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The relationship between the markets for health insurance and medical malpractice insurance

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ABSTRACT

This article evaluates the interdependence of medical malpractice insurance markets and health insurance markets. Prior research has addressed the performance of these markets, individually, without specifically quantifying the extent to which they are linked. Increasing levels of health insurance losses could increase the scale of potential malpractice claims, boosting medical malpractice losses, or could embody an improvement in medical care quality, which will reduce malpractice losses. Our results for a state panel data set from 2002 to 2009 demonstrate that health insurance losses are negatively related to medical malpractice insurance losses. An additional dollar of health insurance losses is associated with a $0.01–$0.05 reduction in medical malpractice losses. These findings have potentially important implications for assessments of the net cost of health insurance policies.

KEYWORDS:

Health insurance | medical malpractice | health reform | Affordable Care Act | health care

JEL CLASSIFICATIONS:

I13 | G22 | K13

Disclosure statement

No potential conflict of interest was reported by the authors.

Notes

[1] Kessler (2011) provides an overview of the malpractice system that includes statistics on payouts and a discussion of the intent of tort reform laws.

[2] Medical malpractice refers to the legal liability incurred by physicians and other medical professionals when patients sustain injuries while receiving medical care. More specifically, if a physician deviates from normal standards of care, as determined by the prevailing tort laws of a state, and injures a patient, the medical professional is said to have committed medical malpractice.

[3] A tort reform measure places restrictions on the amount of damages a victim can collect for injuries arising out of a tort, such a medical malpractice. There are several types tort reform measures enacted in various states and the four most common measures considered in the insurance economics literature are caps on noneconomic damages, caps on punitive damages, reforms to joint and several liability rules, and reforms to collateral source rules (e.g. Viscusi and Born 2005; Born, Viscusi, and Baker 2009).

[4] See Robinson (2001) for a review of the various forms of physician payment and analysis of physician incentives to provide the appropriate level of care, accept risk, and maintain productivity. See also Avraham and Schanzenbach (2013) for a discussion of physician incentives to induce demand, also known as ‘offensive medicine’.

[5] Under a capitation arrangement, providers are paid a fixed amount per-member per-month.

[6] From the financial perspective of the provider, providers are not typically well equipped to take on capitation contracts and partly in response to this concern, providers continue to form larger groups and unite with other health care organizations, in order to increase their capital base and ability to bear risk (Simon and Emmons 1997).

[7] To the extent that time spent interacting with health insurance plans leads to less time spent with patients, this evidence further suggests that health insurance markets have a meaningful influence on the way that medical professionals interact with patients.

[8] The authors evaluated changes in the total number of physicians, and the change in those practising in obstetrics/gynaecology, surgery, and internal medicine.

[9] Changes in physician behaviour in response to malpractice risk are often referred to as ‘positive defensive medicine’ (actions taken to improve the quality of care) and ‘negative defensive medicine’ (actions taken that are unnecessary, or withdrawal of actions that are necessary). See Kachalia, Choudhry, and Studdert (2005).

[10] For example, all states have varying types of mandated health insurance benefits which, in many cases, affect the contract design and claims levels of health insurers (The Center for Affordable Health Insurance Report, 2010).

[11] All medical errors do not necessarily result in a malpractice lawsuit and all medical malpractice lawsuits do not necessarily involve medical errors (or adverse events). A recent article by Sohn (2013) provides an analysis and discussion of the characteristics of malpractice cases in the US tort system.

[12] According to TowersWatson, US tort costs grew 8.7% per year, on average, between 1951 and 2010 (Towers Watson 2012).

[13] The health insurance market data utilized in our analysis are acquired from the by-state Exhibit of Premiums, Enrolment, and Utilization of the NAIC Health Annual Statement filings. Our unscaled measure of health insurance claims is an aggregation of claims across all business segments (i.e. individual, group, Medicare supplement, vision, dental, FEHBP, Medicare, Medicaid, and all other lines reported in the Exhibit).

Medical malpractice insurance market data are acquired from the by-state Exhibit of Premiums and Losses of the NAIC Property and Casualty Annual Statement filings. The Exhibit contains direct losses incurred in the business segment of medical professional liability, which is our unscaled measure of medical malpractice insurance loss levels.

[14] We filter all observations at the firm level before aggregating the data to the state level. In particular, we delete observations of insurers with assets, surplus, premiums, losses, and enrolment of less than 1000, and also of those insurers with loss ratios less than 1% and greater than 500%, in order to ensure that our sample contains viable, operating insurance companies. In unreported analyses, we find that our main result remains qualitatively unchanged when the loss ratio filter is not imposed.

[15] The state-level data set contains information relating to medical malpractice insurer losses and health insurer losses for all states except California, which was excluded from our analysis due to incomplete data from health insurers operating in the state.

[16] Variable sources, detailed definitions, and within and between-state variations are provided in Appendix 1. All variables capturing monetary values are expressed in terms of 2009 dollars.

[17] Health insurance losses incurred is the total of the insurers' health insurance claims in all lines of health insurance business, as reported in the NAIC Health Annual Statement.

[18] We considered additional state market controls for inclusion in the models such as Medicaid and Medicare enrolment, uninsured persons, specialist physicians, hospital admissions, and Health Maintenance Organization enrolment. These variables are omitted from our reported analysis in an effort to mitigate potential endogeneity and/or multicollinearity problems. In unreported analyses, we find that our main result is robust in a variety of model specifications which include these additional state-level market controls. The inclusion of state and year fixed effects in our model (described in an ensuing section) helps to further control for omitted state market factors.

[19] It was necessary to scale several state market control variables in the regression analysis for reporting and formatting purposes. Active Physicians_{it} was increased by a factor of 1000, Young was increased by a factor of 10, and $\text{Median Income}_{it}$ was scaled by 100.

[20] For example, differences in access to legal services, income levels, frivolous claims levels, educational attainment, or occupational status may exist between individuals residing in metropolitan areas and those residing in rural areas.

[21] Controlling for the effect of physicians on medical malpractice insurance claims is consistent with prior literature (e.g. Danzon 1984; Barker 1992).

[22] Caps on noneconomic damages place limits on amounts awarded to injured parties for pain and suffering, emotional distress, loss of consortium, and similar nonpecuniary losses (e.g. Grace and Leverty 2013; Viscusi and Born 2005).

[23] Studies such as Caselli, Esquivel, and Lefort (1996) do not include time dummies in the Arellano–Bond framework because variables are taken as deviations from period means.

[24] Our Arellano–Bond estimator results are based on 294 observations of 49 states over a six year period. This is due to the fact that the procedure requires a two year lag of HealthInsLossPC as part of the identification process, which reduces our total number of state–year observations.

[25] Because HealthInsLossPC is endogenous, valid instruments for the variable are HealthInsLossPC in years t – 2 to t – n, yielding a total of 20 instruments for this variable in our model. Instruments for $MMInsLossPC_{it}$ are lags of the variable in years t – 1 to years t – n, resulting in 28 instruments for this variable in our model.

[26] As noted by Cameron and Trivedi (2010), if the error terms are serially uncorrelated, then we would expect to reject the null hypothesis of autocorrelation at the first order but not at higher orders. In our model, we find strong evidence against the null hypothesis of first order autocorrelation (p-value < 0.001) but fail to reject the null at order two (p-value $= 0.565$).

[27] In the Arellano–Bond model, the one year lag of MMInsLossPC is also included in the model as an independent variable but was omitted in the table for consistency of reporting alongside the additional model specifications. This estimated coefficient of this variable is 0.226 and is statistically significant at the 10% level.

[28] We also conduct two additional unreported analyses which suggest our results are not driven by highly influential state-observations. First, we estimate our main model, drop observations with an rstudent value greater than 2 and less than negative 2 and

re-estimate the model without the influential observations (N = 377 for this model). The negative and significant relation between health and medical malpractice insurance is still present in this model. Second, we calculate the z-score of health insurance losses per capita based for the full sample of 392 state–year observations and then drop state–year observations with z-scores greater than 2 and less than negative 2. When we re-estimate the model based on the reduced sample (N = 367 for this model), we also find a negative and statistically significant coefficient on health insurance losses per capita.

[29] The 2SLS method is an alternative approach to addressing the potential for endogeneity in our model. To obtain the 2SLS output in Table 2, we follow an approach similar to McShane, Cox, and Butler (2010) and calculate an instrument equal to the average of health insurance losses per capita in year t – 1 for all states which border state i. Unreported analysis indicates the instrument is positive and statistically significant in the first stage regression model and the partial R^2 of the excluded instruments is 0.161. Further analysis also indicates the 2SLS model is not under-identified nor weakly identified. Finally, as given in the table, the null of exogeneity is rejected at the 1% level.

[30] Our results are also robust to the inclusion of several other instruments. First, we use the proportion of a given states' population that has been told they have high blood cholesterol levels (available via the Centers for Disease Control and Prevention (CDC)) as an alternative instrument. The literature related to medicine indicates that genetic factors play a larger role in determining cholesterol levels than do environmental factors (e.g. Heller et al. 1993; Cuchel and Rader 2003), which is evidence that Cholesterol may not be correlated with the same socioeconomic or demographic factors associated with the tendency to file a lawsuit. The negative and significant relationship remains when Cholesterol is used as an instrument. Our results also remain quantitatively unchanged when we employ total health insurance premiums earned per capita as an instrument or the proportion of a given state's population smokes cigarettes on a regular basis, Smokers. When we consider multiple instruments for HealthInsLossPC, our main results are consistent for any combination of Cholesterol, Smokers, health insurance losses per capita in bordering states, and health insurance premiums earned per capita. With one exception, all models pass the relevant instrument validity tests (e.g. first stage F-test and under/weak/over identification tests). The exception is that when health insurance premiums per capita is included with additional instruments, the models are over-identified.

[31] The inclusion of state and year fixed effects reduces the likelihood of biased results arising from omitted variables and, as reported in the table, a Hausman test supports the inclusion of state and year fixed effects.

[32] We thank an anonymous referee for identifying these specific factors.

[33] Total health enrollees is defined as the sum of all health enrollees in state i during year t across all health insurers and data are obtained from the NAIC health filings. The alternative scaling is insightful because it allows us to allocate losses for the respective insurance markets more closely to the population for which each type of coverage is relevant. While the results using the alternatively scaled variables provide important and robust evidence, we provide the evidence using uniform scaling of all variables by population for consistency.

[34] Active physicians is omitted as an independent variable due to the fact that it is used to scale the dependent variable.