HOW WILL THE AFFORDABLE CARE ACT CHANGE EMPLOYERS' INCENTIVES TO OFFER INSURANCE?

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Abstract

This study investigates how changes in the economic incentives created by the Affordable Care Act (ACA) will affect the probability that private-sector U.S. employers will offer health insurance. Using the Medical Expenditure Panel Survey Insurance Component for 2008-2010, we predict employers' responses to key ACA provisions. Our simulations predict that overall demand for insurance will rise, driven by workers' desire to avoid the individual mandate penalty and the availability of premium tax credits in exchanges. Our analyses also suggest that the average probability of an establishment offering insurance will decline from .83 to .66 with ACA implementation, although there is considerable variation by firm size, industry and union status.

Keyword*:* health insurance, Affordable Care Act; premium tax credits; employer behavior

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I. Introduction

In 2011, 58% of the non-elderly U.S. population obtained health insurance through an employer (DeNavas-Walt, Proctor, and Smith, 2012). The preferential tax treatment of premiums for employer-sponsored insurance (ESI) and economies of scale create strong incentives that encourage provision of health insurance through the workplace relative to the individual market.

Several provisions in the Patient Protection and Affordable Care Act (P.L. 111-148, hence "ACA") will affect employers' incentives to offer ESI. In 2014, employers that do not offer coverage will pay an annual penalty of $2,000 per full-time employee (exempting the first 30 employees) if *any* full-time employee buys subsidized insurance in a new health insurance exchange.

At the same time that the ACA will penalize larger employers for not offering health insurance, it will provide a new option for workers to buy health insurance outside their place of employment. With the opening of health insurance exchanges in 2014, the ACA will provide tax credits to individuals with family incomes between 133% and 400% of the federal poverty level (FPL) who do not have access to an offer of ESI to purchase exchange-based coverage. These premium assistance credits will reduce the cost of health insurance to 3 percent of income for those at 133% FPL[2], phasing out to 9.5 percent of income at 300-400% FPL.

One of the most controversial ACA provisions also goes into effect in 2014, when most individuals in the United States will be required to have insurance or pay a penalty.

[2] The 2013 federal poverty level (FPL) is $11,490 for one person, increasing to $39,630 for a family of eight. Modified Adjusted Gross Income (MAGI) will be used to determine premium subsidies, resulting in an effective rate of 138% FPL after a 5% offset.

At full implementation in 2016, the penalty for a single person will be the greater of $695 (up to three times that amount for a family) or 2.5% of household income. Although the penalty is not large relative to the full price of an insurance policy, this requirement is expected to increase demand for coverage by those currently lacking insurance. Taken together, the employer shared responsibility requirement, the introduction of insurance exchanges with premium assistance credits for lower-income individuals without access to ESI, and the individual mandate have the potential to influence employers' incentives to offer health insurance.

In addition to provisions that directly affect employers, other ACA provisions – regulation of insurers' medical loss ratios and premiums, and a requirement to offer "essential" benefits – are expected to affect the functioning of health insurance markets. These policies have the potential to change the types of insurance products sold, the premiums charged, and the degree of market competition.

We investigate how these changes in economic incentives created by the ACA will affect the probability that private-sector U.S. employers will offer ESI. Using the Medical Expenditure Panel Survey (MEPS) for 2008, 2009, and 2010, we predict employers' responses to key ACA provisions in four steps. First, we estimate a binary logit model to identify the factors that influence an employer's decision to offer ESI. Second, we predict how key ACA provisions that will be implemented in 2014 alter the economic incentives of workers to choose ESI versus an "outside good" and an individual exchange policy versus the "outside good." Third, using the model estimates, we predict the relative probabilities of each choice. Finally, we solve for the unconditional probabilities of an ESI offer, the individual exchange option, and the outside good.

Our simulations suggest that the average probability of an establishment offering ESI will decline from .83 to .66 with ACA implementation, although there is considerable variation by firm size, industry, and union status. Moreover, our results show that the introduction of a new option – individual exchange coverage with income-based premium assistance credits – will be attractive to a high percentage of workers who do not have an ESI offer from their employer.

Section 2 summarizes the data. Section 3 describes our methods for conducting the simulation. Section 4 presents results and study limitations. Section 5 discusses the findings and implications for policy.

II. 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 and characteristics of the establishment. Employers that offer insurance provide information about the plans 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 coverage relative to wages. This value likely varies based on the composition of an establishment´s workforce, including workers' wages, family incomes, family size,

[3] Because the MEPS-IC is not available to the public, we obtained approval to use the data from the U.S. Bureau of the Census. All analyses were conducted in the Minnesota Census Research Data Center.

demographics, and federal and state tax rates, given the tax-exempt status of premiums.[4] While the MEPS-IC contains some information about workers' attributes, it does not have the level of detail necessary to measure the price of ESI. Thus, we augmented 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 establishments.

Because the employer's decision to offer ESI may also depend on labor market conditions, we merged information on the establishment size distribution and unemployment rate for the county in which the establishment is located from the U.S. Bureau of the Census County Business Patterns (2008-2009) and the U.S. Bureau of Labor Statistics (2008-2010). We restricted our attention to private-sector establishments. Table 1 provides descriptive statistics of establishments that offer and do not offer insurance.

III. Methods

A. Estimating the Employer Offer Model

In our conceptual framework, an employer offers a combination of wages and health insurance that minimizes its labor costs, subject to maintaining its employees' utility at a level that keeps the establishment competitive in the labor market (Feldman and Dowd, 1987; Dowd and Feldman, 1987). Employees have preferences regarding the combination of wages and health insurance that comprise their total compensation. Given the tax-exempt status of employer-paid premiums (or total premiums for Section 125

[4] All tax rates (federal, state, OASDI, and marginal payroll tax rates for Medicare HI) were estimated using TAXSIM (Feenberg and Coutts, 1993).

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 should be more likely to offer health insurance, all else constant.

Other workforce attributes may influence employees' preferences for health insurance, including workers' family incomes and health status. 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. The most commonly used aggregate measure is the preferences of the average worker (Gruber and Lettau, 2004).

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 (e.g., staff to obtain premium quotes and coordinate open enrollment) 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 employers to be more likely to offer insurance. Other factors that vary geographically, including state regulations 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, such as firm size, industry, the employer size distribution in the local market, and macroeconomic conditions.

The offer model is written as follows:

$$(1) \quad \ln U(ESI_{it}) - \ln U(Not\,Offer_{it}) = \beta_0 + \beta_1 TP_{it} + \beta_2 WORK_{it} + \beta_3 ESTAB_{it} + \beta_4 LABOR_{it} + \beta_5 STATE_{it} + \beta_6 TIME_{it} + \varepsilon_{it}$$

The dependent variable is the difference in the log-utilities of offering ESI and an "outside good" of not offering ESI. If the employer does not offer ESI, this does not necessarily mean that the workers will be uninsured. They may have access to ESI through a spouse or they can buy insurance in the individual market.[5] However, as noted above, the individual market lacks economies of scale and does not offer a premium tax subsidy[6], so few workers take up that option (Marquis and Long, 1995). By convention, the log-utility of the outside good is normalized to zero.

Neither of the utilities in equation (1) is observed. Rather, we observe variables that influence the utility of offering ESI, and we postulate that the employer will offer ESI if:

$$(2) \quad \ln U(ESI_{it}) - \ln U(Not\,Offer_{it}) > 0$$

If we assume the error term in (1) has a logistic distribution, we can replace the unobserved dependent variable with an indicator that equals 1 if the firm offers ESI and zero if it does not. Then we estimate the coefficients (β) in (1) and express the probability that the firm offers ESI as:

$$(3) \quad \Pr(ESI_{it}) = \frac{\exp^{Xb}}{1 + \exp^{Xb}}$$

where *b* stands for the parameter estimates and *X* represents the variables listed in equation (1).

[5] A small proportion of workers may also qualify for Medicaid or state-based public insurance programs.

[6] Self-employed individuals who have a net profit for the year may be able to deduct the premiums paid for health insurance for themselves and qualified dependents from their taxable income.

Our key explanatory variable is the tax price (TP) – the price of a dollar of health insurance relative to a dollar of wage income. TP is less than 1.0 given the tax-exempt status of employer-paid ESI premiums (total premiums for employers with Section 125 plans). It varies within establishments given variation in workers' family incomes and across establishments given different income distributions. Our identification strategy relies on observed differences in the progressivity of marginal tax rates across states from 2008 to 2010.[7]

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, we selected workers in private-sector establishments. We computed total family income, defining the family using the Health Insurance Eligibility Unit (HIEU[8]) identifier on the MEPS-HC. 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

[7] Seven states did not have state income taxes in 2008. Among states with income taxes, there is wide variation in the number of brackets and rates. For example, the maximum rate in Arizona was 4.54 percent in 2008, in contrast to Vermont's rate of 9.5 percent.

[8] The HIEU includes all members of the family who would typically be covered under a private insurance family plan: adults, spouses, and unmarried natural/adoptive children age 18 and under (or age 24 and under who are full-time students).

Insurance taxes.[9] We then computed a tax price for each worker in the MEPS-HC using the following formula:

$$(4) \qquad TP = \frac{(1 - f - s - ss - mc)}{(1 + ss + mc)}$$

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. The OASDI and Medicare HI taxes were imputed as 7.65% of payroll.

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 the family size of the worker (also predicted using a regression). All of the explanatory variables in that regression also exist in the MEPS-IC. We then predicted tax prices from the MEPS-HC to each establishment in the MEPS-IC. We repeated this method to predict workers' family income in the MEPS-IC establishments.[10]

In addition to the tax price, we considered several other workforce attributes: the percentage of part-time workers, the wage, age and sex distributions of workers in the establishment, and the presence of unionized workers in the establishment. Our model also controls for establishment size, single or multiple locations, and indicators for one-digit industry categories, business tenure, and non-profit ownership.[11]

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[9] Since the MEPS-HC does not include state identifiers and internet connections are not permitted in Census RDCs, we repeated this simulation for each worker for each state. We then selected the state-specific observation after bringing the file into the RDC.

[10] See Abraham, Graven, and Feldman (2013) for additional information on the construction and prediction of the tax price.

[11] We used multiple imputation and STATA's "nearest-neighbor" approach to address item non-response issues for some of the workforce and establishment measures. This method uses linear regressions to predict values for the outcomes of interest based on a set of explanatory variables. We used information on firm size,

Local labor market conditions are captured by the unemployment rate for the county in which the establishment is located and the percentage of establishments in the county with more than 50 workers. Finally, we include state fixed effects to control for state-specific, time-invariant factors that may influence employer offering.

The employer offering model was estimated with binary logit and STATA 12.0/SE statistical software. All estimates were weighted to reflect the number of employees in private-sector U.S. establishments. The results are reported in Table 2.

B. Measuring Changes in Economic Incentives in 2014

In 2014, employers will have the same choices that were present before the ACA: to offer ESI or not to offer ESI. If an employer does not offer ESI, workers may seek an alternative source of coverage or remain uninsured. But in 2014, workers will have a new option – to purchase individual coverage in newly-created exchanges with income-based premium subsidies. In other words, there will be three options: ESI, individual exchange coverage, and the outside good.[12]

Because the ACA will change the economic attractiveness of particular sources of health insurance as well as individuals' overall incentive to have insurance, it is important to consider the incentives affecting all three choices when predicting employer behavior. Although we consider all three options, we are constrained by having only one offer equation. Thus, we assume that the same coefficients and unmeasured factors in the

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industry and state as explanatory variables. Values are imputed for observations missing workforce and establishment information from establishments that are similar on these dimensions to maintain a complete sample for the analysis.

[12] In 2014, the "outside good" will include coverage through a spouse, public insurance for those who are eligible, and the purchase of individual insurance outside the exchange. There is still much uncertainty regarding the long-term viability of an "outside" individual insurance market, since many ACA regulations apply both inside and outside exchanges. Subsidies, however, may be obtained only in the exchanges.

model's constant term that affect the choice of offering ESI versus the outside good in equation (1) can be applied to the choice of the individual exchange coverage versus the outside good. This assumption is reasonable if the arguments in the utility function (e.g., tax price, income, and demographics) and their effects on workers' utility are the same for both sources of insurance. We discuss this assumption further in the limitations section.

While we assume the coefficients are the same, the ESI and individual exchange options will have different tax prices. Below we describe how each of the ACA provisions we consider may affect the tax price of insurance. We model the *sum* of these effects as a single change in the tax price – one for ESI and one for the individual exchange policy. We also consider other anticipated changes to insurance markets (e.g., differences in administrative loading fees between ESI and exchanges).

Individual Mandate: The ACA requires most individuals to obtain qualified coverage or pay a penalty. When fully implemented, the annual penalty for a single person will be the greater of $695 (or up to three times that amount for a family ($2,085)) or 2.5% of family income. The employees can escape this penalty by choosing either ESI or the individual exchange option. We calculated the average penalty for each establishment.

Value of the ESI Tax Subsidy: Under the existing tax code the employer-paid portion of the ESI premium (or the total premium for firms with Section 125 status) is exempt from income and payroll taxes. This provision is not affected by the ACA. We estimated the value of the tax subsidy by estimating predictive models of ESI premiums and the employer-paid portion of premiums. Next, we inflated all amounts to 2014 dollars and then estimated the value of the tax subsidy by multiplying the predicted tax-exempt premium amount by (1-tax price) as defined previously.

Employer Shared Responsibility Requirement: If an employer with at least 50 full-time equivalent workers does not offer coverage in 2014 and any full-time employee receives a premium tax credit for purchasing insurance in an exchange, the employer will pay an annual penalty of $2,000 times the number of full-time employees less 30. We used the following formula to estimate the establishment's penalty:

(5) Penalty = (number of the full-time workers at firm – 30)*$2,000*(number of employees in establishment/number of employees in the firm).

Because the MEPS-IC does not identify the number of full-time workers at the firm level, we used information on the number of part-time and full-time workers at each establishment and assumed that the distributions at the firm and establishment levels are similar.

If an employer that currently offers ESI drops it in 2014, its workers will lose the value of the ESI tax subsidy. We assume the employer must adjust wages upward to maintain workers' total compensation at its prior level.[13] We raised the incomes of workers in establishments that offered insurance by an amount equal to the tax-exempt premium less the employer shared responsibility requirement ("employer penalty") and divided by 1.0765 (since the employer will have to pay payroll taxes on the increase in wages). We adjusted incomes of workers in larger establishments that did not have an offer downward by the amount of the employer penalty divided by 1.0765.

Value of Exchange Subsidies: In 2014, individuals who lack an ESI offer can buy subsidized insurance in exchanges. The value of the exchange subsidy equals the premium of a benchmark health insurance plan in a given state, less a percentage based on the family's income relative to the federal poverty level (FPL). The benchmark plan is the second-

[13] We assume the adjustment will be through wages only, but employers could adjust other types of compensation, such as making additional contributions to retirement plans.

lowest cost "silver plan" which has a 70 percent actuarial value (AV). The Congressional Budget Office has estimated that the premium of a silver plan will be $5,300 for single coverage and $15,000 for family coverage in 2016 ($4,762 and $13,476 in 2014 dollars, assuming 5.5% annual real growth). While there is still some uncertainty over the amount of the subsidy, an estimate may be generated from one of the publicly available subsidy calculators. For example, using the subsidy calculator on the Kaiser Family Foundation website, a family of four (2 adults ages 35 and 38 with two children) earning $31,750 in 2014 (133% FPL) would pay $635 out-of-pocket for a policy that costs $11,282 (http://kff.org/interactive/subsidy-calculator/, 2013). We used the FPL guidelines and the subsidy schedule, along with the estimated silver plan premiums, to calculate the out-of-pocket maximum and the value of the subsidy that a worker would receive based on his/her family income.

We consider two other changes to insurance markets that are likely to be affected by the ACA: changes in administrative loading fees and product offerings.

Administrative Loading Fees: The values of ESI and the individual exchange option may differ because of differences in loading fees, defined as the percentage of expected benefits paid out for administrative costs and profits. Karaca-Mandic, Abraham, and Phelps (2011) found a loading fee gradient by firm size from 37% in firms of less than 100 workers to 4% in firms with more than 10,000 workers. Historically, estimated loading fees for the individual market have been quite high. Proponents of insurance exchanges argue that loading fees will be lower because of the elimination of medical underwriting and stronger competition among insurers resulting from better information on price and quality. Additionally, the ACA implemented medical loss ratio (MLR) regulation in January

2011 for the individual and fully-insured small and large group markets. The MLR is the percent of premium revenues paid out for clinical benefits. The regulation specifies a minimum MLR of 80% in the individual and small group markets (approximately a 20% loading fee). To account for this regulation, we assume ESI loading fees of 20% for firms with fewer than 100 workers; 15% for those with 100-9,999 workers; and 4% for firm sizes of 10,000 or more. Based on individual market insurers' early compliance with the MLR regulation, we assume a loading fee of 23.5% for individual exchange coverage.

Spending on Covered Services: Individuals switching from ESI to an individual exchange policy may choose a silver plan (with 70% actuarial value) because that plan's premium determines their subsidy. Alternatively, they may purchase coverage similar to what their employer offered. Empirical evidence suggests that ESI plans, on average, have a higher actuarial value than plans in the individual market (Gabel et al. 2012). We assumed that workers will purchase coverage similar to ESI. To account for this, we used information on ESI premiums and our loading fee assumptions for ESI and exchange coverage to estimate the exchange premium for "ESI-like" coverage.

Finally, we aggregated the effects predicted above and expressed them as changes in the tax price:

(6) Baseline ESI tax price = 1-(ESI tax subsidy/predicted ESI total premium)

(7) 2014 ESI tax price = 1-((ESI tax subsidy + employer penalty +individual mandate)/predicted ESI total premium)

(8) 2014 individual exchange tax price = 1-((exchange subsidy + individual mandate)/exchange premium for "ESI-like" plan)

We illustrate these calculations with a hypothetical example. Suppose we want to quantify the economic incentives for a medium-size, self-insured employer to offer ESI

versus the "outside good" in 2014. Let's suppose the premium offered by the employer is $6,000 and that the marginal tax rates of workers result in an average tax price of .697. If the employer offers ESI, all employees who are eligible for coverage can have a $1,818 tax subsidy ($6,000*(1-.697)), given the tax treatment of ESI premiums. Also, if the employer offers coverage, an employee avoids the penalty that would be passed on to him in lower wages ($1,394) and the individual penalty if he goes without insurance (assumed to be $1,000).[14] We need to express these incentives relative to the premium. In this stylized example, the net cost of an ESI policy (versus the outside good) is $1,788 and the tax price is .298 (1-(($1,818+$1,394+$1,000) / $6,000)).

We can also consider the choice of an individual exchange policy versus the outside good in 2014. Unlike ESI, there is no tax subsidy for the premium paid by the worker. Let's assume that the exchange premium for an ESI-like plan is $6,175. We arrived at this value by multiplying the predicted ESI premium for the worker by a factor equal to ((1+exchange loading fee)/(1+ESI loading fee)) to estimate how much the exchange premium would be for "ESI-like" coverage. If the worker has low family income and does not have access to another ESI offer through a spouse, he will qualify for a premium tax credit. For example, a single worker earning approximately $23,000 per year or about 200% of FPL would be required to pay up to 6.3% of his income toward the premium. If one assumes this policy is similar to a silver plan, then the value of the credit would be about $3,300. By purchasing coverage, the worker also avoids the individual mandate penalty. In this case, the cost of an individual exchange policy is $1,875 ($6,175-($3300+$1,000)) and the tax price is .303.

[14] The wage adjustment resulting from the employer penalty assumes that each worker bears an equal share of the penalty imposed on the firm. These changes in wages may not occur instantly in 2014. We model the long run effects as if the changes have fully occurred.

C. Predicting the Options of ESI Offer, Individual Exchange, and Outside Good

After aggregating the effects described above and expressing them as tax prices, we used the model estimates and the new ESI tax price to predict the probabilities of an ESI offer versus the outside good in 2014. We then repeated this step using the 2014 individual exchange tax price to predict its probability versus the outside good.

In the final step in this exercise, we recovered the unconditional probability of the outside good through algebraic manipulation:

$$
\begin{aligned}
&\Pr_{ESI} / \Pr_{NO} = \exp(X_{ESI} b) \\
&PR_{EXC} / P_{NO} = \exp(X_{EXC} b) \\
&PR_{ESI} + PR_{EXC} + PR_{NO} = 1 \rightarrow \\
&PR_{NO} = 1/(\exp(X_{ESI} b) + \exp(X_{EXC} b) + 1)
\end{aligned}
\tag{9}
$$

We used the same method to solve for the probabilities of offering ESI and the exchange option.

IV. Results and Study Limitations

A. Results

Table 3 provides descriptive statistics by firm size for the average tax subsidy, individual mandate, employer penalty, and exchange subsidy per worker in establishments that offer insurance and those that do not. All estimates are weighted by the number of workers in the establishment.

As noted above, the value of the ESI tax subsidy is a function of workers' incomes and plan premiums. Across all establishments, the mean subsidy is $2,728 per worker.

Among employers that offer insurance, the average tax subsidy per worker ranges from $2,487 for small firms to $3,065 for large ones. The estimated average tax subsidies for non-offering employers are considerably lower.

Across workers in all establishments, the individual mandate penalty per worker is $1,615. Workers in non-offering small firms have the lowest individual mandate penalties. Small firms (and their workers) are also exempt from the shared responsibility requirement if they do not offer coverage in 2014. In contrast, the average employer penalty among larger firms that do not offer insurance is $1,566 per worker.

The average exchange subsidy per worker reflects differences in workers' incomes across firm sizes. Notably, the average exchange subsidy for workers in non-offering small and medium employers is about twice as large as those that sponsor insurance ($3,197 vs. $1,473 for medium size employers), suggesting that workers in non-offering employers have considerably lower incomes.

Table 4 summarizes the tax prices for the baseline ESI offer as well as the 2014 ESI option and the 2014 individual exchange option. Overall, the average tax price for ESI at baseline is .67, with the largest variation by the wage category of an establishment. The second and third columns of Table 4 summarize the average tax prices for ESI and the individual exchange option in 2014. Recall that the ESI tax price incorporates the value of the ESI tax subsidy and the individual mandate, whereas the 2014 individual exchange tax price includes the value of exchange subsidies and the individual mandate.

The average 2014 ESI tax price is .30, which is considerably lower than the baseline ESI tax price. All else equal, this implies that an ESI offer will be much more attractive in 2014 when the ACA provisions go into effect. Workers who choose the individual exchange

option forgo the ESI tax subsidy, but they may be eligible for exchange subsidies if they are lower-income and do not have access to another ESI offer through a spouse. The estimated average tax price for the individual exchange option is .52, suggesting that it too is relatively more attractive compared with ESI at baseline.

Table 4 also illustrates how the economic incentives in the 2014 tax prices vary by workforce and establishment characteristics. We observe a modest change in the average ESI tax price for small firms (0-49 workers) between baseline and 2014 (.68 to .45) compared with large firms (.66 to .22), due in part to the exemption of small firms from the shared responsibility requirement.

Table 5 reports simulations for the probabilities of an ESI offer, the individual exchange option, and the outside good following the introduction of key ACA provisions. Column (1) is the average predicted probability of the baseline (pre-2014) ESI offer. Columns (2), (3) and (4) are unconditional average predicted probabilities of an ESI offer, the individual exchange option, and the outside good in 2014.

The top row in Table 5 provides the results for the overall population, weighted by the number of employees in private-sector U.S. establishments. The average predicted probability of an ESI offer falls from .83 at baseline to .66 in 2014 (see column 2). However, much of this decline is offset by the individual exchange option, which has an average predicted probability of .26. The outside good probability falls from .17 at baseline to .08 in 2014.

Table 5 also reports the average predicted probabilities of each option by firm size. At baseline, the average predicted probability of an ESI offer for very small employers (<9 workers) is 0.35 compared with 0.95 for large employers (500 or more workers). We

observe a non-linear pattern of predicted declines in ESI offers: decreases in ESI offers are modest for very small and very large employers (11% for the former and 15% for the latter), but the changes are considerably larger for employers with between 25 and 499 workers.

The biggest decline in ESI offer probability is for workers in the accommodation, food service, entertainment and recreation services industries, where the probability of an ESI offer falls from .69 to .42 (39 percent decline). However, the model also predicts that many workers in these industries will shift to the individual exchange option, based on the offering probability estimate of .43. Other industries predicted to have large decreases in ESI offers are construction (.70 to .49) and retail and wholesale trade (.86 to .65). In contrast, we predict the smallest changes in ESI offers for the professional services and finance, insurance, real estate and company management industries.

There is a clear pattern of ESI offers based on the presence of unionized workers. At baseline, establishments with no unionized workers have an average probability of offering ESI of .81 compared with .93 for establishments with a union presence. The model predicts that the average probability of offering ESI in establishments without a union presence will drop to .63 (22% drop), but employers with a union presence will see a smaller decline to .82 (11% drop).

The demographic composition of an establishment's workers is important for ESI offers. The simulations show differential changes in ESI offers by age, whereby employers with a young workforce (less than 20% of the workers age 50 or older) have a larger predicted decrease in the probability of offering ESI compared with establishments with higher concentrations of older workers.

B. Study Limitations

Several limitations are worth noting. First, we did not consider other ACA provisions that will affect employers. One is the availability of premium tax credits for small low-wage employers to offer ESI. While this subsidy may increase the probability of ESI offers, early evaluations suggest that it has been ineffective (General Accounting Office, 2012).

We did not model the value of cost-sharing credits that will be available for workers with incomes below 250% FPL who obtain exchange-based coverage. These credits will raise the actuarial value of the silver plan to a more generous plan with 94% actuarial value for individuals with income of 100-150% FPL, 87% for those between 150-200% FPL, and 73% for those between 200-250% (www.kff.org, 2010). This will increase the value of the exchange subsidy and will make this option more attractive for employers with workers who would qualify.

Another ESI provision we did not model will impose penalties on employers that do not offer 'affordable' coverage for certain lower-income workers. We assume employers will offer affordable coverage.

We also used an average exchange premium that varies only by family coverage tiers (single, employee-plus-one, and family). In 2014, exchange premiums will be determined by modified community rating. Adjustments will be based on family coverage tiers, age (3:1 rate band), geography, tobacco use status, and the actuarial value. While we account for family coverage tiers in the model, we did not consider either the age distribution of an establishment's workers or geography when estimating the exchange premium for "ESI-like" coverage. Older workers will face higher premiums for individual

exchange policies than younger workers. This will lead to a larger individual exchange tax price and reduce the attractiveness of this option for firms with older workers.

Additionally, in estimating the compensation returned to employees if an employer shifts from offering insurance to not offering it, we assumed that each worker would receive the average employer portion of the premium. It is difficult to know at present whether employers will behave in this way or use a more refined approach when making compensation adjustments. Moreover, our analyses do not assume any stickiness with respect to adjusting compensation packages. If this is difficult, there may be a lag in drops of coverage until compensation packages can be adjusted. A second important limitation is that we used the estimated parameters from the ESI offer model to predict the probability of the individual exchange option. Implicitly, we assumed that workers perceive the quality of ESI and exchange insurance as identical. Although we did account for differences in tax prices, loading fees, and covered spending (we assumed that workers who purchase individual exchange coverage will "buy up" their covered spending relative to the silver plan), we were not able to account for other potentially important factors – such as higher shopping costs in the exchanges. Because the individual exchange option does not yet exist, one cannot know how important these factors will be.

Also, we simulated the probabilities of the three options solely through measurable changes in the tax price without making explicit adjustments for the degree of "substitutability" between ESI and individual coverage or the persistence of ESI, as other simulation models have done. If workers perceive their current ESI offers as better than exchange coverage, our model may predict too much flight from ESI to exchanges.

Finally, one of the ACA's goals is to improve the functioning of the unregulated individual insurance market (the "outside good" in our model). To the extent the ACA is effective this may reduce the probabilities of both ESI and individual exchange options. The best way to estimate the "full" choice model that will be available in 2014 may be to use nested logit, with ESI and individual exchange coverage in the "insurance nest" versus the outside option. If employees perceive ESI and individual exchanges as similar, this may also reduce the probability of choosing the insurance nest.

V. Discussion and Policy Implications

The economic incentives created by the ACA are predicted to have a large effect on the overall demand for insurance by U.S. workers and on the sources through which they obtain coverage. Our simulations predict that overall demand for insurance will rise in response to the ACA, driven largely by workers' desire to avoid the individual mandate penalty and the availability of subsidized private insurance in exchanges. Notably, the "outside good" option which includes being uninsured is predicted to be 8% for workers in private-sector U.S. establishments, a rate far lower than the 17% baseline (pre-ACA) rate.

Employers whose workers stand to benefit the most from the availability of a new option – purchasing subsidized private insurance in exchanges – are the least likely to offer ESI in response to the ACA. While small and medium-size employers have lower baseline rates of ESI offers, our simulation shows additional movement away from ESI. The ACA provides fewer incentives for small firms to offer ESI compared with larger firms, given the absence of a shared responsibility requirement. Medium-size employers may shift away from ESI and toward the individual exchange option because workers in these establishments have lower incomes and can receive larger exchange subsidies than

workers in large firms. Establishments in accommodation, food service, entertainment, recreation services, and construction industries also are likely to have higher percentages of workers qualifying for premium tax credits. This may shift their most preferred choice from offering ESI to offering the exchange option.

There are clear tradeoffs for workers between purchasing ESI and individual coverage in exchanges. First, given economies of scale, ESI generally has lower administrative loading fees than individual coverage. As a result, individuals get more "bang for their buck" through group coverage. However, employers may not offer workers a choice of plans and the plan(s) they offer may not be what the individuals would have chosen on their own. With the introduction of exchanges and the availability of different types of plans based on actuarial value, workers may select plans that align more closely with their preferences.

Second, while an employer's decision to offer insurance is binary, the subsequent effects of that decision on workers may be quite varied. Clearly, low-wage workers who lack access to ESI through a spouse stand to gain the most from premium tax credits offered in exchanges. In contrast, high-wage workers may not qualify for any subsidy and pay the full premium. Further, because exchange premiums will be age-rated, older workers will likely face higher premiums than they would in an employer group setting.

Finally, there is still much uncertainty regarding how well insurance exchanges will function in terms of product offerings, premiums, and the consumer experience. Employers may take a "wait and see" attitude before switching from ESI to the individual exchange option. Looking ahead, it will be important to monitor employer responses and to assess the impact of ACA provisions on workers' choices.

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Table 1: Descriptive Statistics

Variable	Small Employers		Medium Employers		Large Employers	
	No Offer (n=32395)	Offer (24587)	No Offer (N=1351)	Offer (N=12431)	No Offer (n=859)	Offer (N=22069)
Average tax price	0.7072	0.6665	0.7226	0.6683	0.6903	0.6624
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 service, entertainment/recreation 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 that are 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 a county that have over 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 Model of Establishment's Probability of Offering ESI

Variable	Small Employers			Medium Employers			Large Employers		
	Marginal Effect	SE	Z	Marginal Effect	SE	Z	Marginal Effect	SE	Z
Average tax price	-.2812	.0227	-12.3731	-.2319	.0441	-5.2556	-.1383	.0524	-2.6395
Average family income ($10,000s)	.0972	.0011	85.9065	.0665	.0029	22.8243	.0450	.0027	16.6342
Firm size 0-9	Ref	Ref	Ref	.	.	.	.	.	.
Firm size 10-24	.2519	.0055	46.1494	.	.	.	.	.	.
Firm size 25-49	.3616	.0079	46.0304	.	.	.	.	.	.
Firm size 50-99	.	.	.	Ref	Ref	Ref	.	.	.
Firm size 100-499	.	.	.	.0398	.0074	5.3815	.	.	.
Firm size 500 and more	.	.	.	.	.	.	.	.	.
Multi-location establishment (%)	-.0246	.0106	-2.3305	-.0185	.0075	-2.4649	-.0466	.0247	-1.8885
Business tenure < 1 year	Ref	Ref	Ref	Ref	Ref	Ref	Ref	Ref	Ref
Business tenure 1-4 years	.0583	.0212	2.7449	-.0162	.0497	-.3261	.0403	.0455	.8863
Business tenure 5-9 years	.0981	.0211	4.6430	-.0183	.0488	-.3760	.0727	.0431	1.6865
Business tenure 10 or more years	.1653	.0207	7.9665	.0084	.0477	.1763	.0841	.0403	2.0858
Non-profit ownership	.0990	.0112	8.8098	.0537	.0101	5.3236	.0845	.0149	5.6632
Retail or wholesale trade	.1108	.0137	8.1130	.0576	.0349	1.6481	.2031	.0414	4.9005
Accommodation, food service, entertainment/recreation services	.0115	.0145	.7941	.0605	.0345	1.7534	.1998	.0422	4.7365
Personal or administrative, building support services	.0502	.0142	3.5414	-.0015	.0359	-.0406	.0833	.0412	2.0196
Professional services	.0045	.0126	.3615	.0244	.0332	.7364	.0482	.0399	1.2087
Religious, civil or other non-profit	Ref	Ref	Ref	Ref	Ref	Ref	Ref	Ref	Ref
Finance, insurance, real estate, company management	.0069	.0141	.4929	.0074	.0371	.2007	.0840	.0408	2.0576
Manufacturing or mining	.1524	.0156	9.7606	.0687	.0357	1.9228	.2139	.0475	4.5058
Transportation or Utilities	.0675	.0177	3.8119	.0317	.0394	.8050	.1703	.0445	3.8224
Construction, agriculture,	.0792	.0140	5.6608	.0276	.0408	.6762	.2110	.0502	4.2024

forestry, fishing, hunting, or unknown									
Some union employees	-.0322	.0131	-2.4588	-.0175	.0201	-.8679	-.0486	.0082	-5.9307
Less than 20% of workers age 50 or older	Ref	Ref	Ref	Ref	Ref	Ref	Ref	Ref	Ref
20-50% of workers age 50 or older	.0286	.0050	5.7603	.0224	.0078	2.8813	-.0149	.0067	-2.2336
More than 50% of workers age 50 or older	-.0482	.0058	-8.3323	-.0232	.0134	-1.7304	-.0073	.0123	-.5890
Less than or equal to 33% of workers are female	Ref	Ref	Ref	Ref	Ref	Ref	Ref	Ref	Ref
Greater than 33-66% of workers are female	.0782	.0058	13.4395	.0127	.0096	1.3185	-.0099	.0089	-1.1104
More than 66% of workers are female	.0498	.0056	8.8586	-.0081	.0102	-.7917	.0322	.0101	3.2002
Percent of establishment's workers that are part-time	-.0023	.0001	-36.0305	-.0012	.0001	-11.0864	-.0002	.0001	-2.0251
County unemployment rate	-.0036	.0013	-2.7084	-.0018	.0018	-1.0009	.0003	.0018	.1429
Proportion of establishments in a county that have over 50 workers	.5335	.1616	3.3006	-.2657	.2604	-1.0201	.5674	.3036	1.8692
Year 2008	Ref	Ref	Ref	Ref	Ref	Ref	Ref	Ref	Ref
Year 2009	-.0034	.0067	-.5077	.0057	.0109	.5262	.0045	.0093	.4811
Year 2010	-.0108	.0070	-1.5351	-.0002	.0110	-.0137	.0117	.0102	1.1455

Table 3: Economic Incentives of Establishments to Offer Insurance in 2014

Average Per Worker	Overall	Small Employers		Medium Employers		Large Employers	
		No Offer	Offer	No Offer	Offer	No Offer	Offer
ESI Tax Subsidy	$2728	$1789	$2487	$1734	$2709	$2021	$3065
Individual Mandate	$1615	$1106	$1667	$1004	$1621	$1192	$1734
Employer Penalty	$1033	$0	$0	$601	$1156	$1439	$1566
Exchange Subsidy	$1573	$2982	$1289	$3197	$1473	$2368	$1330

Table 4: Estimated Tax Prices Overall and by Selected Establishment and Workforce Characteristics

Characteristic	Baseline ESI Tax Price	2014 ESI Tax Price	2014 Individual Exchange Tax Price
Overall	0.67	0.3	0.52
Firm Size			
0-49	0.68	0.45	0.37
50-99	0.68	0.33	0.41
100-249	0.67	0.28	0.56
250-499	0.67	0.26	0.56
500 or more	0.66	0.22	0.61
Industry			
Retail or wholesale trade	0.69	0.31	0.49
Accommodation, food service, or entertainment/recreation services	0.74	0.4	0.21
Personal or admin/building support svc	0.67	0.29	0.44
Professional services	0.65	0.28	0.66
Religious, civil or other non-prof orgs	0.65	0.35	0.66
FIRE or company management	0.65	0.25	0.69
Manufacturing or timing	0.65	0.26	0.58
Transportation or utilities	0.67	0.28	0.6
Construction	0.66	0.36	0.37
Agriculture, forestry, fishing or hunting, unknown	0.69	0.39	0.17
Union Status			
No union employees	0.67	0.31	0.49
Some union employees	0.65	0.24	0.67
Age Category			
Less 20 percent over age50	0.68	0.31	0.43
20-50% over age 50	0.66	0.28	0.6
More than 50% over age 50	0.66	0.35	0.58
Sex Category			
Less than 33% female	0.67	0.31	0.5
34-66% female	0.68	0.28	0.52
More than 67% female	0.67	0.32	0.55
Wage Category of Establishment			
More than 50% under $11/hour	0.72	0.42	0.19
Less than 50% under $11/hour & less 50% over $26/hour	0.66	0.29	0.57
More than 50% over $26/hour	0.63	0.2	0.72

Table 5: Simulation Results Overall and by Selected Establishment and Workforce Characteristics

Characteristic	Baseline Probability of ESI Offer	2014 Probability of ESI Offer	2014 Probability of Individual Exchange Option	2014 Probability of Outside Good
Overall	.83	.66	.26	.08
Firm Size				
0-9 employees	.35	.31	.24	.45
10-24 employees	.66	.44	.39	.17
25-49 employees	.78	.48	.43	.09
50 to 99 employees	.87	.59	.37	.03
100-499 employees	.93	.68	.30	.02
500 or more employees	.95	.81	.19	.01
Industry				
Retail or wholesale trade	.86	.65	.28	.07
Accommodation, food service, entertainment, or recreation services	.69	.42	.43	.15
Personal or administrative and building support services	.74	.62	.27	.11
Professional services	.87	.74	.20	.06
Religious, civil, or other non-profit organizations	.75	.59	.25	.16
Finance, insurance, real estate, or company management	.90	.79	.16	.05
Manufacturing or mining	.94	.75	.23	.02
Transportation or utilities	.90	.75	.20	.05
Construction	.70	.49	.35	.16
Union Presence				
No union presence	.81	.63	.28	.1
Some union presence	.93	.82	.16	.02
Age				
Less than 20% over age 50	.79	.60	.3	.05
20% to 50% over age 50	.89	.73	.22	.18
More than 50% over age 50	.73	.60	.22	.18
Sex				
Less than 33% female	.81	.63	.27	.1
34-66% female	.87	.69	.26	.05
More than 66% female	.81	.65	.24	.10