

**NEW EVIDENCE ON EMPLOYER PRICE-SENSITIVITY OF OFFERING HEALTH
INSURANCE**

by

**Jean M. Abraham, Ph.D.
University of Minnesota**

**Roger Feldman, Ph.D.
University of Minnesota**

**Peter Graven, M.S.
Oregon Health and Science University**

CES-WP-14-01 January, 2014

The research program of the Center for Economic Studies (CES) produces a wide range of economic analyses to improve the statistical programs of the U.S. Census Bureau. Many of these analyses take the form of CES research papers. The papers have not undergone the review accorded Census Bureau publications and no endorsement should be inferred. Any opinions and conclusions expressed herein are those of the author(s) and do not necessarily represent the views of the U.S. Census Bureau. All results have been reviewed to ensure that no confidential information is disclosed. Republication in whole or part must be cleared with the authors.

To obtain information about the series, see www.census.gov/ces or contact Fariha Kamal, Editor, Discussion Papers, U.S. Census Bureau, Center for Economic Studies 2K132B, 4600 Silver Hill Road, Washington, DC 20233, CES.Papers.List@census.gov.

Abstract

Economic incentives such as the preferential tax treatment of premiums and economies of scale encourage employers to provide health insurance through the workplace. The employer's decision to offer health insurance depends on how much workers value insurance relative to wages, and that value is likely to vary, given the composition of the establishment's workforce. Using the 2008-2010 MEPS Insurance Component augmented with information from other data sources, we generate new estimates of employers' price sensitivity of offering insurance. Our results suggest that employers are sensitive to changes in the tax price of insurance, with very small employers exhibiting the largest price-sensitivity. Employer size, workforce composition, and local labor market conditions also influence the employer's decision to offer insurance. New evidence can inform policy discussions about the implications of broad-based reforms that change marginal tax rates as well as targeted strategies that address the tax-exempt status of premiums.

1. Introduction

Employer sponsored insurance (ESI) covers 58% of the non-elderly U.S. population (DeNavas-Walt, Proctor, and Smith, 2012). Compared with individually-purchased insurance, ESI has four main advantages for those who are eligible to take it up. The first advantage is that no one can be denied coverage. Everyone who qualifies, which is usually based on working a minimum number of hours and may involve a minimum duration of employment, will be offered coverage. The second advantage is that premiums are based on the experience of the group, not an individual policyholder. This means that ESI protects enrollees from premium increases due to changes in their own health risk as long as they continue to work for the same employer. Economists refer to this protection as “guaranteed renewability” (Pauly, Kunreuther, and Hirth, 1995). The third advantage of ESI is lower administrative costs compared with individual insurance. There is a strong, negative association between the number of employees covered by ESI and the administrative cost as a percentage of benefit costs (Hay Huggins 1987; Karaca-Mandic, Abraham, and Phelps, 2011). The fourth advantage is the preferential tax treatment of ESI. Premiums paid by employers are exempt from the federal income tax, state income taxes in 43 states, and Social Security and Medicare taxes. In addition, many employees can pay their share of the insurance premium with pre-tax dollars if their firm offers a “Section 125” plan.

On closer inspection, however, there is substantial variation in the rate at which employers offer insurance to their workers. The most pronounced difference is by firm size. According to the MEPS Insurance Component (MEPS-IC), approximately 39.2% of

private-sector establishments with fewer than 50 employees offered insurance compared with 96.4% of those with 50 or more workers in 2010 (www.meeps.ahrq.gov, 2010). Small employers that do not offer health insurance frequently cite price as an important reason for not offering.

Employer decision-making with respect to offering health insurance is an understudied area. Although several studies have analyzed the probability that a worker receives an ESI offer (Gruber and Poterba, 1996; Royalty, 2000; Bernard and Selden, 2002; Abraham et al. 2009), fewer have focused on the employer's decision to offer health insurance. This is an important distinction. The probability that a worker receives an ESI offer depends on his or her job choice, which is conceivably related to personal characteristics and preferences (e.g. less-healthy workers demand more health care and thus may be more likely to seek jobs that offer ESI). On the other hand, the employer's decision to offer insurance depends on the characteristics of the employees as a group or a subset of them, such as highly-compensated workers.

Researchers have used three basic approaches to study employers' price-sensitivity of offering health insurance: stated preference methods; small-scale policy experiments; and econometric analyses of employer survey data. The first type of research asks firms that do not offer health insurance about their willingness to offer a hypothetical policy at various premiums (Thorpe, Hendricks, Garnick, and Donelan, 1992; Morrissey, Jensen, and Morlock, 1994). These studies have produced a wide range of elasticity estimates of offering insurance: between -.3 and -1.6.

In the late 1980s, the Robert Wood Johnson Foundation sponsored several pilot programs to subsidize the cost of insurance for small firms that had not previously offered this benefit. Only five percent of eligible small firms enrolled, leading evaluators to conclude that employer offering of insurance was not sensitive to price reductions (Helms, Gauthier and Campion, 1992). In another demonstration project, researchers tested the responses of small employers in New York to a 50 percent premium subsidy and found a very modest increase of 3.5 percentage points the proportion of small firms offering insurance (Thorpe, Hendricks, Garnick, and Donelan, 1992). More recently, Kronick, Olsen, and Gilmer (2008) conducted a randomized controlled trial in which small employers were offered the opportunity to purchase coverage through a San Diego-based HMO. Eligible employers had to have between 2-50 full-time workers, could not currently offer group coverage, and had to have at least two uninsured employees with family income below 300% FPL. The findings revealed no major changes in behavior: even when non-offering small employers could buy coverage at 50 percent of the full premium, fewer than 20 percent did so. A key criticism of such designs was that the temporary nature of the subsidies was unattractive to many employers who did not want to offer insurance and then discontinue it when the subsidies ended.

A third set of studies have used employer survey data to estimate discrete choice models of an employer's decision to offer coverage. These researchers have used two distinct approaches to measure the price of insurance. One group measures the price of insurance by the premium, controlling for policy benefits (Feldman, et al., 1997; Marquis and Long, 2001a; Marquis and Long 2001b; Hadley and Reschovsky, 2002); the other group uses the tax price of health insurance (Jensen and Gabel, 1992; Gruber and Lettau, 2004).

While premiums may be more salient to an employer deciding whether to offer coverage, obtaining unbiased estimates of employer price-sensitivity using this measure is challenging because premiums are not observed for firms that do not offer ESI and must be imputed. Moreover, observed premiums for employers that offer ESI may be endogenous if unobservable factors influence both premiums and the employer's propensity to offer coverage. These studies have identified instruments that are correlated with an establishment's premium but uncorrelated with the firm's demand for insurance, and have predicted premiums for all employers. Different imputation methods may be responsible for different price elasticity estimates in these studies (higher in Feldman, et al. compared with Hadley and Reschovsky, for example).

The other approach uses the 'tax price' of insurance. Because the employer-paid portion of the premium (or the total premium of Section 125 plans) is tax-exempt, one dollar of health insurance costs less than one dollar of wage compensation. Also, because the tax price depends on individuals' federal and state marginal tax rates, higher-income workers face a lower tax price for insurance, leading them to demand this form of compensation more than lower income workers, holding other factors constant.

The most prominent study using this approach is by Gruber and Lettau (2004), who investigated both the employer's decision to offer coverage and covered spending. Their primary data source was the Bureau of Labor Statistics Employment Cost Index (ECI) micro-data, a survey of two, four, six, or eight randomly-chosen workers within establishments, for years 1983-1995. Restricting their attention to full-time workers, Gruber and Lettau used information on 203,836 workers from 48,605 establishments.

Because they lacked detailed information about an establishment's workers (e.g., demographics and non-earned taxable income), they augmented the ECI data with information from the Current Population Survey and Statistics of Income. In a multi-step process, they used NBER's TAXSIM model (Feenberg and Coutts, 1993) to compute federal and state marginal tax rates for workers in the sampled jobs and then generated a 'simulated tax price.' This instrument removes unobserved differences in the tax price from each observation as well as the effects of employer decisions to offer coverage and employee decisions to work for an employer that offers coverage. Finally, they constructed an earnings-weighted average tax price. In addition to the tax price, their offering model included industry, occupation, firm size, earnings, number of sampled workers from the establishment, state, and year. The estimated tax-price elasticity of offering ESI for small firms was -0.688 and for medium firms it was -0.128 (although this estimate was not significantly different from 0). Since almost all large employers in their data offered insurance, they were unable to estimate an offering elasticity for this group.

More recent analyses of employer offering have been limited by the availability of nationally representative data. In fact, almost two decades have elapsed since the employer data analyzed by Gruber and Lettau (2004) and others (Feldman et al. 1997; Marquis and Long, 2001; Hadley and Reschovsky, 2002; Bundorf, 2002) were collected. In the interim, significant changes have occurred to the institution of employer sponsored insurance. Most notably, the rising cost of medical care has led to changes in types of benefit designs offered by insurers, including increasing prevalence of high-deductible health plans. Insurance markets have also become more concentrated over this time period (Emmons, Guardado and Kane, 2012). Finally, expansion of federal and state public

insurance programs (e.g., Medicaid/CHIP) has resulted in new alternatives to ESI for certain workers or dependents who meet specific eligibility guidelines. Given these and other changes, there is value in having new evidence about employer offers of ESI.

Using the 2008-2010 MEPS Insurance Component – a rich data source containing detailed information on establishments and workforce characteristics – we investigate the factors influencing employers’ decisions to offer insurance and provide new estimates of employer price-sensitivity. Results from our model indicate that employers are sensitive to changes in the tax price of insurance, and that employer price-sensitivity is greater for small employers than for large ones. Employer size and workforce composition also influence an employer’s offering propensity, as do local labor market conditions.

2. Conceptual Framework

Theoretical work has focused on developing models that predict how workers’ total compensation is allocated between cash wages and fringe benefits including health insurance (Summers, 1989; Goldstein and Pauly, 1976; Pauly 1986). Our conceptual framework assumes the employer offers a combination of wages and health insurance that minimizes its labor costs, subject to maintaining employees’ utility at a level that keeps the establishment competitive in the labor market (Feldman and Dowd, 1987; Dowd and Feldman, 1987). The employer’s decision to offer health insurance depends on how much workers value insurance relative to wages. This value is likely to vary, given the composition of an establishment’s workforce.

Individual employees have preferences regarding the optimal combination of wages and health insurance that comprises their total compensation. Workers’ preferences for

health insurance versus wages depend on a number of factors, notably family income. Given the current tax-exempt status of employer-paid premiums (or total premiums for Section 125 plans), workers who pay higher federal and state marginal tax rates face a lower “price” for health insurance relative to wages compared with workers with lower incomes and marginal tax rates. Thus, employers with workers whose tax price of insurance is lower, on average, should be more likely to offer health insurance. In addition to the direct effect of income on the tax price of insurance, higher income workers may demand more medical care as an input to the production of health (Grossman 1972). Insurance may also provide additional protection from loss of household wealth, which is positively correlated with income.²

In addition to income, other factors that influence workers’ preferences for health insurance may include the health status of workers and their expected demand for medical care. Alternative sources of coverage (e.g., spousal coverage) and alternative sources of care (e.g., charity care) available to them may also affect their choices.

In this framework, we assume that an employer can observe its workers’ preferences (or variables that are proxies for them) and the employer can aggregate those preferences when it decides to allocate total compensation into wages and insurance. Several ideas have been put forth to understand how the employer aggregates employees’ preferences: Goldstein and Pauly (1976) suggested that the employer considers the preferences of the average worker; however, preferences of the median worker or highly-compensated workers also may be important (Danzon, 1989; Gruber and Lettau, 2004).

² If the utility function displays increasing relative risk aversion, then wealthier individuals should hold a higher proportion of their portfolio in safe assets and should have higher demand for insurance.

Employers must also consider the transaction costs of offering health insurance when selecting the optimal combination of wages and insurance. Since the administrative costs of ESI are likely to be fixed or quasi-fixed, larger employers can spread those costs over more workers relative to small firms. Thus we expect larger firms to be more likely to offer insurance. Other factors that vary geographically, including state regulation of health insurance markets, may affect the administrative costs of ESI.

Finally, an employer must set total compensation at a level that keeps the establishment competitive in the labor market. We expect several factors to be correlated with local labor market conditions and compensation levels, including firm size, industry, the employer size distribution in the local market, and macroeconomic conditions (e.g., the unemployment rate).

3. Methods

In this section, we describe the data and specify an empirical model of the employer's decision to offer insurance, including the measures used in the analyses.

A. Data

The primary data source is the Medical Expenditure Panel Survey-Insurance Component (MEPS-IC) List Sample for 2008, 2009, and 2010.³ The MEPS-IC is a nationally-representative, establishment-level survey of U.S. employers that collects detailed information on the provision of health insurance. The survey includes questions about an employer's workforce (age, gender, wage level, and union presence) and characteristics of the establishment (number of workers, percentage full-time, industry, business tenure,

³ Since the MEPS-IC data are not available in the public domain, the research team obtained approval from the U.S. Bureau of the Census. All analyses were conducted in the Minnesota Census Research Data Center.

ownership status, multiple locations, firm size⁴, and state). Among employers that offer coverage, information is also collected about the plan(s) offered, including the total premium, employer and employee contributions, enrollment by coverage type (single, employee plus one, and family), and Section 125 status.

An employer's decision to offer health insurance depends on how much its workers value that benefit relative to wages. This value likely varies based on the composition of an establishment's workforce, including workers' wages, family incomes, family size, demographics, and federal and state tax rates, given the tax-exempt status of premiums.⁵ While the MEPS-IC contains some information about workers' attributes, it does not have the level of detail necessary to create a measure of the tax price. Thus, we augment the MEPS-IC with information on workers' families from the MEPS-Household Component (HC), a nationally representative sample of the non-institutionalized U.S. population, using a statistical matching method (described below) to impute the tax price and additional characteristics to workers in the establishment. Because employer behavior may also depend on labor market conditions, we merge information from the U.S. Bureau of the Census County Business Patterns file (2008-2009) and the U.S. Bureau of Labor Statistics (2008-2010) on the establishment size distribution and unemployment rate for the county in which the establishment is located. We restrict our attention to private-sector establishments.

B. Empirical Model

⁴ The unit of observation is an establishment, although the survey includes information about the firm size associated with that establishment.

⁵ All tax rates (federal, state, OASDI, and marginal payroll tax rates for Medicare HI) were estimated using TAXSIM. See Feenberg and Coutts (1993) for a description of TAXSIM.

Based on the conceptual framework above, we can write a reduced-form model of employer offering as follows:

$$Prob(Offer_{it}) = \beta TP_{it} + \theta Worker_{it} + \delta Estab_{it} + \omega Labor_{it} + \pi State_{it} + \tau Time_t + \varepsilon_{it}$$

Our dependent variable, *Offer*, is an indicator for whether an establishment offers insurance during the survey year. This indicator equals one if the establishment reported offering insurance on the IC survey and had at least one employee enrolled in coverage, zero if not. While the additional criterion of having at least one employee enrolled affected a very small proportion of observations, it is a distinction between public-use summary tables from the MEPS-IC and this analysis.

Our key explanatory variable is the tax price (*TP*). This captures the price of a dollar of health insurance relative to a dollar of wage income, given the tax-exempt status of ESI premiums (employer-paid premiums and total premiums for Section 125 plans). Tax prices vary within establishments given variation in workers' family incomes and they vary across establishments given different income distributions. Our identification strategy relies on differences across states during the time period 2008-2010 in the progressivity of their marginal income tax rates. In 2008, seven states did not have state income taxes. Among states with income taxes, we observe wide variation in the number of brackets and rates. For example, in Arizona the maximum rate during 2008 was 4.54 percent in contrast to Vermont's rate of 9.5 percent.⁶

⁶ For a detailed list of state income tax rates, refer to http://www.taxpolicycenter.org/taxfacts/Content/PDF/state_income_rates.pdf. Gruber and Lettau (2004) observed two additional sources of variation in the tax price: changes in the structure of federal and state taxation over time. These changes were not important during the period of our study.

While the MEPS-IC has basic information about the wage distribution of workers in each establishment, it does not have detailed information about workers' family incomes, marginal tax rates, or tax prices of insurance. Below we describe our approach for imputing this information.

Using the MEPS-HC for 2007 and 2008 (the most recent years available), we selected workers in private-sector establishments. We computed total family income, defining the family using the Health Insurance Eligibility Unit (HIEU) identifier on the MEPS. Next, we used NBER's TAXSIM software and all available tax-related input values for each worker to estimate workers' marginal federal and state income tax rates, OASDI, and Medicare Hospital Insurance Taxes.⁷ We then computed a tax price for each worker in the MEPS-HC using the following formula:

$$TP = \frac{(1 - f - s - ss - mc)}{(1 + ss + mc)}$$

where f is the worker's federal income marginal tax rate, s is the marginal state income tax rate, ss is the marginal payroll tax rate for the OASDI program, and mc is the marginal payroll tax rate for the Medicare Hospital Insurance program. We assumed that the OASDI and Medicare HI tax rates together were 7.65%.

We used a cell-based approach to impute information on workers' family incomes and tax prices to establishments in the MEPS-IC. For each establishment in the MEPS-IC, we began by creating 36 unique wage-coverage type-dual ESI offer cells. There are three wage categories in the IC corresponding to workers earning low (<\$11/hour), medium

⁷ Since the public use version of the MEPS-HC does not have state identifiers and internet connections are not permitted in Census RDCs, we repeated the tax-rate estimates for each worker as if they lived in every state. We then selected the state-specific observation after bringing the file into the RDC and obtaining access to the MEPS with state identifiers.

(\$11-26/hour), and high (>\$26/hour) hourly wages. We also defined six coverage type categories: enrolled in single coverage, enrolled in employee plus-one-coverage, and enrolled in-family coverage, as well as not enrolled-single, not enrolled-employee plus one, and not enrolled-family coverage.

A key empirical challenge is that we do not observe the same information for establishments that offer ESI versus those that do not. In particular, we do not observe the distribution of coverage types, our proxy for workers' family structures, among establishments that do not offer coverage. We used information from the MEPS-HC to predict the number of uninsured individuals (measured in categories) in a health insurance eligibility unit (our family identifier) with a non-covered worker as a function of wage category, establishment size, multi-location establishment, state, and industry. We predicted these outcomes to allocate workers in non-offering establishments into the three "non-covered" coverage type cells.

As the final step, we estimated a regression of MEPS-HC workers' tax prices as a function of wage-coverage type interactions, establishment size of the worker, employment at a multi-location firm, industry, state, and family size of the worker (also predicted using a regression). All of the explanatory variables in the MEPS-HC regression also exist in the IC. We then predicted tax prices from the HC to each establishment's 36 cells in the IC. We repeated this method to predict workers' family incomes to IC establishments. Then we aggregated the cell-level information to the establishment by calculating a weighted average where the weights were the proportions of an establishment's workers in each cell.

Workforce Attributes

Other characteristics of workers (*Worker*) at the establishment level may be correlated with their preferences for health insurance relative to wages. We included several workforce attributes directly measured on the MEPS-IC: the percentage of workers at an establishment that are part-time; indicator variables for the percentage of an establishment's workers who are female ($\leq 33\%$, 34-66%, $>66\%$); indicator variables for the percentage of an establishment's workers who are age 50 or older (<20 , 20-50, more than 50%); an indicator variable if the establishment has any unionized workers; and a set of indicator variables to capture the wage distribution of workers in the establishment (more than 50% earn under \$11/hour; less than 50% earn under \$11 per hour and less than 50% earn over \$26/hour; more than 50% earn over \$26/hour).

Establishment attributes

We included several establishment characteristics (*Estab*) reported in the MEPS-IC: indicators for firm size (0-9 (reference), 10-24, 25-49, 50-99, 100-499); whether the establishment has multiple locations; one-digit industry categories (religious, civil, or other non-profit is the reference); business tenure (1-4 years (reference), 5-9 years, 10+ years); and non-profit ownership (for-profit is the reference category).⁸

Labor market conditions

⁸We used multiple imputations and STATA's "nearest-neighbor" approach to address item non-response issues for some of the workforce and establishment measures. This method uses linear regression to predict values for the outcomes of interest based on a set of explanatory variables. We used information on firm size, industry and state as explanatory variables. Values are imputed for the observations missing workforce and establishment information using establishments that are similar on these dimensions to maintain a complete sample for analysis.

Local labor market conditions (*Labor*) are measured by the unemployment rate for the county in which the establishment is located. We expect the unemployment rate to be negatively related to an employer's decision to offer insurance, since employers may stop offering coverage to cut costs when faced with declining profits (Cawley and Simon, 2005; Marquis and Long, 2001). We also included the percentage of establishments in the county with more than 50 workers. We expect a greater concentration of large establishments in the market to positively influence insurance offers.

State and Year Fixed Effects

We included state fixed effects to control for state-specific, time-invariant factors that may influence employer offering. Additionally, we included indicators for each year to capture time trends.

C. Econometric Analysis

We used binary logit and STATA 12.0/SE statistical software to estimate the employer offering model. To allow for more flexible estimation of our model parameters, we stratified the establishments into three groups based on whether the establishment was part of a small firm (≤ 49 workers), medium firm (50-499) or large firm (500 or more workers). Following model estimation, we used the margins command to estimate marginal effects and elasticities for the tax price of insurance. All estimates are weighted to reflect the number of employees in U.S. private-sector establishments.

4. Offer Model Results

Table 1 provides descriptive statistics (weighted by the number of employees) for establishments in the MEPS-Insurance Component in 2008, 2009, and 2010 (n=93,692), stratified by firm size category and offer status. Across all three firm size strata, employees in offering establishments have lower weighted-average tax prices relative to those in non-offering establishments. Table 1 also shows distinctive patterns by industry. For example, employees in accommodation, food service, and recreation industries are much less likely to be in an establishment that offers insurance relative to employees in establishments that provide professional services. Across all three firm size categories, employees in establishments that offer insurance are disproportionately more likely to have a union presence than those that do not offer insurance.

Marginal effects and standard errors for the three binary logit models are reported in Table 2. The key explanatory variable is the weighted average tax price (the price of a dollar of health insurance relative to a dollar of income). The overall mean tax price is .67. We expect an inverse relationship between the tax price and the probability than an employer offers ESI and the results show evidence of this relation.

To more easily interpret whether employers are sensitive to the tax price of ESI, we estimated the elasticity of the probability of offering insurance with respect to the tax price. These results are summarized in Table 3. Three findings are notable. First, employers of all sizes exhibit some price-sensitivity of offering ESI. All elasticity estimates are significantly different from zero. Second, the results suggest a gradient of elasticities of offering insurance for establishments of different sizes. Small employers (0 to 49 workers) are the most price-sensitive with an average elasticity of -0.8133. Thus, a 10% decrease in

the average tax price (e.g., from .67 to about .60) is associated with an 8.1% increase in the probability of offering insurance, holding all else constant.

Our results for small employers (< 50) are “in the ballpark” of the average elasticity (-0.688) that Gruber and Lettau (2004) found. However, we find that medium and large employers have some price sensitivity too. For example, employers with at least 500 workers have an average elasticity of -0.123; in contrast, Gruber and Lettau found the estimated elasticity for medium-size firms was not significantly different from zero, and they were unable to estimate an offering elasticity for large firms.

Since most prior research has not focused on large employers or has failed to detect a non-zero price-elasticity, we investigated more closely the representation of particular industries among large employers that don't offer coverage. Descriptive analyses suggest that large firms in industries such as personal care services, health and personal care stores, wired telecommunications carriers, and special food stores are the most likely non-offering large employers.

In addition to the average tax price, we also considered alternative measures of an establishment's tax price. As noted above, several ideas have been put forth to understand how the employer aggregates employees' preferences (Goldstein and Pauly, 1976; Danzon, 1989; Gruber and Lettau, 2004). In sensitivity checks, we also tried the tax price for the highest-wage workers in each establishment and the median tax price. The results did not change in any qualitatively significant way when we re-estimated our models using these alternative tax price measures.

As discussed in the conceptual framework, we expect that workers' family incomes are correlated with preferences for health insurance versus wages. In the estimates from Table 2, which included average family income (10,000s of dollars) of workers in an establishment, we observe a positive and significant effect. An increase of \$1,000 in average family income is associated with a .0972 increase in the probability of an ESI offer among small employers. We also find positive and statistically significant relationships between income and the probability of offering ESI among medium and larger employers, although the magnitudes are smaller (.0665 and .045, respectively).

Other workforce characteristics, such as the age and sex distribution of an establishment's workers, are related to preferences for insurance. Small employers with between 20% and 50% of workers age 50 and older are slightly more likely to offer ESI (.029) than small establishments with a "young" workforce (less than 20% of workers are age 50 or older). However, small employers with more than 50% of workers age 50 and older are .0482 less likely to offer insurance than those with a young workforce. While we expect that older workers have higher health risk and therefore stronger demand for coverage, a small employer with an older workforce may not be able easily to obtain coverage given market conditions. Interestingly, this pattern of results is not present among medium or large employers.

Across the three models, the parameter estimates suggest heterogeneous responses of the decision to offer health insurance with respect to the percentage of female employees. The results clearly suggest that small establishments where at least one-third of the workforce is female are more likely to offer ESI relative to small establishments that

are predominantly male. However, we find no such evidence among medium or large employers.

Given the quasi-fixed costs of insurance administration, employers may be less likely to offer insurance if they hire a high percentage of part-time workers. We find a modest negative relationship between the percentage of part-time workers at an establishment and its probability of offering ESI. Specifically, a 10% increase in the percentage of part-time labor is associated with a .02 decrease in the probability of offering ESI among small employers, with smaller effects found for medium and large employers.

An indicator for the presence of unionized workers in the establishment is our final workforce characteristic. Interestingly, the results suggest that establishments with a union presence are slightly less likely to offer ESI relative to those without a union presence, after controlling for other factors. This is opposite to what we observe in the descriptive statistics. To investigate the sensitivity of this result, we estimated models that included interaction terms between union presence and income. In these models (output not reported), the main effect of union presence becomes positive, but this does not change the tax-price elasticities relative to the baseline model.

The pattern of marginal effects for the industry to which an establishment belongs is also interesting. After controlling for other workforce and establishment characteristics, we find notable differences in the pattern of industry effects across firm size strata. For example, large employers in industries such as accommodation, food services, entertainment, and recreation are almost 20 points more likely to offer insurance relative

to religious, civil, or other non-profit industries (reference category). In contrast, we find no evidence any significant differences for small or medium-sized employers.

The results for other establishment characteristics generally align with our predictions. For example, a small or medium-sized employer's probability of offering insurance is positively related to its size even within strata. Older establishments and those that are non-profit are also more likely to offer insurance relative to newer and for-profit employers.

The results suggest a small but significant inverse relationship between the unemployment rate of the county in which the establishment operates and offering ESI for small employers only. Finally, a higher proportion of large establishments in the county is associated with a greater likelihood of offering ESI, but this relation again is found only among small employers.

5. Discussion and Concluding Remarks

We provide new evidence regarding worker and establishment factors that influence an establishment's probability of offering insurance. Small employers, defined as those having 49 or fewer workers, exhibit the strongest price-sensitivity, with an average tax price elasticity of offering of -0.813. Large employers are less price-sensitive, although the estimated elasticity of -0.123 is still statistically different from zero.

Other factors that predict an employer's probability of offering insurance include higher average family income of workers and a higher percentage of female workers, the latter among small employers. The results also suggest that small employers are sensitive

to local labor market conditions, which were changing dramatically during the study period. The estimates suggest a small but significant inverse relation between the unemployment rate of the county in which the establishment operates and offering ESI. We also find that a higher proportion of large establishments (50 workers or more) in the county is associated with a greater likelihood of a small employer offering ESI, presumably to remain competitive in the labor market.

Some limitations of our study are worth noting. First, the unit of analysis is an establishment. Multi-location firms may decide to offer insurance based on firm-level attributes that we don't observe. Second, the MEPS-IC only includes a categorical measure of the establishment's wage distribution. This measure, which we used to impute family income, is not sensitive to extreme values of income that may be found in some firms. Third, our model doesn't consider insurance market competition. To the extent that establishments in more competitive markets have lower administrative costs and/or loading fees for insurance, this may be positively related to offering coverage.

Several features of ESI make it relatively more attractive than coverage purchased individually. Employer sponsored insurance has lower administrative costs and guaranteed renewability. It also provides legal protection against being denied coverage based on health risk, protects those who are ill from large premium increases, and of course, ESI has preferential tax treatment of premiums. While ESI has been eroding slowly over the past decade because of rising cost pressures, its future may be affected even more by public policy, including both broad-based and targeted efforts.

As policymakers devise strategies to reduce budget deficits, one approach is to raise tax rates to increase revenue. To the extent that changes to the tax code result in higher federal and/or state marginal tax rates, this would reduce the tax price of insurance. Our estimates suggest that reducing the tax price would increase the probability that an employer offers insurance, assuming that the tax treatment of ESI premiums does not change.

However, in recent years, policymakers have begun to question the current tax treatment of ESI premiums because this subsidy is costly and it distorts incentives. One controversial provision of the Patient Protection and Affordable Care Act, slated for implementation in 2018, is the ‘Cadillac’ tax. This provision imposes a 40% excise tax on premiums of health plans offered by employers and insurers that are above specific thresholds. For 2018, these thresholds are \$10,200 for single coverage and \$27,500 for a family policy, although the legislative language allows for some modifications depending on the rate of medical inflation between 2010 and 2018 (www.kff.org, 2013). The ‘Cadillac’ tax in many ways is like a cap on the tax subsidy of insurance. Other policies that propose to directly reduce or eliminate the ESI tax subsidy would also affect ESI offers as well as other aspects of benefits (e.g., coverage generosity, employer versus employee contributions). Future work on employers’ offers of health insurance is needed to investigate how employers will respond to these and other economic incentives resulting from changes to the legislative and market environments.

References

- Abraham, J. T. DeLeire, and A. Royalty. "Access to Health Insurance at Small Establishments: What Can We Learn from Analyzing Other Fringe Benefits?" *Inquiry*, 2009, 46(3): 253-273.
- Bernard, D. and T. Selden. "Employer Offers, Private Coverage, and the Tax Subsidy for Health Insurance: 1987 and 1996," *International Journal of Health Care Finance and Economics*, 2002, 2(4): 297-318.
- Bundorf, M.K. "Employee demand for health insurance and employer health plan choices." *Journal of Health Economics*. 2002, 21: 65-88.
- Cawley, J. and K. Simon. "Health Insurance Coverage and the Macroeconomy." *Journal of Health Economics*, 2005, 24: 299-315.
- Emmons, D.W., J.R. Guardado, and C.L. Kane. *Competition in Health Insurance: A Comprehensive Study of U.S. Markets, 2012 Update*. Chicago: American Medical Association, 2012.
- Danzon, P. "Mandated employment-based health insurance: incidence and efficiency effects," Working Paper. University of Pennsylvania, Philadelphia, PA, 1989.
- DeNavas-Walt, C., B. Proctor, and J. Smith. "Income, Poverty, and Health Insurance in the United States: 2011," U.S. Census Bureau, September 2012, <http://www.census.gov/prod/2012pubs/p60-243.pdf>
- Dowd, B. and R. Feldman. "Voluntary Reduction in Health Insurance Coverage: A Theoretical Analysis." *Eastern Economic Journal*, 33(3): 215-231.
- Feenberg, D. and E. Coutts. "An Introduction to the TAXSIM Model." *Journal of Policy Analysis and Management*, 1993, 12(1): 189-194.
- Feldman, R., B. Dowd, S. Leitz, and L. Blewett. "The Effect of Premiums on the Small Firm's Decision to Offer Health Insurance," *Journal of Human Resources*, 32:4 (Fall, 1997), 635-658.
- Goldstein, G. and M. Pauly. "Group Health Insurance as a Local Public Good," in *The Role of Health Insurance in the Health Services Sector*, ed. by R.N. Rossett, New York: National Bureau of Economic Research, 1976, 73-110.
- Grossman, M. "On the concept of health capital and the demand for health." *Journal of Political Economy*, 80: 223-243.
- Gruber, J. and J.M. Poterba. "Tax Subsidies to Employer-Provided Health Insurance," in *Empirical Foundations of Household Taxation*, ed. by M.S. Feldstein, Chicago: University of Chicago Press, 1996.

Gruber, J. and M. Lettau, "How Elastic Is the Firm's Demand for Health Insurance?" *Journal of Public Economics*, 88:7 (2004), 1273-1293.

Hadley, J. and J. D. Reschovsky, "Small Firms' Demand for Health Insurance: The Decision to Offer Insurance," *Inquiry*, 39:2 (2002), 118-137.

Hay Huggins Company, 1987, U.S. House Committee on Ways and Means, *Health Care Resource Book*, Washington, DC: U.S. Government Printing Office, April 16, 1991, 107.

Helms, W. D., A. Gauthier, D. Campion. "Mending the Flaws in the Small-Group Market." *Health Affairs*, 1992, 11(2): 7-27.

Jensen, G. and J. Gabel. "State Mandated Benefits and the Small Firm's Decision to Offer Insurance." *Journal of Regulatory Economics*, 1992, 4(4): 379-404.

Karaca-Mandic, P., J. Abraham, and C. Phelps. "How do Loading Fees Vary by Group Size? : Implications for Health Reform." *International Journal of Health Care Finance and Economics*. 2011, 11(3): 181-207.

Kronick, R., L. Olsen, and T. Gilmer. "The Response of Small Businesses to Variation in the Price of Health Insurance: Results from a Randomized Controlled Trial." *Medical Care Research and Review*. 2008, 65: 187-206.

Marquis, M.S. and S. Long. "To Offer or Not to Offer: The Role of Price in Employers' Health Insurance Decisions," *Health Services Research*, 2001a, 36(5): 935-958.

Marquis, M.S. and S. Long. "Employer Health Insurance and Local Labor Market Conditions." *International Journal of Health Care Finance and Economics*, 2001, 1(3/4): 273-292.

Morrisey, M., G. Jensen, and R. Morlock. "Small Employers and the Health Insurance Market." *Health Affairs*. 1994, 13(5): 149-161.

Pauly, M. "Taxation, health insurance, and market failure." 1986, *Journal of Economic Literature*, 24: 629-675.

Pauly, M.V., H. Kunreuther, and R. Hirth. "Guaranteed Renewability in Insurance," *Journal of Risk and Uncertainty*, 10:2 (March, 1995), pp. 143-156.

Royalty, A.B. "Tax Preferences for Fringe Benefits and Workers' Eligibility for Employer Health Insurance," *Journal of Public Economics*, 75:2 (2000), pp. 209-227.

Summers, L. "Some Simple Economics of Mandated Benefits." *American Economic Review*, 1989, 79(2): 177-183.

Thorpe, K. A. Hendricks, D. Garnick, K. Donelan, and J. Newhouse. "Reducing the Number of Uninsured by Subsidizing Employment-Based Health Insurance." *JAMA* 1992, 267(7): 945-948.

Table 1: Descriptive Statistics by Firm Size Strata and Offer Status

Variable	Small		Medium		Large	
	No Offer (n=32395)	Offer (n=24587)	No Offer (n=1351)	Offer (n=12431)	No Offer (n=859)	Offer (N=22069)
Weighted average tax price*	0.7072	0.6665	0.7226	0.6683	0.6903	0.6624
Weighted average family income (\$10,000s)*	4.0537	6.1835	3.8016	6.1088	4.6561	6.5925
Multi-location establishment	2.31	5.43	28.28	36.78	76.29	92.6
Business tenure < 1 year	2.05	0.39	0.99	0.29	0.37	0.11
Business tenure 1-4 years	18.11	8.01	11.22	4.37	3.46	1.1
Business tenure 5-9 years	19.89	13.41	15.24	7.45	16.65	2.09
Business tenure 10 or more years	59.96	78.19	72.54	87.89	79.53	96.71
Non-profit ownership	6.49	10.66	4.96	19.76	3.11	14.27
Retail or wholesale trade	14.91	17.35	9.9	13.83	14.11	20.23
Accommodation, food, entertainment/rec services	23.91	7.49	34	11.66	20.33	9.75
Personal or administrative, building support services	12.63	8.88	19.89	7.18	35.7	10.32
Professional services	18.83	28.16	15.03	30.16	14.78	26.55
Religious, civil or other non-profit	4.13	5.64	1.1	3.01	0.08	0.31
Finance, insurance, real estate, company management	5.46	7.51	1.86	7.47	7.87	13.36
Manufacturing or mining	3.8	9.25	5.89	15.63	3.78	11.71
Transportation or Utilities	2.58	2.53	2.72	2.92	2.54	6.14
Construction, agriculture, forestry, fishing, hunting, or unknown	13.76	13.19	9.61	8.15	0.8	1.61
Some union employees	2.41	4.46	6.57	10.33	10.36	28.65
Less than 20% of workers age 50 or older	59.54	52.03	75.74	46.6	64.49	40
20-50% of workers age 50 or older	26.27	36.25	19.26	46.81	32.79	54.76
More than 50% of workers age 50 or older	14.19	11.72	5.01	6.6	2.72	5.24
Less than or equal to 33% of workers are female	39.7	46.34	30.94	36.77	24.33	22.15
Greater than 33-66% of workers are female	24.58	25.1	36.59	33.96	50.94	49.71
More than 66% of workers are female	35.72	28.56	32.46	29.27	24.72	28.14

Percent of establishment's workers part-time	40.93	17.81	42.08	17.31	26.69	20.8
County unemployment rate	8.21	7.94	8.24	8.03	8.26	8.01
Proportion of establishments in county with >50 workers	0.0504	0.0533	0.054	0.0548	0.0556	0.0568

Notes: All values weighted by employees in an establishment.
*Denotes variables imputed from the MEPS-Household Component

Table 2: Binary Logit Models by Firm Size Strata for the Probability that an Establishment Offers ESI

	Small		Medium		Large	
	Marginal Effect	Standard Error	Marginal Effect	Standard Error	Marginal Effect	Standard Error
Weighted average tax price	-.2812**	.0227	-.2319**	.0441	-.1383**	.0524
Weighted average family income (\$10,000s)	.0972**	.0011	.0665**	.0029	.0450**	.0027
Firm size 0-9	Ref	Ref	.	.	.	.
Firm size 10-24	.2519**	.0055	.	.	.	.
Firm size 25-49	.3616**	.0079	.	.	.	.
Firm size 50-99	.	.	Ref	Ref	.	.
Firm size 100-499	.	.	.0398**	.0074	.	.
Firm size 500 and more	.	.	.	.	.	.
Multi-location establishment	-.0246*	.0106	-.0185*	.0075	-.0466	.0247
Business tenure < 1 year	Ref	Ref	Ref	Ref	Ref	Ref
Business tenure 1-4 years	.0583**	.0212	-.0162	.0497	.0403	.0455
Business tenure 5-9 years	.0981**	.0211	-.0183	.0488	.0727	.0431
Business tenure 10 or more years	.1653**	.0207	.0084	.0477	.0841*	.0403
Non-profit ownership	.0990**	.0112	.0537**	.0101	.0845**	.0149
Retail or wholesale trade	.1108**	.0137	.0576	.0349	.2031**	.0414
Accommodation, food service, entertainment/recreation services	.0115	.0145	.0605	.0345	.1998**	.0422
Personal or administrative, building support services	.0502**	.0142	-.0015	.0359	.0833*	.0412
Professional services	.0045	.0126	.0244	.0332	.0482	.0399
Religious, civil or other non-profit	Ref	Ref	Ref	Ref	Ref	Ref
Finance, insurance, real estate, company management	.0069	.0141	.0074	.0371	.0840*	.0408
Manufacturing or mining	.1524**	.0156	.0687	.0357	.2139**	.0475
Transportation or Utilities	.0675**	.0177	.0317	.0394	.1703**	.0445
Construction, agriculture, forestry, fishing, hunting, or unknown	.0792**	.0140	.0276	.0408	.2110**	.0502
Some union employees	-.0322*	.0131	-.0175	.0201	-.0486**	.0082
Less than 20% of workers age 50 or older	Ref	Ref	Ref	Ref	Ref	Ref

20-50% of workers age 50 or older	.0286**	.0050	.0224**	.0078	-.0149*	.0067
More than 50% of workers age 50 or older	-.0482**	.0058	-.0232	.0134	-.0073	.0123
Less than or equal to 33% of workers are female	Ref	Ref	Ref	Ref	Ref	Ref
Greater than 33-66% of workers are female	.0782**	.0058	.0127	.0096	-.0099	.0089
More than 66% of workers are female	.0498**	.0056	-.0081	.0102	.0322**	.0101
Percent of establishment's workers that are part-time	-.0023**	.0001	-.0012**	.0001	-.0002*	.0001
County unemployment rate	-.0036**	.0013	-.0018	.0018	.0003	.0018
Proportion of establishments in a county that have over 50 workers	.5335**	.1616	-.2657	.2604	.5674	.3036
Year 2008	Ref	Ref	Ref	Ref	Ref	Ref
Year 2009	-.0034	.0067	.0057	.0109	.0045	.0093
Year 2010	-.0108	.0070	-.0002	.0110	.0117	.0102
Notes: **p<.01, *p<.05						

Table 3: Tax Price Elasticity of Offering ESI by Firm Size Strata

	Elasticity of Offer	Standard Error	Z
Small Firms (0-49 employees)	-0.8133	.0666	-12.2031
Medium Firms (50-499 employees)	-0.2619	.0516	-5.0730
Large Firms (500 or more employees)	-0.1227	.0472	-2.5965