure incorporates both this tradeoff between the liability it faces in self-insuring (i.e., the uncertainty in uncovered spending versus the net increase in administrative overhead described above) and the extent to which the rating regulations deviate the fully-insured premiums away from the employer’s expected healthcare spending. Thus, this decision to self-insure when facing fully-insured premiums under limited allowable rating should depend on whether an employer has a low or high level of expected health spending. An employer with relatively low expected health spending will face higher fully-insured premiums with limited allowable rating than with experience rating, and an employer with relatively high expected health spending will face lower fully-insured premiums with limited allowable rating than with experience rating, all else equal. We therefore hypothesize that employers with relatively lower expected spending are more likely to self-insure when they face premiums subject to limited allowable rating, as these employers stand to benefit more from avoiding premiums pooled with relatively higher expected spending employers. In this case, the benefit of avoiding premiums subject to limited allowable rating may outweigh the added liability from self-insuring.

Allowable Rating Regulations in the States Prior to the ACA

Prior to the ACA’s federal small group market rating regulations (i.e., during the 2008–2013 period covered by our analyses), regulation of small group market policies was primarily subject to state jurisdiction. While all small group market plans were subject to guaranteed issue and renewal under federal law (since the 1996 Health Insurance Portability and Accountability Act), state-level regulations specified the extent of experience rating allowed

⁵In addition to financial costs considered here, the employer may also incorporate employee valuations of the differences in the benefit package which may result from being fully-insured or self-insured, such as a self-insured plan not including state-mandated benefits (e.g., infertility treatments) due to ERISA.

and the factors on which such premiums could be adjusted. While almost all states allowed for some degree of rating on age and gender, states were much more mixed on whether they permitted rating on other factors such as the health status of an employer's workers or that employer's particular industry. For our main set of empirical analyses, we define the set of "limited rating" states as those that prohibited rating on either workers' health status, an employer's industry, or both. This then leaves the set of "experience rating" states as those which allowed for rating on both workers' health status and an employer's industry, although many of these states only permit such experience rating within certain bands (e.g., a 3:1 ratio of the highest premiums to the lowest premiums). The general intuition behind this categorization is that a state legislature aiming to achieve increased pooling in the small group market across employers varying in health risk could generally attempt to achieve that goal by either more-broadly prohibiting the explicit use of workers' health status (which then presumably implies an implicit prohibition on the use of industry as a rating category) or by more-narrowly prohibiting the use of industry in setting premiums (where, in principle, an insurer could still obtain additional health status information across employers within a given industry to further vary premiums by employer-specific health status).

Figure 1 displays our categorization of states' small group market rating environments. These data are from the KFF State Health Facts website and additional review of state legislation. (We exclude employers located in Hawaii and Massachusetts due to the presence of an employer mandate to offer coverage during the study period.⁶) There are 31 states that comprise the "experience rating" set of states (shown in white in Figure 1), in which both workers' health status and an employer's industry were allowable rating factors. Among the 18 states that comprise the "limited rating" set of states (shown in various shades of grey in Figure 1), seven prohibited the use of industry but allowed the use of health, five prohibited the use of health but allowed the use of industry, and six prohibited the use of both. State small group market rating regulations were stable during this 2008–2013 time period for which we have nationally-representative data on employer self-insurance, so we are unable to assess the impact of changes in rating regulations within states over time. Thus, we ultimately focus on cross-sectional variation across states, using slightly larger employers whose premiums are unaffected by these regulations as a comparison group to control for potential unobservable confounding factors related to states with more limited allowable rating. (That said, one might expect changes in such unobservable confounding factors to also be problematic for longitudinal analyses examining the introduction of laws over time, even if that variation in laws across states over time existed here.)

As noted above, we do not have information on the actual health risk of workers within each employer in the KFF/HRET data, so we therefore use MEPS-HC data to construct an industry-level average health risk measure (described in detail below). This lack of information on employer-specific health status (within a given industry) should generally bias us against finding differential effects of limiting allowable rating by risk across

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⁶During the time period covered during this study, Massachusetts had already implemented health reform including small group market rating regulations that are very similar to the ACA's. While the Massachusetts experience could provide the opportunity to evaluate the effects of such provisions on employer self-insurance rates using other data sources, the KFF/HRET data are not comprehensive enough to permit any evaluation of a single state.

employers, assuming that such measurement error attenuates the magnitude of the coefficient estimate of the impact of rating regulations and employer-level health risk on the employer's decision to self-insure. However, because our measure of risk is driven solely by the variation in risk across industries (and not within a given industry), we also consider an additional alternative categorization of states into "limited rating" versus "experience rating" as a sensitivity analysis, in which we focus solely on a state's prohibition of the use of industry in rating for a cleaner comparison applicable to our available measure of risk. Specifically, we restrict our sample to include only those employers located in states where worker health status is an allowable rating factor, to thereby directly focus on the prohibition of the use of industry as an additional rating factor. For this specification check limiting the analysis to this subset of states in which health status is an allowable rating factor, the comparison is essentially the "limited rating" states where rating on industry is prohibited (shown in the lightest grey in Figure 1 above) versus the "experience rating" states where rating on industry is permitted (shown in white in Figure 1).

IV. Empirical Model and Data

Empirical Overview

We run an employer-level linear probability model as an OLS regression for the probability of self-insurance as a function of an indicator for industry-level relative health risk, an indicator of whether the employer is located in a state with limited rating, an indicator of whether the employer is subject to small group market regulations (based on size of the employer), and interactions of these three indicator measures. In most states, employers with 25 to 50 workers comprise the treatment group subject to small group market regulations and employers with 51 to 100 workers serve as the unregulated control group (though a few states use a different threshold than 50). We identify the relationship between relative health risk and being subject to limited rating with self-insurance by this three-way interaction term. Besides varying the categorization of limited rating states (described above), we also include a number of specification checks to exclude certain employers from the sample, vary the operationalization of the risk measure, and incorporate both the employer offer and self-insurance decisions jointly into the model.

The first specification check, as suggested above, narrows the sample to the subset of states that allow experience rating by health status to test for differences in the impact of solely limiting the employer's industry as an allowable rating factor. The second specification check excludes the subset of employers near the fifty-employee size threshold, as Kapur et al. (2012) find evidence suggesting that the implementation of small group market rating regulations in the 1990s led to employers increasing the size of their workforce to avoid being subject to these regulations.⁷ We drop employers with up to ten employees above or below the threshold. The third specification check uses a continuous measure of industry-

⁷As noted above, Kapur et al. (2012) find evidence of these workforce increases only for employers that were very near the 50-worker size threshold. While their data are from an earlier timeframe and they do not evaluate whether such growth occurred selectively in employers with relatively lower risk workers, any selective growth of relatively healthier employers to move out of the regulated market would likely bias us against finding an effect of limited rating on self-insurance among relatively healthier employers remaining under the size threshold. Nonetheless, we test the sensitivity of our results to this potential employer size response by excluding employers around this size threshold from our sample.

level health risk rather than the dichotomous measure. The fourth specification check omits the underlying independent effect of the health risk measure to allow for including a set of industry fixed effects into the model. The fifth specification check employs a Heckman selection-corrected model to account for potential selection among employers that offer insurance coverage, where the first-stage model predicts an employer's offer decision based on additional variables of local labor market conditions, Medicaid generosity, and availability of charity care.

Data

We obtain employer-level data on self-insurance, employer size, state, industry, and other characteristics from a restricted-use version of the KFF/HRET Employer Health Benefits Survey, a nationally-representative survey of firms (rather than establishments). The restricted-use version of this dataset enables us to merge on state-level and local market-level factors related to small group market regulations and other healthcare market characteristics. We pool data from 2008 through 2013 and restrict our analyses to employers with 25–100 workers that offer coverage, using employers subject to state small group market regulations as the treatment group and those slightly larger than the maximum size affected by small group market rating regulations as a control group. In most cases, employers with 50 or fewer workers are subject to state small group market rating regulations, though several states cap the maximum size slightly lower; we categorize employers as affected by small group market rating regulations accordingly. We do not include employers with less than 25 workers as self-insurance for them is quite uncommon, and we do not include employers with more than 100 workers because we want our control group to be as similar to smaller employers as possible.

We construct industry-level measures of mean health risk from the MEPS-HC data from 2003 through 2010. To construct this health risk index, we evaluate health risk among privately-insured workers using the MEPS-HC risk adjustment score file (HC-140), which provides normalized risk scores for MEPS-HC respondents, including both a DxCG diagnosis-based risk score using the set of Hierarchical Condition Clusters (HCC) and a demographic-based risk score. (The MEPS HC-140 risk score file is only available for years 2003 through 2010.) Similar to Pauly and Herring (2000; 2007), we construct an individual-level measure of “condition-related health risk” as the ratio of an individual's normalized risk score based on age, gender, and presence of HCCs to the individual's normalized risk score based only on age and gender. The purpose behind this ratio is to create a measure of health spending driven only by chronic conditions and not either age or gender, as insurers are still able to use age and gender under most limited rating schemes in place during the study period. We then construct industry-level weighted averages of this index for MEPS-HC respondents that are privately-insured workers in establishments with 25 to 100 workers.^{8,9} We interpret this health risk index as an industry-level measure of predictable condition-

⁸As noted above, an “establishment” is a single location whereas a “firm” could include multiple establishments under common ownership or control. The MEPS-HC includes only information about the number of employees at the respondent's establishment rather than the firm. While many small employers have only one location and therefore the firm and the establishment are identical, due to data limitations our data used to construct this industry-level risk measure therefore also include workers at small establishments that are part of larger firms. However, because the KFF/HRET data do include number of employees at the firm level, the data for our primary analysis do not face this limitation.

related risk that can be measured with information on an employer's industry above and beyond that of age and gender. Our underlying assumption here is that a private insurer in a state allowing experience rating would be able to incorporate this information into lower or higher premium quotes to a fully-insured employer, and an employer would also be able to use this information to evaluate its own expected costs of self-insuring. We dichotomize industries into low or high risk according to whether its health risk index is less than or greater than 1.0, respectively. Our motivation for focusing on a dichotomous measure is to produce regression results that are analogous to an initial set of unadjusted triple-difference mean rates of self-insurance (presented in the next section); however, we also use the continuous measure created here as a specification check. Because of our interest in whether *low-risk* employers are more likely to self-insure, we adjust this continuous index to measure lower risk in this specification check by using negative z-scores of this constructed health risk index, such that an increase in this measure means that the employer is *more* low risk.

We include several control variables in the model (as well as region and year indicators) which may be expected to affect the probability of the employer self-insuring. Employer-level controls include the number of employees, whether the employer has unionized workers and/or multiple locations, and the percentage of low-income and part-time workers, all of which we obtain directly from the KFF/HRET data. Other control variables include state-level measures of an index of high cost benefit mandates, the premium tax rate, and indicators for whether the state regulates stop-loss policies and has a high risk pool. We also include as controls the level of concentration in the local insurance and hospital markets.

Because employers may be more likely to self-insure due to the ERISA exemption from state benefit mandates on fully-insured policies, we construct an index of the number of "high cost" benefit mandates in each year from the Council for Affordable Health Insurance (CAHI) "Mandates in the States" publications, where "high cost" mandates are defined by CAHI as those with associated healthcare spending as more than one percent of the overall premium. Because employers may be more likely to self-insure to avoid state premium taxes (i.e., an assessment on all fully-insured policies), we obtain these tax rate data from the 2013 NAIC Compendium of State Laws on Insurance Topics (Compendium; Volume II). Because employers may be more likely to self-insure when low-attachment stop-loss policies are more widely available (Eibner et al., 2011; Buettgens and Blumberg 2012), we include data on the existence of state regulations limiting the sale of stop-loss insurance policies from the NAIC Compendium (Volume III).¹⁰ Because employers may be less likely to self-insure if a

⁹We assessed the sensitivity of our results to instead constructing industry-level risk indices from the MEPS-HC for workers in establishments with 25 to 50 workers separately from those with 51 to 100 workers. The two sets of industry-level health risk indices are highly correlated, and the results are qualitatively unchanged if we instead base our analyses on these industry-establishment size-level health risk indices.

¹⁰During the time period included in this study, 18 states had adopted regulations based on or similar to the NAIC Stop Loss Insurance Model Act limiting the sale of low-attachment stop-loss policies to small groups (NAIC 1995). However, the parameters of this 1995 version of the Model Act are quite low and had not been updated to keep pace with medical inflation (such as minimum individual and aggregate attachment points of \$4,000 and \$20,000, respectively) and therefore may not represent a real binding constraint on the sale of low-attachment stop-loss policies during the time period of our study. While the NAIC recently recommended widespread adoption of an updated version of the Act with increased attachment points in response to ACA-fueled concern related to an increased likelihood of self-insurance among smaller employers (NAIC Actuarial Subgroup 2012), during the study period no states had as yet enacted these updated regulations. Thus, while we include an indicator for the presence of these prior regulations, their effect may not be indicative of the potential effect of these newer laws with more meaningful parameters.

state high risk pool (i.e., a state-run health plan covering medically-uninsurable residents) lowers the premium for those covered with employment-based insurance, we incorporate data for their presence from the State Health Facts website. Because employers may be more likely to self-insure in more concentrated insurance markets with higher insurer mark-ups, we include the one-year lagged Herfindahl-Hirschman Index (HHI) (scaled to range from 0 to 10) of the local fully-insured insurance market constructed at the Core-Based Statistical Area with Metropolitan Divisions therein (CBSA) using data from the HealthLeaders-InterStudy census of private insurers. Finally, because employers may be more or less likely to self-insure in more concentrated hospital markets with higher hospital prices, we include the HHI (also scaled from 0 to 10) of the hospital market constructed based on private pay inpatient discharges aggregated to the system level within the CBSA using data from the American Hospital Association annual survey data. While these control measures, particularly the insurance and hospital market concentration measures, may be endogenous (e.g., more employers self-insuring could lead to a higher degree of concentration in the local fully-insured market), we include them in our model in an effort to control for important potential confounders that could be correlated with employer self-insurance and do not interpret our findings as their causal impact on employer propensity to self-insure.

Summary Statistics

Table 1 provides the summary statistics for the full set of employers included in our sample with between 25 and 100 workers; the first column includes all employers, while the second and third columns stratify the sample according to whether the employer is located in a state in which small group market premiums are subject to limited rating or experience rating, respectively. All means are weighted using employer-level survey weights obtained from the KFF/HRET survey data. There are 1,564 employers in the total sample including both small group market employers and control employers; 818 of these employers are subject to small group market regulations in their state (i.e., treatment employers) while the remaining 746 serve as the unaffected control employers above the small group threshold. Nearly two-fifths of the employers (N=609) are located in states that limit allowable rating on industry, health, or both (of these, 54% are small group employers), while the remaining three-fifths (N=955) are located in states that permit experience rating (of these, 51% are small group employers). The overall mean employer size is 45 workers, while the mean size of employers subject to small group market regulations is 35 workers and the mean size of control employers is 70 workers. Self-insurance rates are quite low among employers of this size, as overall 10.1% of employers are self-insured, with 9.1% of small group market employers and 12.6% of larger control employers self-insuring.

Table 2 provides information on mean DxCG risk scores, actual spending, and our constructed health risk index across industries. This sample of MEPS-HC respondents includes privately-insured workers at establishments with 25 to 100 workers. Table 2's first column displays mean DxCG risk scores based on age, gender, and the presence of HCCs, the second column displays mean risk scores based only on age and gender, and the third column displays mean actual spending in 2011 dollars. The fourth column then displays the mean health risk index (i.e., the ratio of the first to the second column at the individual-respondent level), and this table sorts the industries by this health risk index from low to

high. Overall, the measures highlight both the variability in the health risk index across industries, as well as the fact that, as expected, there is a strong correlation between all three of these risk scores and actual spending levels. Moreover, it is also clear that some of this variation is due to differences in the distribution of the age and gender of workers across these industries, and so the health risk index we construct is indeed necessary to isolate the effect of allowing premiums to adjust for additional health-risk related information in a scenario where age and gender have already been incorporated into the premium. In our primary model specifications, we categorize employers using a “low risk” binary variable, where we define employers as low risk if this constructed health risk measure is less than 1.0. For the specification check using this continuous health risk measure, we transformed the measure to negative z scores so that a change from 0 to 1 represents a one standard deviation increase in being *more* low risk.

Empirical Model

We evaluate the relationship between employer self-insurance, limited allowable rating and relative health risk using a differences-in-differences-in-differences (DDD) framework analogous to Gruber (1994). Prior to estimating the triple-interaction regression results, we first illustrate the unadjusted relationship between health risk, limited rating, and employer self-insurance in Table 3. Each cell shows the average rate of self-insurance for the group of employers identified as observed in the data.

Table 3 reveals several noteworthy patterns consistent with our hypothesis and identification strategy. First, the bottom portion of the table shows that there are relatively small differences in average rates of self-insurance among larger employers with 51 to 100 workers that form the unaffected control group – that is, self-insurance is relatively similar across control employers in lower versus higher risk industries and limited rating versus experience rating states. Second, within the upper portion of the table for employers in the small group market, the unadjusted patterns of self-insurance are very consistent with our hypothesis – that is, we observe noticeably higher rates of self-insurance among small, low risk employers located in states with limited rating compared to small, low risk employers located in states with experience rating (i.e., 13.3% vs. 8.4%). Finally, the average rate of self-insurance among small, high-risk employers located in risk-rated states is also quite similar to the average self-insurance rates among the high-risk control employers (i.e., 11.6% vs. 12.0%), which is consistent with our hypothesis that small employers located in states with experience rating do not face a strong pooling incentive. Overall, the unadjusted DDD estimate in Table 3 suggests that the relative rate of self-insurance is 17.3 percentage points higher for employers in lower risk industries relative to higher risk industries when they are subject to the small group market’s limited allowable rating regulations.

In order to control for potential confounders to this unadjusted estimate, we use a DDD linear probability regression model with the following form:

$$(1)$$

where SI_j is the probability of self-insurance for employer j , LOW_j is an indicator of whether the employer is in a low risk industry, SMG_j is an indicator of the employer being subject to small group market regulations (by nature of size), and LTR_j is an indicator for whether the employer is located in a limited rating state. Our coefficient of interest is ω for the triple interaction term, and we use a linear probability model specification rather than a probit model specification due to the complications of interpreting the DDD coefficient in nonlinear models (Ai and Norton 2003; Karaca-Mandic et al. 2012; Puhani 2012).

The model also includes controls for employer-level characteristics (X_j) including number of employees, whether the employer has unionized workers and multiple sites, and the percent of low income and part-time workers. We also control for market-level characteristics (M_j) including an index of high cost benefit mandates, premium tax rate, indicators for whether there are regulations on the sale of stop-loss policies and a high risk pool in the state, and insurance and hospital market concentration defined at the CBSD-level as described above. The model also includes region (R_j) and year (T_j) controls, ε_j and is the random error. We estimate clustered robust standard errors at the state level, and we incorporate employer-level weights obtained from the KFF/HRET data.

Specification Checks

As noted above, we also present results from several sensitivity analyses: one with the subset of employers located in states that permit experience rating by health to better isolate the effect of prohibiting industry as a rating factor, one excluding the subset of employers that have 41–60 workers to account for any changes in employment to move into or out of the small group market, one using a continuous measure of low risk, one that includes industry-level fixed effects but omits the main effect of the LOW_j risk index measure, and one from a joint model of offer and self-insurance decisions.

Because the risk measure is constructed at the industry level, we cannot include industry-level fixed effects in the main specification of the model. However, to account for potential differences in patterns of self-insurance (unrelated to risk or rating regulations) across industries, we include a specification check which omits the main effect of the low risk indicator (ϕLOW_j) and adds industry fixed effects to the model (ϕI_j). While difficult to interpret directly, the coefficient on these industry fixed effects captures both the direct effect of an industry's health risk as well as any additional industry-level factors affecting self-insurance. However, the interacted LOW_j terms capture the effects attributable to variation in relative health risk across industries in this model.

Regarding the selection-corrected model, while 89% of the employers in our sample offer insurance coverage,¹¹ our evaluation of employer self-insurance conditional on offering raises the possibility that these conditional estimates may be biased estimates of the overall relationship between our predictors of interest and the self-insurance decision if there are

¹¹The 2013 MEPS Insurance Component (MEPS-IC) survey of establishments finds that 77.2% of establishments in firms with 25 to 99 employees offer insurance coverage (AHRQ 2013). However, the MEPS-IC is an establishment-level rather than firm-level survey, so the results are not directly comparable to the KFF/HRET data for firms. It is possible that firms with multiple smaller establishments are less likely to offer insurance coverage, which would therefore result in a lower average rate of offering coverage. Nonetheless, we note the discrepancy between these two data sources.

unobservable characteristics related to both the offer and self-insurance decision (Heckman 1979). We attempt to address this concern using the full set of employers in the survey with 25 to 100 workers, including those that do not offer health insurance coverage (N=1,754), to examine a Heckman selection-corrected model, where the first stage model predicts employer offer and the second stage model predicts employer self-insurance, correcting for selection into offering insurance.

Because the Heckman selection-correction model requires identification of the first stage (i.e., the offer decision) that is exogenous to the second-stage decision (i.e., the self-insurance decision), we include three additional predictors of employer offer that we expect to be unrelated to the employer decision to self-insure conditional on offering. These are the county unemployment rate from the Bureau of Labor Statistics' Local Area Unemployment Statistics, the presence of a public hospital in the county from the Area Health Resource File, and a measure of Medicaid generosity for children six years of age or older, expressed as a factor of the Federal Poverty Level, constructed from data on Medicaid and CHIP eligibility from the KFF State Health Facts website. Consistent with prior work, we hypothesize that employers will be less likely to offer coverage with less competitive labor markets (i.e., higher unemployment), greater availability of charity care (Herring 2005), and expanded Medicaid coverage (Cutler and Gruber 1996).

V. Results

Table 4 presents results from the main DDD specification of the linear probability model of employer self-insurance as a function of the employer being low risk, located in a limited rating state, subject to small group market regulations, and their interactions. The coefficient on the three-way interaction term is 0.176 ($p=0.077$), indicating a significantly higher probability of self-insurance among employers in low risk industries that are located in limited rating states and subject to small group market rating regulations, consistent with our expectations.

To improve the interpretability of these results, we present predicted probabilities of self-insurance in Table 5, in a format consistent with the unadjusted DDD self-insurance rates shown in Table 3. We compute these predicted probabilities (and their standard errors) at observed values for control variables using Stata's "margins" command. Among the small group market employers, the average change in the predicted probability of self-insurance (conditional on offering insurance) for moving from experience rating to limited rating differs between low-risk and high-risk employers by 15.6 percentage points, with lower risk ones increasing their self-insurance rate by 5.7 percentage points and higher risk ones decreasing their self-insurance rates by 9.9 percentage points. Among the control employers, the average change in the predicted probability of self-insurance for moving from experience rating to limited rating differs between low and high risk employers by only 2.1 percentage points, with low-risk ones having *lower* marginal effects in the states limiting allowable rating in the small group market. Combining these patterns together, the difference between low and high risk employers in the change in the predicted probability that an employer self-insures when subject to limited rating differs between the small group and control employers by a total of 17.7 percentage points. Consistent with our hypotheses, this reflects both an

increased probability of self-insurance among lower risk employers (equal to 9.1 percentage points overall, as the difference between 5.7 and -3.4) and a decreased probability of self-insurance among higher risk employers (equal to -8.6 percentage points overall, as the difference between -9.9 and -1.3), when subject to limited allowable rating.

Results from Specification Checks

Table 6 presents the main results from the linear probability models for the main independent variables for the first four of our five sensitivity analyses. Column 1 simply repeats the results for these variables from Table 4. The results in Column 2 are for the subsample of states where experience rating on health is allowed and suggest that employers in industries with lower health risk and subject to state reforms prohibiting rating by industry alone have a higher probability of self-insuring even when premiums can be adjusted to some extent for health status of the employers' workers. The results in Column 3 exclude employers with 41 to 60 workers; while not statistically significant, the results are similar in magnitude when excluding employers near the size threshold of 50 workers which may selectively hire above or below the threshold in response to community rating regulations.¹² The results in Column 4 suggest that our results are robust to an alternative definition of low risk employers as a continuous variable; however, the magnitude of this effect is not directly comparable to the other models because the results reflect a one standard deviation increase in the mean health risk index measure (rather than the binary indicator which indicates the difference between low and high risk). The results in Column 5 suggest that our results are also robust to including industry-level fixed effects and omitting the main effect of the low risk term.

Finally, we evaluate the sensitivity of our results to modeling the employer's joint decision to offer insurance and self-insure rather than the decision to self-insure conditional on offering insurance. Table 7 presents results from a Heckman selection-corrected linear probability model, where we jointly estimate the offer decision by also including the local unemployment rate, presence of a public hospital, and generosity of Medicaid benefits. Column 1 simply repeats our main findings presented in Table 4, Column 2 presents estimates from the second stage (i.e., the self-insurance decision) of the selection-corrected model, and Column 3 presents estimates from the first stage (i.e., the offer decision) of this selection-corrected model.

We find that the magnitude and statistical significance of the marginal effect on the DDD term for the self-insurance decision are virtually unchanged in the conditional versus selection-corrected model. However, we do find a significant negative coefficient on the DDD term for the first-stage offer decision, suggesting that, in addition to being more likely to self-insure, lower risk small employers that face premiums with stronger rating limitations are also less likely to offer coverage in the first place. However, the diagnostics of the bivariate probit suggest that the correlation of residuals in the two equations is limited; the rho estimate is -0.111 (Wald test = 0.92, $p=0.338$), failing to reject the null hypothesis that

¹²We also exclude from this specification employers located in states whose maximum size for small group market regulations to apply is less than fifty workers, as employers located in these states are likely to face a different range around which this potential employer size distortion may apply. Results are qualitatively unchanged if these employers are included in this model.

the residuals of the two equations are uncorrelated. These results suggest that, while selection into offering insurance is also likely to be related to relative health risk and limited rating, this relationship does not result in a bias in our estimates of the conditional relationship between relative health risk and limited rating and the employer's decision to self-insure.

Taken together, our finding of lower risk employers facing premiums with stronger rating limitations being more likely to self-insure is robust to a number of sensitivity analyses.

Limitations

One limitation to our analysis is that the lack of employer-level data on worker health status in these KFF/HRET data weakens our ability to directly assess the potential interaction between prohibiting insurer rating on health status and industry on employer self-insurance. Another related limitation is that the MEPS-HC data include information only on establishment size rather than employer size, so our construction of the health risk index could include workers at small establishments that are part of larger employers.

Additionally, the cross-sectional nature of our analyses limits our ability to infer the causal relationship between the degree of limited rating in the small group market, the relative health risk of the employer's industry, and employer self-insurance decisions. State small group market rating regulations were implemented primarily in the 1990s and have not changed in recent years (prior to the ACA), so we are unable to evaluate the effects of within-state changes in these regulations during a recent timeframe for which we have these representative data for employer self-insurance decisions. While not a perfect control group, we believe that the inclusion of slightly larger employers which are not subject to small group market rating regulations provides additional strength to our study design. Nonetheless, if these slightly larger control employers differ from small group market employers in ways that differ across states and industry (in a way that is correlated to presence of regulations limiting rating variation), this could bias our estimates of the impact of limited rating on employer self-insurance. Moreover, we are unable to evaluate whether employers respond to limited rating regulations by selectively hiring employees based on their health status.

V. Conclusion

The ACA imposes adjusted community rating regulations on the small group market, which are expected to affect a growing number of employers and policyholders. Because employers with relatively healthier workers can offer health benefits yet avoid these adjusted community rating rules by opting to self-insure, the imposition of the ACA's stronger adjusted community rating regulations is likely to have differential effects on employer decisions to self-insure based on the relative health risk of the employer. We find empirical evidence supporting this practice. As a result, selective self-insurance of lower-risk employers could indeed result in adverse selection and higher premiums among plans in the fully-insured small group market. Moreover, low employer participation and/or an expectation that the small group market will be adversely selected may result in low insurer participation, which could have broader ramifications for the degree of competition in the

local insurance market (which could have independent effects on premiums) and the number of choices available to workers selecting plans in these markets.

Historically, rates of self-insurance among small group market employers have been low. However, anecdotal reports of recent increased interest in self-insurance and marketing of related products to small employers suggest that an increase in the rates of self-insurance among these smaller employers is likely. Moreover, the ACA's adjusted community rating provisions are generally much stronger than the state laws analyzed in this study, and therefore our findings may represent a lower bound of the ACA's likely effects of adjusted community rating on employer self-insurance. Thus, to the extent that state and federal officials wish to maintain robust participation in the small group market and achieve cross-subsidization of premiums from lower risk to higher risk employers, policy actions such as stricter regulation of the sale of low-attachment stop-loss policies to small employers and/or regulating re-entry of employers from the self-insured market back into the fully-insured community rated market could be considered.

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Summary Statistics for the Full Sample of Employers Offering Insurance with Between 25 and 100 Workers, and by States with Limited Rating and Experience Rating

Table 1

	(1)		(2)		(3)	
	Full Sample:		Limited Rating States:		Experience Rating States:	
	Mean	Std Dev	Mean	Std Dev	Mean	Std Dev
<i>Main Indicators and Index:</i>						
Self Insured Offer	10.1%		9.2%		10.9%	
Small Group	70.3%		72.2%		68.9%	
Limited Rating	43.1%		100.0%		0.0%	
Low Risk	60.2%		58.9%		61.3%	
Health Risk Index	0.990	0.057	0.989	0.058	0.991	0.055
<i>Employer-Level Controls:</i>						
Employer Size	45.2	19.7	45.1	19.8	45.2	19.7
Multisite	28.3%		31.2%		26.2%	
Percent Low Income	13.7	21.1	12.3	19.9	14.8	21.9
Percent Part-Time	15.0	21.3	14.1	19.9	15.7	22.3
Union	6.6%		6.0%		7.1%	
Construction	9.3%		10.1%		8.6%	
Transportation & Utilities	4.7%		5.6%		4.0%	
Information	2.4%		1.6%		3.0%	
Manufacturing	10.3%		12.1%		8.9%	
Financial Activities	4.9%		4.5%		5.3%	
Leisure & Hospitality	3.1%		1.7%		4.2%	
Professional & Business Services	25.5%		23.3%		27.3%	
Education, Health & Social Services	19.2%		17.1%		20.9%	
Wholesale & Retail Trade	14.8%		18.5%		12.0%	
Public Admin. & Government	2.2%		1.7%		2.5%	
Other Services	3.5%		3.8%		3.3%	
<i>Market-Level Controls:</i>						
Mandated Benefit Index	9.6	4.5	10.4	4.7	8.9	4.2

	(1)		(2)		(3)	
	Full Sample:		Limited Rating States:		Experience Rating States:	
	Mean	Std Dev	Mean	Std Dev	Mean	Std Dev
Premium Tax Rate	0.9	1.0	0.9	1.0	1.0	1.0
Stop-loss Regulations Indicator	46.1%		52.0%		41.7%	
High Risk Pool Indicator	63.3%		63.6%		63.1%	
Insurance Market HHI	3.40	1.43	3.00	1.34	3.62	1.46
Hospital Market HHI	3.34	2.63	3.15	2.53	3.48	2.69
Regional Controls:						
South	29.4%		10.6%		43.7%	
Northeast	22.9%		35.7%		13.1%	
Midwest	24.2%		10.7%		34.5%	
West	23.5%		43.0%		8.7%	
Year Controls:						
Year 2008	17.3%		16.9%		17.7%	
Year 2009	17.3%		16.1%		18.3%	
Year 2010	18.0%		20.3%		16.3%	
Year 2011	16.6%		15.9%		17.2%	
Year 2012	15.4%		16.4%		14.6%	
Year 2013	15.2%		14.4%		15.8%	
N	1,564		609		955	

Notes: Employer-weighted means and standard deviations for the analytic sample from the 2008–2013 KFF/HRET Employer Health Benefits Survey. Percentages may not sum to 100% due to rounding.

Table 2

Industry DxCG Risk Scores, Mean Annual Spending, and Resulting Condition-Related Spending Indices for Privately-Insured Workers

Industry	Risk Score, Age/Gender/HCCs	Risk Score, Age/Gender Only	Actual Spending (2011\$)	Health Risk Index
Construction	0.805	0.918	\$2,262	0.886
Transportation & Utilities	1.072	1.179	\$3,132	0.912
Information	0.975	1.022	\$2,132	0.932
Manufacturing	0.992	1.075	\$2,822	0.952
Financial Activities	1.093	1.164	\$3,125	0.965
Leisure & Hospitality	0.855	0.895	\$2,438	0.971
Professional & Business Services	0.991	1.035	\$2,544	0.996
Education, Health & Social Services	1.252	1.265	\$3,751	1.019
Wholesale and Retail Trade	1.040	1.031	\$2,656	1.026
Public Administration & Government	1.345	1.230	\$4,058	1.119
Other Services	1.173	1.036	\$3,469	1.152

Notes: Weighted industry-level mean risk scores and expenditure data calculated from Medical Expenditure Panel Survey Household Component survey data pooled from 2003–2010. Respondent weights are obtained from the MEPS-HC. Actual spending is reported in 2011 dollars. Risk scores are obtained from the MEPS-HC Risk Adjustment Score File (HC-140) and represent risk scores based on age, gender, and hierarchical condition clusters (HCCs) and age and gender only. The health risk index is the industry-level weighted-mean of the ratio of the HCC-based risk score to the age/gender only risk score constructed at the individual respondent-level for privately-insured workers in establishments with 25–100 workers; we interpret this as a measure of industry mean relative health risk.

Table 3

Unadjusted DDD Estimates of the Impact of Health Risk and Rating Regulations on Employer Self-Insurance

Treatment: Small Group Employers	High Risk	Low Risk	Decrease in Risk
	1.9%	13.3%	
Limited Rating States	(0.011)	(0.041)	11.4pp
	11.6%	8.4%	
Experience Rating States	(0.032)	(0.029)	−3.3pp
Introducing Limited Rating	−9.8pp	4.9pp	
Difference In Difference			14.7pp
Control: 51–100 Employers	High Risk	Low Risk	Decrease in Risk
	11.4%	11.3%	
Limited Rating States	(0.043)	(0.028)	−0.1pp
	12.0%	14.5%	
Experience Rating States	(0.035)	(0.030)	2.5pp
Introducing Limited Rating	−0.6pp	−3.2pp	
Difference In Difference			−2.6pp
Difference In Difference in Difference			17.3pp

Notes: Cells contain self-insurance rates (and standard errors) for the group of employers identified. High-risk and low-risk employers are those in industries with a health risk index above and below 1.0, respectively. Limited rating states and experience rating states are defined in the text. The difference-in-difference-in-difference estimate is the difference between the upper panel's difference-in-difference estimate and the lower panel's difference-in-difference estimate.

Table 4

Primary Results from the DDD Linear Probability Model for Employer Self-Insurance

	Coefficient	Standard Error	P Value
<i>Main Indicators and Index:</i>			
Low Risk	0.015	0.047	0.759
Small Group	0.003	0.059	0.963
Limited Rating	−0.013	0.062	0.828
Low Risk*Small Group	−0.059	0.062	0.352
Low Risk*Limited Rating	−0.020	0.073	0.782
Small Group*Limited Rating	−0.085	0.065	0.192
Low Risk*Small Group*Limited Rating	0.176	0.098	0.077
<i>Employer-Level Controls</i>			
Employer Size	0.000	0.001	0.743
Multisite	−0.036	0.020	0.083
Percent Low Income	−0.088	0.043	0.048
Percent Part-Time	−0.050	0.044	0.263
Union	0.033	0.055	0.551
<i>Market-Level Controls</i>			
Mandated Benefit Index	−0.003	0.002	0.190
Premium Tax Rate	0.002	0.010	0.832
Stop-loss Regulations Indicator	0.020	0.022	0.365
High Risk Pool Indicator	0.022	0.028	0.434
Insurance Market HHI	0.003	0.008	0.721
Hospital Market HHI	−0.004	0.004	0.284
<i>Regional Controls (Results Not Shown)</i>			
<i>Year Controls (Results Not Shown)</i>			
N	1,564		
R ²	0.046		

Notes: Results are from an employer-level linear probability regression of self-insurance on the employer being in a low risk industry, located in a limited rating state, and subject to small group market regulations. The model includes employer-level survey weights and clustered robust standard errors at the state-level.

Table 5

Adjusted DDD Estimates of the Impact of Health Risk and Rating Regulations on Predicted Probabilities of Employer Self-Insurance

Treatment: Small Group Employers	High Risk	Low Risk	Decrease in Risk
	2.5%	13.7%	
Limited Rating States	(0.013)	(0.037)	11.2pp
	12.4%	8.0%	
Experience Rating States	(0.038)	(0.025)	-4.4pp
Introducing Limited Rating	-9.9pp	5.7pp	
Difference In Difference			15.6pp
Control: 51-100 Employers	High Risk	Low Risk	Decrease in Risk
	10.8%	10.2%	
Limited Rating States	(0.060)	(0.036)	-0.6pp
	12.1%	13.6%	
Experience Rating States	(0.047)	(0.033)	1.5pp
Introducing Limited Rating	-1.3pp	-3.4pp	
Difference In Difference			-2.1pp
Difference In Difference in Difference			17.7pp

Notes: Cells contain predicted probabilities of self-insurance (and standard errors) for the group of employers identified computed at observed values of other control variables using Stata's margins command. High-risk employers and low-risk employers are defined according to the employers' industry, as defined in the text. Limited-rating states and experience-rating states are defined in the text. The difference-in-difference-in-difference (DDD) estimate is the difference between the upper panel's difference-in-difference estimate minus the lower panel's difference-in-difference estimate.

Table 6

Main Results from Sensitivity Analyses

	(1)	(2)	(3)	(4)	(5)
<i>Main Indicators and Index</i>	Main Specification	Subsample of States Risk Rated on Health	Subsample Excluding Employers with 41–60 Workers	Replacing with Continuous Health Measure	With Industry Dummies (No Low Risk Main Effect)
Low Risk	0.015 (0.047)	0.008 (0.049)	0.005 (0.061)	−0.012 (0.038)	n/a
Small Group	0.003 (0.059)	−0.002 (0.065)	−0.031 (0.080)	−0.030 (0.040)	0.014 (0.057)
Limited Rating	−0.013 (0.062)	0.030 (0.065)	−0.090 (0.069)	−0.018 (0.039)	−0.003 (0.060)
Low Risk * Small Group	−0.059 (0.062)	−0.056 (0.063)	−0.046 (0.081)	−0.011 (0.041)	−0.070 (0.064)
Low Risk * Limited Rating	−0.020 (0.073)	−0.077 (0.058)	−0.011 (0.085)	−0.005 (0.047)	−0.056 (0.072)
Small Group * Limited Rating	−0.085 (0.065)	−0.169*** (0.054)	−0.022 (0.065)	0.007 (0.049)	−0.096 (0.061)
Low Risk * Small Group * Limited Rating	0.176* (0.098)	0.267** (0.101)	0.172 (0.119)	0.103* (0.057)	0.212** (0.098)
N	1,564	1,206	1,082	1,564	1,564
R ²	0.046	0.059	0.055	0.069	0.071

Notes: Coefficients are from five separate employer-level linear probability regressions of self-insurance on the employer being low risk, located in a limited rating state, and subject to small group market regulations. The first column presents results from the primary specification (shown in Table 4), the second column is restricted to the subset of states that are risk rated on health, the third column excludes employers with 41 to 60 workers, the fourth column uses the continuous measure of low health risk instead of the dichotomous measure, and the fifth column includes industry-level fixed effects and omits the main direct effect of the low risk measure. Column 4's results for the continuous low-risk measure represent a one standard deviation increase in the mean health risk index measure. All models include employer-level survey weights and clustered robust standard errors at the state-level (shown in parenthesis).

Statistical significance:

* indicates a p-value < 0.1;

** indicates a p-value < 0.05;

*** indicates a p-value < 0.01.

Table 7

Main Results from a Heckman Selection-Corrected Linear Probability Model

	(1)	(2)	(3)
	Conditional Model: Main Specification for Self- Insurance	Selection- Corrected Model: Second Stage for Self- Insurance	Selection- Corrected Model: First Stage for Offering Insurance
<i>Main Indicators and Index</i>			
Low Risk	0.015 (0.047)	0.012 (0.048)	0.166 (0.275)
Small Group	0.003 (0.059)	0.001 (0.059)	0.022 (0.287)
Limited Rating	-0.013 (0.062)	-0.017 (0.061)	0.115 (0.297)
Low Risk * Small Group	-0.059 (0.062)	-0.057 (0.062)	0.087 (0.346)
Low Risk * Limited Rating	-0.020 (0.073)	-0.019 (0.073)	1.154 * (0.648)
Small Group * Limited Rating	-0.085 (0.065)	-0.084 (0.064)	0.180 (0.239)
Low Risk * Small Group * Limited Rating	0.176 * (0.098)	0.176 ** (0.097)	-1.287 * (0.704)
N	1,564	1,564	1,754
R ²	0.046	n/a	n/a

Notes: Marginal effects from models for self-insurance on the employer being low risk, located in a state with limited rating, and subject to small group market regulations. The first column presents results from the primary conditional linear probability specification (shown in Table 4), the second column presents results from the second stage (i.e., the self-insurance decision) from a Heckman selection-corrected model, and the third column presents results from the first stage (i.e., the employer offer decision) from this selection-corrected model. All models include employer-level survey weights and clustered robust standard errors at the state-level (shown in parenthesis).

Statistical significance:

* indicates a p-value < 0.1;

** indicates a p-value < 0.05;

*** indicates a p-value < 0.01.