2005

The Consequences of the Growth of Health Insurance Premiums

Katherine Baicker
Dartmouth College

Amitabh Chandra
Dartmouth College

The Consequences of the Growth of Health Insurance Premiums

By KATHERINE BAICKER AND AMITABH CHANDRA*

In the United States, two-thirds of the nonelderly population is covered by employer-provided health insurance (EHI).[1] According to a Kaiser Family Foundation national survey (2003), the cost of EHI has increased by over 59 percent since 2000 with no accompanying increase in the scale or scope of benefits. These increases in health insurance premiums may have significant effects on labor markets, including changes in the number of jobs, hours worked per employee, wages, and compensation packages. Indeed, it is possible that a significant portion of the increase in the uninsured population may be a consequence of employers shedding this benefit as health insurance premiums rise.

Understanding how labor-market characteristics affect adjustments to increased health insurance costs is of vital policy importance. Some proposals to cover the uninsured rely on "employer mandates" requiring employers to cover eligible workers. Other proposals provide tax credits for the purchase of non-employer health insurance. The effects of these proposals on employment, wages, and health insurance coverage will be driven by the elasticities of labor supply and demand, institutional constraints on wages and compensation packages, and how much workers value the increase in health insurance costs. Since employers provide such coverage voluntarily, if workers fully value these benefits and are able to sort between firms based on their preferences, then (in the absence of other institutional constraints) they will bear the cost of the increase via reduced wages, with no accompanying change in employment, employment costs, or employee utility.[2] There are many reasons to believe, however, that firms are limited in their ability to offset increases in the price of health insurance premiums through lower compensation, so that increases in the cost of providing health insurance may affect both employment and the structure of work.

Identifying the magnitude of these effects empirically is difficult both because of data availability and because of multiple avenues for causality. In this paper we uncover the causal effect of increases in the cost of benefits on labor-market outcomes by exploiting an exogenous source of variation in the cost of providing health insurance: the recent "medical malpractice crisis" in which malpractice costs for physicians grew dramatically in some states but not in others. The growth in malpractice payments affects malpractice insurance premiums and health insurance premiums, but it should not affect other aspects of employment (see Baicker and Chandra, 2005b). Using this source of variation, we examine the effect of increases in health insurance premiums on employment patterns, earnings, and health insurance coverage. We find that the cost of increases in health insurance premiums is borne in large part by workers through increased unemployment and also through decreased hours for those workers moved from full-time jobs with benefits to part-time jobs without. These results have strong implications for the distributional impact of health-care reforms.

* Both authors: Economics Department, Dartmouth College, 6106 Rockefeller Hall, Hanover, NH 03755, Dartmouth Medical School, and National Bureau of Economic Research (e-mails: kbaicker@dartmouth.edu, achandra@dartmouth.edu). We thank Alan Garber, Seth Seabury, Jonathan Skinner, and Douglas Staiger for helpful conversations that have influenced this research program, and Derek Neal, Aaron Yelowitz, and conference participants at the Berger Conference for very insightful comments. We are grateful for funding from NIA-P01 AG19783-02. The opinions in this paper are those of the authors and should not be attributed to the NIA or NBER.

[1] Based on tabulations of population under age 65 from the March Current Population Survey for 1988–2003.

[2] There is a wide literature estimating the wage–fringe trade-off. A $1 increase in the value of fringes may be offset by a $1 reduction in wages—or a $1/(1 − tax rate) reduction for tax-favored benefits. For example, Jonathan Gruber (1994) demonstrates that the passage of the Pregnancy Discrimination Act in 1978 resulted in employers shifting the entire cost of the mandate onto employees.

I. Analytical Framework

Lawrence H. Summers (1989) outlined the effects of mandated benefits (versus taxes) on wages and employment, highlighting the importance of the employees' valuation of the benefit. The provision of a benefit that is fully valued by workers should not change employment, but should decrease wages by the cost of the benefit. There are, however, several reasons that this adjustment may not occur. First, a price increase may have a different effect on workers' valuation of benefits than an increase in the quality or quantity of benefits provided. Second, workers may not be perfectly sorted between firms based on their preferences for benefits, and nondiscrimination stipulations in the tax code limit the differentiation of benefit packages to full-time workers within the same firm. These nondiscrimination constraints create incentives to move workers between "covered" (with benefits) full-time jobs and "uncovered" part-time jobs. Third, the ability of firms to reduce wages for lower-skilled workers is restricted by the minimum wage. For these three reasons, increases in the cost of health insurance (HI) could affect both total compensation and employment. We thus need to evaluate the effect of rising health premiums on employment, wages, hours worked, and the composition of employment (the share of jobs that are full-time or part-time) empirically. We estimate

$$(1)\quad (\text{Outcome})_{st} = \beta_s + \beta_t + \beta_1(\text{Cost of HI})_{st} + \mathbf{X}_{st}\mathbf{B} + \varepsilon_i$$

where observations are at the state-year level and $\mathbf{X}$ includes a number of economic and demographic controls. Estimating these effects using ordinary least squares poses several problems. Data sets such as the Census and the Current Population Survey (CPS) do not contain information on the employer costs of health insurance or the generosity of the plan.[3] Even when this information is available, researchers may not be able to control adequately for worker characteristics, such as ability, that might also influence outcomes.[4] David Cutler and Brigitte Madrian (1998) estimate a similar equation using imputed premiums and conclude that rising health insurance premiums result in increased hours worked per employee, but they do so without the benefit of a source of exogenous variation in premiums.

In our analysis, we use per capita medical malpractice payments as an instrument for health insurance premiums to overcome these empirical obstacles. The "medical malpractice crisis" that began at the turn of the 21st century saw a dramatic increase in physician premiums for malpractice insurance. M. M. Mello et al. (2003), Chandra et al. (2005), and Baicker and Chandra (2005a) provide an overview of this crisis and its underlying causes and consequences. If the demand for health services is inelastic, then the effect of increasing malpractice payments on malpractice premiums will have little effect on net physician compensation, but will instead be borne by consumers of health care through increases in the price of health care (and, consequently, health insurance premiums).[5] We thus use increases in malpractice payments as an instrument for health insurance premiums to estimate the following first-stage equation:

$$(2)\quad (\text{Cost of HI})_{st} = \gamma_s + \gamma_t + \delta_1(\text{Malpractice payments})_{st} + \mathbf{X}_{st}\mathbf{\Gamma} + \nu_i$$

where observations are at the state-year level and malpractice payments are broken down by the size and number of payments for different specialties. Instrumenting for health insurance premiums removes both the bias from classical measurement error as well as the bias from omitted variables. This is because the instrument only picks up that part of the (within-state)

[3] It is also not clear whether (if asked) respondents would know the costs or generosity of their health insurance plan (see Alan L. Gustman and Thomas L. Steinmeier, 2001).

[4] These limitations are identical to those that have plagued the literature on identifying the wage–fringe tradeoff (see Janet Currie and Brigitte Madrian [1999] for a comprehensive overview).

[5] In theory we could also use malpractice premiums as an instrument for health insurance premiums, but limitations of malpractice insurance data make this less practical (Baicker and Chandra, 2005b).

variation in premiums that is attributable to (within-state) changes in malpractice climate.[6] We then include the instrumented premium on the right-hand side of regressions estimating various labor-market outcomes, including employment, hours worked, and health insurance coverage.

II. Data

Data for this analysis come from several different sources, documented more fully in Baicker and Chandra (2005b). Annual state-year-level data on health insurance premiums by type (family or individual) and employer size (under 50 or larger) come from the Kaiser Family Foundation/HRET survey for 1996–2001 (see Kaiser Family Foundation, 2003). Labor-market outcomes, health insurance coverage, and demographic data are obtained from the March Current Population Survey (CPS) for 1996–2002. We assign health insurance premiums to workers based on their state of residence, year, family structure, and firm size, and then aggregate premiums, covariates, and labor-market outcomes to the state-year level. Medical malpractice payment information comes from the National Practitioner Data Bank (U.S. Department of Health and Human Services, 2004), where all malpractice payments made in the United States by or on behalf of a licensed health care provider must be reported. We calculate the size and number of payments resulting from medical treatments, surgical treatments, obstetrical treatment, and other treatments. All dollar amounts are deflated using the CPI.

III. Results

We begin with an examination of the effect of increases in health insurance premiums on employment, wages, and hours worked. All regressions include state and year fixed effects and covariates (including categorical variables for gender, marital status, race, education, and health) and are weighted by state population. Standard errors are clustered at the state level. Premiums, income, and hours are all measured in logs. We use the log of medical malpractice payments (including real per capita dollars and the number of payments per capita, by specialty, current and lagged) to instrument for the log of health insurance premiums. The instruments are jointly significant (p value of 0.00002) and suggest that when per capita malpractice payments double, health insurance premiums increase by 1–2 percent, consistent with previous estimates (see D. P. Kessler and M. B. McClellan, 1996).

Results from two-stage least-squares estimation of equation (1), shown in Table 1, suggest that, when health insurance premiums increase by 10 percent, the fraction of the population that is employed goes down by 1.4 percent, while the fraction of the employed who work full time goes down by 2.4 percent. This is consistent with the hypothesis that increasing the cost of benefits in the presence of constraints on wage adjustment produces some unemployment, and that as the cost of providing health insurance benefits increases, firms will substitute part-time workers with limited benefits for full-time

TABLE 1—EFFECT OF HEALTH INSURANCE PREMIUMS ON EMPLOYMENT

	Dependent variable				
Independent variable	Wage[a]	Hours	Full time[b]	Empl.[c]	Employer HI[d]
Premiums	−0.19	−0.51	−0.24	−0.14	−0.13
	(0.23)	(0.19)	(0.08)	(0.07)	(0.21)
r^2:	0.95	0.77	0.67	0.88	0.92
N:	284	284	284	284	284
Covariates:[e]	yes	yes	yes	yes	yes
Mean:[f]	26,332	33	0.84	0.82	0.51

Notes: State-year observations are from 1996–2002. Covariates include age, race, education, and health status of population, and state and year fixed effects. Health insurance premiums were instrumented with number and size of medical malpractice payments. Malpractice liability data are from National Practitioner Data Bank, health insurance premiums are from Kaiser/HRET survey, labor market outcomes are from the March CPS. Regressions are weighted by population; standard errors are clustered at state level. The average real HI premium for the sample is $4,894.

[a] Wage and salary income.
[b] Fraction of workers who are full-time.
[c] Fraction of population employed.
[d] Fraction with employer-provided health insurance.
[e] Covariates and fixed effects.
[f] Mean of dependent variable.

[6] Our use of this instrument does not rely on the fact that workers get more or better health care as their premiums rise—just that the price of health insurance from all sources has increased. Workers may be willing to accept lower wages in exchange for costlier health insurance because they would have to pay more on the open market for it.

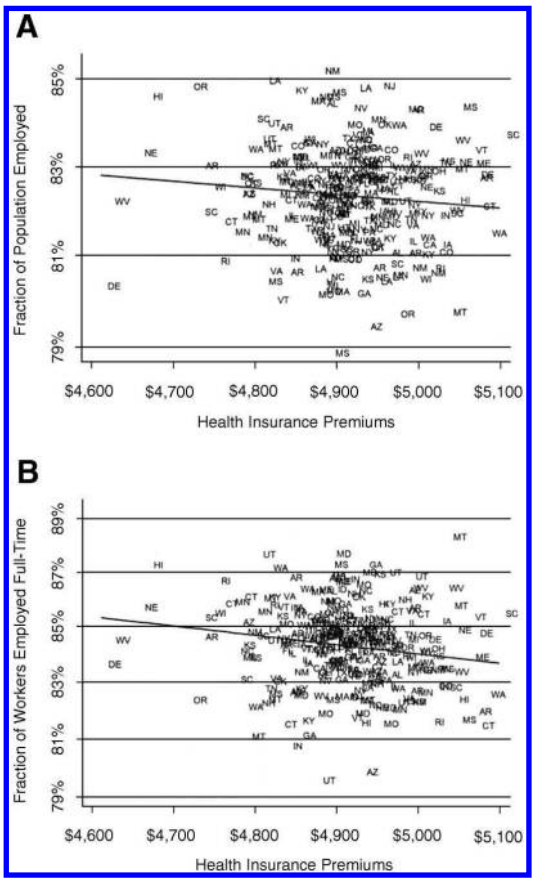

FIGURE 1. (A) EFFECT OF HEALTH INSURANCE PREMIUM ON FRACTION OF POPULATION EMPLOYED AND (B) EFFECT ON FRACTION OF WORKERS EMPLOYED FULL-TIME

Notes: See notes to Table 1. (A) Regression-adjusted coefficient of −0.14 (robust SE = 0.07) from regression of log(Fraction of population employed) on log(HI premium); (B) regression-adjusted coefficient of −0.24 (robust SE = 0.08) from regression of log(Fraction of workers employed full-time) on log(HI premium).

workers with benefits. Figure 1 shows these regression results graphically.

We might expect certain groups to be more sensitive to changes in the cost of health insurance. While the average effect on wages is small, analysis at the individual level in Baicker and Chandra (2005b) suggests that workers with health insurance see a substantial reduction in wages when premiums rise, and that low-wage workers and manufacturing workers are much more likely to lose employer health insurance or to become unemployed when premiums rise.

IV. Conclusion

Rising health insurance premiums, unemployment, and uninsurance have led to increased scrutiny of the labor-market consequences of rising benefits costs. We use variation in medical malpractice payments to disentangle the causal effect of rising health insurance premiums on wages, employment, and health insurance coverage. We find that the cost of increasing health insurance premiums is borne in large part by workers in the form of decreased hours and employment. Workers with health insurance are more likely to see a decrease in wages, and some workers, such as low-wage hourly workers whose wages cannot be lowered, may face even greater risk of becoming uninsured as the cost of health insurance increases.

Together, these estimates demonstrate that the labor-market effects of rising health insurance are far from neutral. Whether because workers do not fully value the increase in the cost of health insurance or because of institutional constraints on wages or parity of benefit-offering, increases in health insurance premiums affect both the number and structure of jobs. Our estimates suggest that the 40-percent increase in health insurance premiums seen between 1996 and 2002 could have been responsible for as much as an 8-percent decrease in full-time work among the employed, and a 6-percent reduction in employment.

These results also have strong implications for employment-based policies designed to increase insurance coverage.[7] Many proposals rely on "employer mandates" to cover the uninsured. If some classes of workers are exempt from the mandate (such as part-time workers or those at particularly small firms), employers are likely to substitute uncovered jobs for covered ones, which would make those workers worse off and reduce the impact of the mandate on insurance coverage. Where constraints prevent this kind of substitution and limit employers' ability to offset the increased cost of employment by lowering wages, mandates will cause decreases in employment. More generally, the

[7] One example is California's "Proposition 72." Aaron Yelowitz (2004) provides a thorough discussion of this legislation and estimates its economic impact.

continuing rise in health insurance premiums seems likely to increase the ranks of both the uninsured and the unemployed.

REFERENCES

Baicker, Katherine and Chandra, Amitabh. "The Effect of Medical Malpractice Liability on the Delivery of Health Care," in Alan Garber and David Cutler, eds., *Frontiers of health policy*, Vol 8. Cambridge, MA: MIT Press, 2005a (forthcoming).

Baicker, Katherine and Chandra, Amitabh. "The Labor Market Effects of Rising Health Insurance Premiums: Evidence from the Medical Malpractice Crisis," National Bureau of Economic Research (Cambridge, MA) Working Paper No. 11160, 2005b.

Chandra, Amitabh; Nundy, Shantanu S. and Seabury, Seth A. "The Growth of Physician Malpractice Payments." *Health Affairs*, 1 June 2005.

Currie, Janet and Madrian, Brigitte C. "Health, Health Insurance and the Labor Market," in Orley Ashenfelter and David Card, eds. *The handbook of labor economics*, Vol 3C. Amsterdam: Elsevier, 1999, pp. 3309–3416.

Cutler, David and Madrian, Brigitte. "Labor Market Responses to Rising Health Insurance Costs: Evidence on Hours Worked." *RAND Journal of Economics*, 1998, *29*(3), pp. 509–30.

Gruber, Jonathan. "The Incidence of Mandated Maternity Benefits." *American Economic Review*, 1994, *84*(3), pp. 622–41.

Gustman, Alan L. and Steinmeier, Thomas L. "Imperfect Knowledge, Retirement and Saving." Unpublished manuscript, Dartmouth College, July 2001.

Kaiser Family Foundation, Kaiser Commission on Medicaid and the Uninsured. *Health insurance coverage in America, 2002 Data Update*. Menlo Park, CA: Kaiser Family Foundation, December 2003.

Kessler, D. P. and McClellan, M. B. "Do Doctors Practice Defensive Medicine?" *Quarterly Journal of Economics*, 1996, *111*(2), pp. 353–90.

Mello, M. M.; Studdert, D. M. and Brennan, T. A. "The New Medical Malpractice Crisis." *New England Journal of Medicine*, 2003, *348*(23), pp. 2281–84.

Summers, Lawrence H. "Some Simple Economics of Mandated Benefits." *American Economic Review*, 1989 (*Papers and Proceedings*), *79*(2), pp. 177–83.

U.S. Department of Health and Human Services, Division of Practitioner Data Banks. *National practitioner data bank public use data file*. Washington, DC: U.S. Department of Health and Human Services, 2004.

Yelowitz, Aaron. *The economic impact of Proposition 72 on California employers*. Washington, DC: Employment Policies Institute, September 2004.

This article has been cited by:

1. Grace W. Gu. 2018. Employment and the cyclical cost of worker benefits. *Review of Economic Dynamics* **28**, 96-120. [Crossref]
2. Christopher S. Brunt, John R. Bowblis. 2017. Health insurer market power and employer size: an empirical evaluation of insurer concentration and wages through compensating differentials. *Applied Economics* **49**:30, 3005-3015. [Crossref]
3. JOHN A. GRAVES, PRANITA MISHRA. 2016. The Evolving Dynamics of Employer-Sponsored Health Insurance: Implications for Workers, Employers, and the Affordable Care Act. *The Milbank Quarterly* **94**:4, 736-767. [Crossref]
4. Daniel Montanera. 2015. The importance of negative defensive medicine in the effects of malpractice reform. *The European Journal of Health Economics* . [Crossref]
5. Thomas Buchmueller, Colleen Carey, Helen G. Levy. 2013. Will Employers Drop Health Insurance Coverage Because Of The Affordable Care Act?. *Health Affairs* **32**:9, 1522-1530. [Crossref]
6. Stephen B. DeLoach, Jennifer M. Platania. 2013. The Macroeconomic Consequences of Financing Health Insurance. *International Advances in Economic Research* **19**:2, 107-129. [Crossref]
7. Jianmin Tang, Can Le. 2007. Multidimensional Innovation and Productivity. *Economics of Innovation and New Technology* **16**:7, 501-516. [Crossref]