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Estimating the Coverage Effects of the 2010 Affordable Care Act

The Employment Policies Institute (EPI) is a nonprofit research organization dedicated to studying public policy issues surrounding employment growth. Among other issues, EPI research has quantified the impact of new labor costs on job creation, explored the connection between entry-level employment and welfare reform, and analyzed the demographic distribution of mandated benefits. EPI sponsors nonpartisan research that is conducted by independent economists at major universities around the country.

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INTRODUCTION

Proponents of the Patient Protection and Affordable Care Act and the companion Health Care and Education Reconciliation Act of 2010, known collectively as the Affordable Care Act (ACA)[1], expect that the law will substantially expand health insurance coverage to the 17.61 percent of currently uninsured non-elderly working Americans,[2] without dramatically changing the terms under which the vast majority of working Americans now receive their health insurance.[3] Conversely, critics claim that the nature of currently insured workers' coverage will change. They predict the ACA mandates requiring firms to provide health insurance to their workers or face a fine will cause large scale reductions in hiring (Chow and Phillips, 2009, and Beacon Hill Institute, 2010) and the ACA subsidies for health insurance purchased by some lower income families at privately run exchanges will substantially crowd out employer-sponsored health insurance (ESI) and discourage work (Kessler, 2011, and Holtz-Eakin and Smith, 2010).

While it will be some time before the ACA implementation is complete, there is a nascent literature attempting to estimate its behavioral consequences. Here, using stylized calculations, we provide a first approximation of the sensitivity of predicted changes in the share of workers covered by ESI to alternative assumptions about how workers and employers will react to the implementation of the ACA.[4]

We show that predictions of the share of workers who will keep their current ESI are quite sensitive to behavioral assumptions—an increase in ESI coverage from 74.29 to 78.62 percent in the static case where no workers currently receiving ESI move to the newly created exchanges, to a drop from 74.29 to 65.89 percent in

[1] The Patient Protection and Affordable Care Act of 2010 (P.L.111-148) can be found at http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=111_cong_bills&docid=f:h3590enr.txt.pdf and the Health Care and Education Reconciliation Act of 2010 can be found at http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=111_cong_bills&docid=f:h4872enr.txt.pdf
More detailed reviews of the provisions of this law for employers can be found elsewhere, such as Simon (2010).

[2] Congressional Budget Office (CBO) using formal simulation modeling, forecasts that it will insure 32 Million more than otherwise by 2019 (CBO 2010). See http://www.cbo.gov/publications/collections/health.cfm for an overview of CBO reports on the health care bills.

[3] "First, if you are among the hundreds of millions of Americans who already have health insurance through your job, or Medicare, or Medicaid, or the VA, nothing in this plan will require you or your employer to change the coverage or the doctor you have. (Applause.) Let me repeat this: Nothing in our plan requires you to change what you have." (President Obama, to joint session of Congress, September 2009), reported at http://www.huffingtonpost.com/2009/09/09/obama-health-care-speech_n_281265.html

[4] Employer mandates to provide health insurance to their workers will reduce incentives to hire low-skilled workers whose hourly wage rate is close to the federal or state minimum hourly wage rate. Such mandates increase workers' non-wage compensation and when this increase cannot be offset by declines in their wage compensation, analysts predict it will have the same depressing effect on employment as a minimum wage hike. However, because the major ACA expansion of health insurance coverage for low-skilled workers comes from increases in the income eligibility level for Medicaid, we predict that the implementation of the ACA will have relatively small negative employment effects which will not be very sensitive to behavioral change assumptions. In an appendix available from the authors, we show that the magnitude of job losses implied by binding minimum wages would be between 32,000 and 47,000 .

the most dynamic case we consider. This huge swing in predicted ESI coverage from 78.62 to 65.89 percent depends on two critical assumptions whose implications are not well understood.

The first assumption is this: To what degree will firms and their workers alter their current contractual relations with respect to the explicit workers' share of the ESI premium? This is important because access to substantial taxpayer subsidized exchange health insurance premiums for families defined as lower income (400 percent of the official poverty line or below—$89,400 for a family of four in 2011) is restricted to those without ESI and those whose ESI coverage is unaffordable. But because the ACA affordable coverage rule is whether the worker's premium is below 9.5 percent of his or her family income, we show that it could be in the interest of a surprisingly large share of current ESI workers and employers to change their current contracts so that these otherwise income eligible workers will be able to receive the exchange subsidy. This is the case even though workers who choose this option will have to pay their exchange premium with post-tax dollars and their firms will be fined $3,000.

The second factor is uncertainly with respect to in how the affordability provisions will be interpreted in the codifying of ACA regulations. The language in doubt is whether the affordable coverage rule applies to single coverage or family coverage for workers with families. We show that this as-yet-uncodified interpretation of the language of the ACA will dramatically affect the degree that the ACA crowds out ESI.[5]

[5] While it is clear that the ACA considers an offer of ESI to be affordable if it costs less than 9.5 percent of gross household income, it is unclear whether this refers to the premium for single coverage or family coverage as applicable to the workers, or whether it always refers to single coverage. The Senate Finance Committee report published on October 18, 2009, upon which the eventual ACA legislation was based defined affordability as follows: "Unaffordable is defined as coverage with a premium required to be paid by the employee that is ten percent or more of the employee's income, based on the type of coverage applicable (e.g., individual or family coverage)." (Underline added, U.S. Senate, 2009, p.39) . Between October 18, 2009 and December 24, 2009 when the final bill was passed by the Senate, the language that defines affordability was changed with the word "self-only coverage" substituted for "the type of coverage applicable (e.g., individual or family coverage)". Because the House of Representatives accepted as a whole the language in the Senate bill, in the final version of the ACA legislation passed by both Houses and signed by President Obama affordability is defined in section 5000A(e)(1)(B) as:
"(B) REQUIRED CONTRIBUTION.—For purposes of this paragraph, the term 'required contribution' means—
(i) in the case of an individual eligible to purchase minimum essential coverage consisting of coverage through an eligible-employer-sponsored plan, the portion of the annual premium which would be paid by the individual (without regard to whether paid through salary reduction or otherwise) for self-only coverage" (underline added).
The Congressional Budget Office (CBO) and the Joint Committee on Taxation (JCT) used the definition of single coverage in scoring the bill, following the language in Section 5000A(e)(1)(B) of the ACA. Under this interpretation, families will receive premium subsidies on the exchanges based on income only if they were not offered ESI coverage at all or if the firm offered coverage to them but the "single option", as opposed to the "family option" was unaffordable.[5]
However, language in other parts of the ACA still refers to coverage for families as well. For example, Section 1513 describes the shared responsibility clause that triggers a fine as occurring when a "… large employer fails to offer to its full-time employees (and their dependents) the opportunity to enroll in minimum essential coverage..". The section further stipulates that a large employer that has offered its "...full time employees (and their dependents) the opportunity to enroll in minimum essential coverage…" but nonetheless has one or more of its full time employee enroll in an exchange plan and receive a subsidy will trigger a different fine. (Underline added).

In our most dynamic case, when all covered employees are compensated in higher wages to offset their payment of the full ESI premium in order that some will be able to take full advantage of an affordable coverage rule that is broadly interpreted to mean affordable family coverage, we estimate that the movement of workers out of ESI and into exchange-based coverage will: 1) overwhelm the number of workers moving into ESI by currently uninsured workers in large firms due to the mandates; 2) cause the provision of health care insurance to working Americans to become more sharply segregated based on family income; and 3) cost taxpayers up to $5 billion dollars in gross subsidies for every one million workers who switch from being an ESI main policy holder to receiving subsidized exchange coverage, all else equal.[6] As a result, we estimate that increased exchange use in the most dynamic case will require about $47.5 billion more in gross yearly subsidy payments than in the least dynamic case.

PREVIOUS ESTIMATES OF THE EFFECTS OF THE AFFORDABLE CARE ACT

Although several papers analyze the likely effects of health insurance reforms, to our knowledge none focus on the importance that the definition of the affordable coverage rule and the consequences of basing that rule on the percentage of the ESI premium paid by the worker have on overall ESI coverage or on the distribution of such coverage, particularly across wage and income dimensions. For example, Dubay, Cook, and Garrett (2009)[7] simulate the effects of health reform on the uninsured, modeling a Medicaid expansion to 133 percent of the poverty line and an individual mandate. They find that these two reform components would bring some financial assistance to three-quarters of the uninsured, with about half being eligible for subsidies and half being eligible for Medicaid. Holahan and Garrett (2011) discuss the impact of both health insurance and health care provisions in the ACA on employment and conclude that, on net, there would be very small consequences.

Holtz-Eakin and Smith (2010) were the first to point out that the federal subsidies in the ACA, intended only for those not eligible for ESI, are so large that they could induce strategic behavior on the part of some employees and tempt some employers to change their labor contracts to take advantage of these subsidies. Using hypothetical workers and a fine of $2,000 per worker (the case when large firms do not offer health insurance to their workers), they demonstrate when it will make sense for an employer to drop health insurance coverage and the types of workers who will benefit from a switch from ESI to subsidized exchange coverage.

[6] We do not take into account cost sharing subsidies in our calculation. We also do not take into account the additional taxes that the government will earn as a result of workers who receive higher wages once they switch away from employer coverage. However, we do take into account the reduced amount of subsidies that would result once workers receive higher wages from compensating wage differentials.

[7] http://www.urban.org/uploadedpdf/411950_uninsured.pdf. More information about the Urban Institute Micro-simulation Model is available at http://www.urban.org/UploadedPDF/411690_microsimulation_model.pdf and http://www.ncvhs.hhs.gov/090227p4.pdf

For instance, they calculate that for a large firm, with full-time employees in families earning up to 200 to 250 percent of the family poverty line (depending on how high health care costs rise by 2014), employers could drop ESI, allow the worker to access the exchange subsidies, and make the employee better off through increased wages despite the fines. They note that whether firms will adjust fully will depend on certain inflexibilities in the labor market, but that "the massive federal subsidies are money on the table inviting a vast reworking of compensation packages." (Holtz-Eakin and Smith, 2010, p. 4.)

Here we provide a more systematic estimate of their behavioral assumptions. But our major innovation is to demonstrate a more likely avenue for workers and employers to gain access to the "money on the table." That is, we explore a potential mutual agreement to reset the employer-employee sharing of the premium within a firm to allow otherwise eligible workers to take full advantage of the arbitrary measure of affordability in the current legislation rather than by such workers sorting to do so.

REFORM COMPONENTS ANALYZED IN THIS PAPER

Here we focus on the ACA's three major routes to coverage expansion; the employer mandate, Medicaid expansion, and exchange subsidies. We first look at the ACA's effect on total coverage, and the sources of that coverage under static cases where individuals do not fully consider their alternative health insurance options. We then consider dynamic cases that allow firms and their workers to reconsider their compensation packages in light of the new law. Our dynamic cases extend the analysis of Holtz-Eakin and Smith (2010) along several dimensions. Instead of using aggregate numbers and focusing only on how the enactment of the law will impact workers (assuming a family of four) in large firms with employer coverage, we use individual-based data from the Current Population Survey (CPS) to look at the behavioral response to the ACA by all workers in our universe. We do so by showing how health insurance coverage and its distribution by source in 2008 (in the 2009 March CPS) would have changed by firm size, income-to-need ratio (a worker's pre-tax post-transfer family income divided by the value of the poverty line for a family of that size), and wage rate if these three ACA features had been implemented in 2008 and that all behavioral changes occur in that year.[8] Our calculations take into account the feedback loop that may exist if workers receive compensating differentials when they drop ESI. That is, we take into account that someone who is at the cusp of Medicaid eligibility would no longer be eligible for coverage if they were to drop ESI and receive a wage increase. We do this also when calculating the applicable exchange subsidy, which depends on the family's income.

[8] We do this for the purpose of illustration; it will obviously take much more time for any behavioral effects to fully play out.

A more sophisticated budget-neutral consideration of ACA's financing is beyond the scope of our paper, but would be needed to consider the net effects of these reform features. The CBO used micro-simulations on the entire U.S. population to project global yearly estimates of the ACA's impact when all its provisions are fully implemented. Here, we only focus on a subset of the working age population and their dependents and provide a first approximation of the gross cost to taxpayers of the parts of the ACA related to financing exchange subsidies and additional Medicaid expenditures, assuming that all the behavioral changes we discuss in our dynamic cases fully play out in 2008. We do so to focus on the sensitivity of the outcomes to the assumptions used and the unintended consequences these specific subsidies could have on the way health insurance is provided in the United States.

In our estimations, we focus on non-self-employed working age (aged 17 to 64) individuals who are employed in private sector jobs, but our simulations consider relevant family characteristics (e.g., family income, whether the worker has other family members requiring coverage, etc.) and explicitly include dependents when making cost calculations for exchange subsidies. In the first static case, we model the employer mandate as requiring all large employers (50 or more workers) to ensure that all full-time workers (30 hours or more a week) are covered by employer health insurance, providing family coverage when appropriate. We assume all firms will provide such coverage rather than pay the fine. The Medicaid expansion builds upon this by covering all workers in families with incomes at 133 percent or less of the poverty line through Medicaid, transferring some of the people who otherwise would have been covered under the employer mandate rules. Exchange coverage is available to everyone, and we assume in our final static case that everyone who remains uninsured (and values insurance at least at 10 percent of income) will go into the exchange, but that no one who currently has coverage through some other means will drop that coverage.

The dynamic cases allow individuals to make calculated decisions about whether exchange coverage (or lack of coverage) makes them better off. We then assume that firms and workers collaborate to find the best option for them. We will focus on four dynamic cases. The least dynamic, which is consistent with the CBO approach on our two key assumptions, assumes a narrow definition of the affordable coverage rule and no change in premium payments. In this case we find no crowd-out effect. The most dynamic case assumes a broad definition of the affordable coverage rule and that workers explicitly pay 100 percent of the premium and results in the greatest crowd-out effect. In our two intermediate cases, the effect diminishes when we use either a narrow definition of the affordable coverage rule or do not allow a change in premium payments.

DATA SOURCES AND METHODS

Our calculations are performed on a nationally representative sample of the population. The appropriate data set for this analysis should contain information on current health insurance sources, as well as income, employment, and demographic information for workers and their families. We use the 2009 March Current Population Survey, which contains most of the details we need, and supplement it with additional data on health insurance premiums from other sources. A lack of detailed information on coworkers at the same firm is a deficiency characteristic of all standard household surveys. The reason this matters is that a firm makes decisions about health insurance with the current (and potential future) workforce in mind, and we would not know this from household data.[9] This matters less for illustrative calculations like ours when considering what effects legislation may have several years in the future, but should be kept in mind when interpreting our results.

Health insurance, family income, and firm size data come from the 2009 March CPS.[10] Wage data come from the outgoing rotation group (ORG) questions of 2009 March-June CPS.[11] The March CPS asks individuals to report the size of their employer, and offers options of less than 10, 10 to 24, 25 to 99, 100 to 499, 500 to 999 and 1,000 and over. For purpose of the law, an important cutoff point occurs with respect to firms with 50 workers, so it is important for us to assign workers in the 25 to 99 category to either the 25 to 50 or 51 to 99 firm size category. The MEPSIC data show that of all firms with 25 to 99 workers, about half the workers are employed by firms in the 25 to 50 firm size category. Thus, we randomly assign half of the workers in the CPS 25 to 99 firm size category to the 25 to 50 firm size category and the rest to the 50 to 99 firm size category and report data by small (less than or equal to 50) and large (greater than 50) firms. Our sample size of workers in the 2009 March CPS is 36,950, representing 95,496,817 workers. Note that the BLS estimate for the number of total workers in the United States is 139,817,000 in July 2009.[12] As expected, this is higher than our total since we limit the sample (age 17 to 64 private sector, non self-employed workers).

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[9] More sophisticated simulation models create synthetic firms out of individual workers in surveys.

[10] While the March survey asks about health insurance in the past year, questions asked in February relate to health insurance at that point in time. However, this special CPS supplement in February was not conducted in 2009. To ensure that workers are assigned only to one insurance status, we use a hierarchy that is explained in the Data Set Methods appendix. A full description of how we construct our CPS-based data set is available upon request.

[11] In each month, a quarter of the respondents in the CPS are asked detailed wage information. Because of the rotational structure of the CPS, those in the March CPS will be answering those detailed questions in March-June of the CPS. We first select the March CPS sample that meets the definition of private sector, non-self employed workers, aged 17-64, and record the total weight of this population (the number of individuals represented by this population definition). We lose a large subset of this population because of either failure to match to the ORG or failure to find a wage among those who match to the ORG, among these workers. We then re-weight the remaining matched wage sample to total the national population of private sector non-self employed workers aged 17-64 and proceed with this sample. However, in case those workers who report wages are systematically different from workers who do not report wages, we have created alternative versions of our key tables on the full sample of workers in the March CPS who are private sector, non-self employed workers, aged 17-64 (without requiring wage data) to test the sensitivity of our results. These tables did not show large differences from the main tables.

[12] http://www.bls.gov/news.release/empsit.a.htm, accessed August 2010.

Using data on workers' wages, firm size, coverage, and family incomes from the 2009 March CPS, we first establish the current level and distribution of health insurance coverage, and then simulate the effects of the main provisions of the ACA on this population, under different sets of simplifying assumptions. We limit ourselves to private sector non-self-employed workers (both part-time and full-time) aged 17 to 64 years. We begin with a discussion of the base-case before health reform, showing coverage rates by firm size, income, and wage categories. From this initial setting, we examine coverage rate changes that result from each main aspect of reform as they build on each other, by income, firm size, and wage category.

We first consider coverage patterns under a static case of full ACA compliance and full Medicaid take-up without unintended behavioral changes. We assume that Medicaid and other insurance are viewed as equivalent forms of coverage by workers. Finally, we show how the ESI share estimates will change under our four dynamic scenarios where employers and workers take advantage of the new exchange subsidies in their decisions about how work will be compensated, and where the interpretation of the affordable coverage rule in the ACA varies.

The behaviors we describe can be summarized by equations. In the equations below, we assume that, for those workers who were ESI insured as the main policy-holder prior to the ACA, the relevant decision is only between keeping ESI or switching to exchange coverage (since we already know they bypassed the option of being uninsured even when there was no fine associated with being uninsured). But for those who were uninsured prior to the new law, we will compare their insurance options to being uninsured to decide their final insurance status. We assume here that those who are eligible for Medicaid would opt for it, regardless of their initial insurance status. The decisions regarding ESI, exchange coverage and being uninsured are summarized by the following equations.

The worker with ESI in the base case chooses to remain with ESI coverage if:

[1] $((P_x - S_x)) > [(P_e - F_e)\,(1-t)]$

where P_x stands for the total price that will be charged in the exchange,[13] S_x stands for the subsidy to which they will be entitled (based on their income-to-needs ratio after a compensating wage differential is received if they do not receive ESI), t stands for the marginal tax rate and P_e stands for the total price of a policy when sold through the employer. The tax adjustment is made to the cost of employer coverage because the total cost will be incurred on a pre-tax basis. F_e stands for the fine triggered when the worker elects subsidized exchange

[13] We have used estimates from Kaiser Family Foundation. We have also used employer premiums from the MEPSIC as an alternative.

coverage, if they come from a large firm. The fine is $3,000 per marginal worker in question if the employee contribution is set higher than a certain fraction of income. If the inequality in [1] does not hold, we assume the worker opts for exchange-based coverage.

In Figure 1, we show the distribution of the amount $[(P_e - F_e)(1- t)] - ((P_x - S_x))$ for each worker in a kernel density graph. This shows whether the amount of after tax money received as compensation for agreeing not to receive affordable ESI is greater than the after tax money needed to obtain exchange coverage, and if so, by how much. A positive number means that the worker is better off trading in affordable ESI for a compensating wage differential and using it to obtain subsidized exchange-based coverage. The fraction of those with positive numbers who are able to realize these gains will depend on the "firewall"—whether the affordable coverage rule is defined in a broad or narrow way and whether firms can adjust employee premium splits. The universe included in Figure 1 is all workers who had ESI in the base case (full-time and part-time as well as small and large firms) and those who are covered by the employer mandate. It is important to demonstrate this distribution, as it allows one to judge the importance of any transaction costs that could be introduced into the decision-making process.

Next, we consider decisions facing those who were uninsured prior to reform. Mechanically, we approach their decisions in two steps. For those who are full-time workers in large firms, we first ask which option the worker would prefer (ESI or exchange) if they were to be insured. This calculation (Equation 1) is conducted just as it is for workers who currently have ESI. Then we question whether the worker (who is uninsured at baseline in the CPS) would choose the winning status over the option of being uninsured. Unlike in the case of workers who already have ESI, we cannot assume here that the uninsured workers would value coverage at whatever is the lowest cost option available to them (ESI or exchange). This calculation also incorporates the fact that being uninsured triggers an individual-level fine. We assume that the value placed on health insurance depends on income and age (using 10 percent of family income). There is no one way to value health insurance for the uninsured, but approximately 10 percent of income is the maximum considered affordable in the legislation for families under four times the poverty line. And, in earlier legislation for poorer families (Children's Health Insurance Program), five percent was set as the maximum cost for the family for coverage of their children. We have used alternate values of five and 15 percent, as well as values in that range by age group to see how much the results depend on this arbitrary assumption. When doing so, we find our results are not changed in any meaningful way.

The decision of whether or not to be uninsured is summarized by the following equation. The worker decides to be uninsured if:

[2] Cost of outcome in [1] > (F_i + d) (Income)

where F_i stands for the individual-level mandate fine, and d stands for 10 percent if the person is under the age of 35, and 20 percent if 35 or older. Income stands for their family income.

As in Figure 1, Figures 2a and 2b show the distribution of surpluses from being uninsured, for all workers who were uninsured in the base case. Figure 2a is for those who picked ESI coverage in the most dynamic case, and were uninsured in the base case. Positive numbers indicate that being uninsured is chosen. Figure 2b is for those who picked exchange coverage in the most dynamic case, and were uninsured in the base case. Once again, positive values indicate a preference for being uninsured. In our calculations, very few individuals would be uninsured even when parameter (d) is set as low as 5 percent of income, partly because of the individual fine and partly because very low income individuals receive Medicaid or generous exchange subsidies.

Once workers are assigned a final insurance status in our dynamic cases, we compare the insurance rates, ESI rates, and exchange rates to the static case coverage rates. The Data Set Methods volume, available upon request, contains a table at the end showing the number of workers (weighted and unweighted) who move from one insurance status to another going from the base to the static and then to the dynamic cases.

RESULTS

Static Cases

The first row of Table 1 reports the source of health insurance coverage for the 95 million working Americans (aged 17 to 64) employed in the private sector represented by our data. The primary target of ACA among the working population is the 17.61 percent who have no health insurance. Of the 82.29 percent of workers who have some form of health insurance, the majority (58.90 percent) are directly covered by their ESI plan. Another 15.39 percent receive their insurance as a dependent on another worker's ESI. In total, 74.29 percent of all working age Americans employed in the private sector were covered by ESI plans in 2008. Only 5.09 percent were covered by health insurance purchased on the open market and 2.99 percent received their health insurance coverage from Medicaid or some other government provided plan. Thus, ESI is the primary source of health insurance for workers across all firm size, income-to-needs, and wage categories, and is more likely to be

held by workers in large firms, with higher incomes, and higher wages. Those in small firms, those with low income-to-needs ratios, and those with low wage rates are much less likely to have any form of health insurance.

Appendix Table 1 contains the same Table 1 categories, but reports the number of workers in each cell rather than the percentage of workers by firm size, income-to-need, and wage rate categories. These numbers are obtained from the CPS weights that show the number of workers represented by each CPS observation. For instance, of the 95 million working age Americans employed in the private sector, 64 million are in large firms. The other 31 million are in small firms that are not mandated to provide health insurance (i.e., not expected to pay a fine if they do not).

However, since small firms are less likely to have ESI plans, the 16.8 million uninsured workers are almost equally employed by small (8.7 million) and large (8.05 million) firms. Table 2 shows the number of uninsured workers whose employers will be subject to fines in the static case, if they are not provided with ESI, relative to the total number of uninsured workers. Of the 16.8 million uninsured workers, only 8.05 million are employed in large firms and of those, 1.51 million of them work less than 30 hours per week. Hence, the ACA will only mandate the employers of 6.6 million or 41 percent of all uninsured workers to provide ESI or pay a fine.

Table 3 shows in greater detail the distribution of workers across different insurance categories, with column percentages adding up to 100 by category. As discussed in the context of Table 1 and Appendix Table 1, small firm employees comprise a relatively smaller share of our sample of workers than large firm employees. But a disproportionate share is uninsured, which is more precisely shown in Table 3. While 32.47 percent of our sample is employed in small firms, they make up 49.70 percent of all uninsured workers. The ACA will not penalize any of these firms, and, in our static estimations, these firms are unlikely to increase their provision of ESI by much.

Another important ACA feature can be seen in the income-to-needs distribution in Table 3. While we saw in Table 1 that ESI is the primary source for health insurance of those who have some form of health insurance in all income categories, low income-to-needs workers are the least likely to have any form of health insurance. As can be seen in Table 3, 23.36 (14.43 + 8.93) percent of the uninsured have income below 133 percent of the family poverty line and therefore will be eligible after the ACA's expansion of Medicaid to this level of income. Likewise, 56.63 (21.52 + 21.86 + 13.25) percent of the uninsured whose income-to-needs ratios are between 133 and 400 percent of poverty will be potentially eligible for subsidies in the ACA created insurance

exchanges. The 20.02 percent of the uninsured whose income-to-needs ratios are above 400 percent of poverty will also be able to purchase exchange coverage but they are not eligible for a subsidy.

Hence, while the mandate on large firms to provide health insurance to their full-time workers misses the majority (59 percent) of uninsured workers who either work for small firms or are not full-time workers, the Medicaid expansion and the subsidies for the uninsured who go to the exchanges will potentially impact all but 20 percent of the uninsured population whose income-to-needs ratios are greater than 400 percent of the poverty line.

What is less obvious is that both the expansion of Medicaid and subsidies for the exchanges may also impact the decisions of the vast majority (74.29 percent) of workers who are either directly or indirectly covered by ESI. As demonstrated in Table 3, a small percentage of these workers have income-to-needs ratios that are below 133 percent of the poverty line (2.99 percent of own employer and 1.38 percent of dependent). But a much larger percentage have income between 133 and 400 percent of the poverty line (36.9 percent of own employer and 28.7 percent of dependent). As can be seen in Appendix Table 1, this translates into 1.9 million currently covered ESI workers with family incomes below 133 percent of the poverty line who could be eligible for Medicaid coverage, and 25 million currently covered ESI workers with family income between 133 and 400 percent of the poverty line who could be eligible for subsidies if they switch coverage to the exchanges. These potentially eligible Medicaid and subsidized private exchange customers who currently have ESI coverage far exceed the ACA's target population of 16.8 million currently uninsured workers. While the crowd-out effects of these largely neglected 25 million current ESI covered workers will by definition be ignored in the static case below, we will focus on this major behavioral effect in our four dynamic cases thereafter.

Coverage changes in the static case. In Table 4, we display the results of our three static simulation exercises. These show the consequences of various aspects of the ACA on health insurance coverage and the source of that coverage for the 95 million working age Americans employed in the private sector if it had been implemented in 2008.[14] In the first two columns we repeat the numbers for the insured and ESI coverage rate (own and dependent) from Table 1. In the third column, we first assume that all large firms will provide coverage to their full-time workers, including those living in lower-income families. As can be seen in row 1 of this column, this will increase overall coverage to 89.99 percent, relative to 82.39 percent in the base case in column 1. As demonstrated in column 4, this is entirely driven by the increase in ESI coverage from 74.29 percent (row 1 of column 2) to 81.97 percent (row 1 of column 4). This can be thought of as the maximum

[14] Our sample was limited to those workers in the CPS sample who reported wages, as explained in the text and the footnote to Table 1. In unreported tables we recalculated Table 4 without such a limitation. The results were quite similar.

increase in ESI that would occur under full compliance with the ESI mandate by employers absent a Medicaid expansion and with no behavioral effects by workers already covered by ESI.

Almost all the increase in ESI coverage in the static case occurs among workers in large firms, but because some dependents of these newly insured, large-firm workers are employed in small firms, even the share of small-firm employees with ESI rises slightly. This is because we first interpret the law broadly as stating if the worker in question has dependents not covered through other means, then family health insurance coverage must be provided by large firms. Thus, full compliance with the law would mean employers subject to the mandate offer coverage to workers as applicable (single or family) and workers take up that coverage—our broad interpretation of the law. Even in this case, large-firm ESI coverage will not reach 100 percent because around 19 percent of uninsured employees in large firms work part-time. In this static case, workers and their employers do not consider changing their compensation packages and taking advantage of the subsidies offered under the new law, nor do any small-firm workers who are uninsured prompt their employers to start offering coverage because of the individual mandate fine.[15] However, we assume that all workers who qualify for Medicaid take-up that coverage regardless of whether they previously received ESI.

The next two columns (columns 5 and 6) better represent the consequences of Medicaid take up in the static case. Medicaid expansion (building on top of the employer mandate, so it understates its total effect) would further increase overall coverage from 89.99 percent (row 1 of column 3) to 92.73 percent (row 1 of column 5), a total increase of about 2.7 percentage points. This rise in overall coverage masks an important shift in the source of coverage. The Medicaid expansion reduces ESI coverage from 81.97 percent (row 1 of column 4) to 78.62 percent (row 1 of column 6), a decline of 3.4 percentage points relative to what the static case would predict in the absence of Medicaid expansion. For small firms, ESI coverage after the first two components of the static case (60.10 percent) is actually lower relative to the base case (60.49 percent). This is because the increase in coverage of their employees as dependents of mandated workers from the second set of columns is overshadowed by the number of their workers who leave for Medicaid coverage under full take-up. As can be seen by comparing columns 4 and 6, the decline in ESI coverage entirely occurs in income-to-needs ratios rows below 133 percent which fall to zero based on our assumption of full Medicaid take-up.

[15] In our calculations in this paper, we also do not consider the subsidies available to small firms to offer coverage because of their temporary nature (up to two years) and because the full credit (which is 50 percent of the employer contribution towards coverage, which could be as low as 50 percent of the total, which would put the credit as low as 25 percent of the cost of coverage) is available only to very small firms with very low-wage workers (firm size less than 10 workers, average annual wages less than $25,000), many of whom may be eligible for Medicaid or highly subsidized exchange coverage if their employers do not offer ESI. The cutoff for Medicaid, 133 percent of the poverty level, is currently somewhat less than $30,000 a year for adults in a family of four

In the final of the static cases (columns 7 and 8), we assume that people choose to become insured through the exchange unless they value health insurance at less than the premium in the exchange. We assume that people value health insurance at 10 percent of their income. This applies to everyone else who remains uninsured and who wishes to avoid the fines and moves to the exchanges, even the 20 percent of the uninsured with incomes greater than 400 percent of the poverty line and hence not subsidized. In this static case, coverage now hits almost 100 percent (column 7), but there is no further change in ESI.[16]

Dynamic Cases

Unlike the static cases, the dynamic cases can be thought of as incorporating strategic behavior on the part of workers and firms. As before, we have full take-up of Medicaid. But unlike the static case, we now allow all those who are offered ESI (because of the employer mandate or not) but are income-eligible for exchange subsidies to consider obtaining subsidized exchange coverage, if their ESI coverage can be classified as unaffordable. Our alternative cases reflect four combinations of two alternative assumptions. The first is with respect to a broad or narrow interpretation of the affordable coverage rule. The second is concerned with whether or not employers and their workers will increase all ESI premiums upward to allow those workers who would otherwise be eligible for subsidized exchange coverage to now qualify for exchange subsidies due to their ESI coverage being unaffordable.

To reduce ESI crowd-out, the ACA prohibits workers whose employer offers health insurance from accessing the subsidized exchange market even if they would be eligible for it on family income grounds alone. But there is an exception to this rule that allows small- and large-firm workers to receive subsidized exchange coverage if that coverage is not affordable.[17] To guard against this exception, subsidizing an unreasonable number of such workers, there are firewall provisions in the law (CBO, 2010). When such workers receive subsidized insurance from an exchange, if they are employed in a large firm, that firm must pay a fine of $3,000. Small firms pay no fine. To meet the affordability test, workers' ESI premiums must exceed 9.5 percent of their family income. However it is ambiguous whether Congress intended the affordable coverage rule to be defined by a broad (single or family coverage, depending on the worker's family status) or narrow standard (single coverage even if the worker has a family). Below we show how important this interpretation of Congressional intent will be by comparing dynamic cases using both a broad and narrow interpretation of the ACA language. This is the first assumption whose impact on ESI coverage and employment we will test in our dynamic cases.

[16] An alternative possibility here is to assume that the remaining individuals, even those who are part-time workers, obtain employer coverage. This would increase ESI but this case is not considered here.

[17] We ignore the provision regarding low actuarial value of plans. We also ignore a provision regarding "free choice vouchers" that may have applied to some employers as it was repealed as part of the 2011 budget act, (§1858 of H.R. 1473, Department of Defense and Full-Year Continuing Appropriations Act, 2011).

Internal Revenue Service (IRS) rules allow both employers and employees to contribute to health insurance premiums on a pre-tax basis, as long as employers establish the necessary paperwork (which almost all large employers do). This means that the split between employee and employer contributions for health insurance is largely an artificial one.[18] The second assumption, whose impact on ESI coverage and employment we will test in our dynamic cases is the importance of employers and their workers willingness to set the share of the premium all workers pay for ESI to a level which exceeds the affordability standard of 9.5 percent of family income for those workers who would otherwise be eligible for exchange subsidies on family income grounds and providing higher wages for all workers instead.

Our most dynamic case is a broad interpretation of the affordability coverage rule and full flexibility of employee premium. In it, we hypothesize that employers can and will, with the cooperation of their workers, take advantage of the provisions in the law to give their workers in families living below four times the poverty line the option of taking advantage of subsidized exchange coverage even though it will require them to pay a fine.[19]

To distinguish our simulations finding from those of Holtz-Eakin and Smith (2010), we assume that employees in both the short and long run remain with their firms. Hence none of the crowd-out we find in our model is caused by workers sorting into firms that do or do not offer ESI.[20] Despite our assumption that all workers

[18] For large employers this is a straightforward exercise. But for small employers, this is currently a more meaningful distinction because their ability to provide health insurance usually depends on the fraction of eligible employees accepting coverage. Small employers tend to have low employee contributions to ensure high participation rates, an issue that does not concern large employers. Insurer practices in unregulated markets allow them to put restrictions on terms of sale such as this. When reforms are instituted in the insurance market, this may not matter. For example, small firm exchanges will offer guaranteed issue plans with close to community rated premiums. These premiums will not depend on the participation rate. Thus, at the extreme, all employers could set the annual contribution just above 9.5 percent of the income of the highest family income worker to qualify for a subsidy ($88,900, thus $8,454) and bypass the affordability rule.
Even if many employers and employees do not renegotiate terms right away, there is more flexibility in the long run. The employer would then pay $3,000 a year for the marginal worker who goes to the exchange and receives a subsidy; in equilibrium only those workers for whom the exchange subsidy is larger than the $3,000 fine and the loss of the ESI tax deduction will choose to do so.

[19] Exchange coverage can be either in a single or a family plan. We assume that when a worker obtains a family plan with a subsidy in the exchange, only that main policy holding worker will trigger a fine for their employer. That is, a secondary worker in the same family who is a dependent under the exchange insurance policy will not trigger their own employer fine since the subsidy is technically received only by the main policy-holder worker.

[20] Another possible mechanism implicit in the Holtz-Eakin and Smith, 2010 calculations is that large-firm workers who wish to take advantage of exchange subsidies could sort into large firms where health insurance is not offered, and the employer would incur a fine of $2,000 for each of these workers. We also modeled the Holtz-Eakin and Smith (2010) case in our work (Table A-2). In this case, workers in large firms are allowed to sort into firms based on whether they find it in their interest for the firm to offer health insurance or not. In large firms a fine of $2,000 applies if the firm does not offer coverage. Workers in small firms do not face this fine so all who would qualify for an exchange subsidy will go as long as the subsidy is at least as great as the tax deductibility they would lose of ESI. When not offered coverage, workers and families can go to the exchange and receive subsidies to which they are entitled. This results in the greatest movement away from employer provided health insurance and into the subsidized exchanges by workers whose income is less than four times the poverty line (from 78.62 in the static case—row 1 of column 4 in Table 4—to 61.66).

remain with their original firms and that the only changes to employer provided health insurance are related to the share of the initial premium paid by the worker, in our most dynamic case we find that ESI declines and increases the take-up of subsidized exchange provided health insurance close to those found in our case inspired by Holtz-Eakin and Smith (2010) found in the appendix.

Our least dynamic case is a narrow interpretation of the affordability coverage rule and no change in employee premium. In it, we hypothesize employers and workers maintain the same employee ESI premium payment after the ACA is implemented as they did before. We show that the narrow definition of single coverage even for workers with families, together with the assumption of no change in the current premium paid by workers, results in exactly the same outcome as in the static case.

We also show two intermediate cases: a narrow interpretation of the affordable coverage rule that allows the worker to pay the full premium and a broad interpretation of the affordable coverage rule with no change in premium.

***Comparing the most and least dynamic cases*.** Table 5 shows the distribution of coverage under both the least and most dynamic cases discussed above. In the first three columns of Table 5 we, like the CBO, assume a narrow definition of affordability and no changes in the premium paid. In the final three columns of Table 5 we contrast these results with the most dynamic case—broad definition and fully flexible premium payment. In both cases we use the same mechanisms for determining the gains from a move from ESI coverage to exchange coverage.

Specifically, workers living in families whose income is below four times the poverty level will qualify for exchange subsidies if their employer does not offer them coverage or if the coverage that is offered has cost sharing that is unaffordable by the narrow standard in the first set of columns and by the broad standard in the second set of columns. In the first set of columns we assume no change in who pays the premium. In the second set of columns we assume full flexibility in setting employee cost sharing. In both cases we assume that workers and their employers will take this new worker option of purchasing subsidized health insurance from an exchange into consideration in adjusting the compensation package—but in the first case employer and employee do not consider changing the premium paid by the worker to gain eligibility. In contrast, in considering whether to include employee health insurance as part of an employee's compensation package or only providing monetary wages, in the more dynamic case they will recognize that switching from a compensation package that contains ESI to one containing only wages will mean that large firms will be subject

to a fine and that both small and large firm workers will lose the implicit tax subsidy contained in tax free ESI coverage.

The values in the first two columns of Table 5 are identical to the values in the last 2 columns of Table 4. That is, in our least dynamic case in which we assume a narrow definition of the affordable coverage rule along with no premium adjustments, no ESI covered worker is able to surmount the ACA firewall conditions and hence there is no ESI crowd-out. This outcome was assumed in the static cases in Table 4. The third column of Table 5 reports exchange coverage in the least dynamic case. Its values are also the same as found in the static case, although they are not explicitly shown in Table 4. There is no crowding out of ESI despite the subsidized premium for exchange coverage, because the firewall of a narrow affordable coverage rule and an unwillingness of employers and employees to change the mix of premiums paid results in few workers with ESI being eligible for the subsidies among workers who would otherwise meet the family income test.

This is not the case in the most dynamic case (broad affordability and maximum change in premiums) in the second set of columns in Table 5. ESI crowd-out is dramatic. ESI coverage declines from 78.62 percent in the static case (which is also the narrow, no premium adjustments dynamic case as is seen in row 1 of column 2) to 65.89 percent in row 1 of column 5. Exchange coverage increases from 10.23 (row 1 of column 3) to 22.89 percent (row 1 of column 6) overall and from 27.98 (row 9 of column 3) to 68.18 percent (row 9 of column 6) for those with income between 133 and 200 percent of poverty. Exchange coverage increases from 18.26 to 54.27 percent for families between 201 and 300 percent of poverty and from 12.58 to 35.04 percent for families between 301and 400 percent of poverty.

***Comparing intermediate dynamic cases*.** Table 6 reports the two intermediate cases and shows that both moving from a broad to a narrow affordable coverage rule and reducing the ability of firms and workers to change the premium paid by the worker will reduce the ability of workers who would otherwise be eligible for subsidized exchange coverage to gain access to subsidized exchange premiums. ESI coverage falls from 78.62 percent (row 1 column 2 of Table 5) in the least dynamic case to 73.95 percent (row 1 column 2 of Table 6) when the narrow definition of affordability is used but firms and workers are still able to increase the ESI premium employees pay. Hence, substantial ESI crowd-out will occur even under the narrow affordable coverage rule used by the CBO. But it is considerably less than the fall in ESI coverage to 65.89 percent (row 1 column 5 of Table 5) using the original broader coverage rule. In this intermediate case, exchange coverage only increases from 10.23 percent (row 1 column 3 of Table 5) to 14.23 percent (row 1 of column 3 of Table 6) rather than to 22.89 percent (row 1 column 6 of Table 5) in the most dynamic case.

ESI coverage only falls from 78.62 percent (row 1 column 2 of Table 5) in the least dynamic case to 76.74 percent (row 1 column 5 of Table 6) when the broad definition of affordability is used but firms and workers do not increase the ESI premium employees pay.

Government Spending On Subsidies

Table 7 provides a first approximation of the populations receiving a subsidy for exchange coverage, and the cost of coverage for that population. In our main calculations, the subsidy is estimated assuming that premiums in the exchange equal those predicted by the Kaiser Family Foundation. Since these tend to be low in comparison to current ESI premiums, we also discuss an alternative calculation that uses current ESI premiums.[21]

In the base case, no one has exchange coverage and there are no government subsidies. In the static case as well as in our least dynamic case, out of the 9.8 million workers who go to the exchanges, only the approximately 4.7 million workers who are living in income eligible families (1.33 to 4 times the poverty line) and are not offered ESI receive subsidized exchange premiums. Since their average subsidy is $4,017, the total gross subsidy is about $19 billion.

In contrast, in our most dynamic case—broad coverage rule and total flexibility—substantial crowd out occurs and the gross subsidy rises to $66.5 billion (13 million newly subsidized exchange users with an average subsidy of $4,948). The subsidy in the later case is so much higher even though there is no real change in the initial economic well being of the workers who are receiving it because the trigger for a government subsidy is based on an "affordability measure" that can be easily manipulated. That is, the law states that subsidies should be such that the out of pocket costs of an individual are no more than some percent of household income. This means that any increases in the employee's premium are fully passed on to the government even though the firm is simply restructuring the way that workers are paid rather than raising the real cost of health insurance.

In our two intermediate cases, the gross subsidy numbers fall somewhere in between since either the affordable coverage rule is narrowed or the premium is not changed. Net subsidy costs would be lower by the sum of the

[21] We show these alternative results since it is unlikely that the new exchanges will be able to provide health insurance of equal quality to that provided by the ESIs at lower costs. It could be that the Kaiser silver plan appears lower than current ESI premiums because current ESI plans may be more generous than the Kaiser silver plan (which has 70 percent actuarial value). Since the exchanges have cost sharing subsidies that bring the actuarial value of the plans to 94 percent for families with income in the range of 100 to150 percent of the poverty line and to 70 percent for families at 250 to 400 percent of the poverty line, we use ESI premiums as an alternative measure of future premium costs. The law stipulates the amounts that families will pay, thus the subsidies cover the remainder of the premium. Since using a different premium affects the subsidy calculations, we have estimated the subsidies with the ESI premiums as well. (The coverage outcomes do not change because the cost sharing is set independent of the exchange premiums).

fines collected from firms and the new taxes on the compensating wage differential of workers who previously received ESI.[22]

Foregone subsidies. Table 8, reports on foregone subsidies— that is, the additional amount of taxpayer money that would be spent on those workers who are income eligible for exchange premium subsidies, but are not able to access them because they are either covered by an affordable ESI plan, or find it not in their financial interest to obtain these subsidies because of the fines and/or the loss of tax subsidy to ESI.[23]

In our most dynamic case, the foregone subsidies are lowest ($1,620.76 on average, and $19.6 billion in total) since the ACA firewalls have been overcome to the greatest degree—the affordable coverage rule is broad and workers premiums are adjustable upward, so substantially more income eligible workers and their dependents can gain access to the subsidies. As long as their total premium costs are high enough to overcome the broad affordable coverage rule and the subsidies are high enough to overcome the $3,000 fine (for large firm full-time workers) as well as the loss of their ESI tax treatment, they will move onto the exchanges. The total subsidy foregone, even in this highly flexible case, is $19.6 billion. In contrast, in the most restrictive dynamic case (narrow, no adjustment), there is $62 billion in foregone subsidies—three times the amount in the most dynamic case. This corresponds to an average of $3,040 per enrollee.

We estimate that Medicaid expenditures will average $2,591 per enrollee using our administrative data and that in the base case there are 3.5 million workers eligible for Medicaid. This increases to 8.8 million after the ACA is implemented (numbers not explicitly shown in a table)—this value is the same in all static and dynamic cases since we assume full Medicaid take-up in each. Thus we estimate the cost of ACA Medicaid expansions will be $13.4 billion in total [(8,834,205 - 3,533,725)*($2,591)].[24]

These estimates are first approximations of the differences in the gross cost to taxpayers of ACA-related financing of exchange premium subsidies and additional Medicaid expenditures in both our static and dynamic

[22] Estimating net government subsidies are even more complicated. Some new exchange users will no longer receive the tax subsidies that were tied to their employer health insurance because their additional income will reduce them. Additional government revenues will also come from the fines that large employers will now pay for employees who no longer receive ESI. On the other hand, we do not include in our subsidy calculation the government subsidies that would be provided for co-pays, and so on under exchange coverage, which would tend to increase government spending on subsidies.

[23] Although dependents (both worker dependents and others) are not included in our worker numbers, their additional costs are included in our estimates for employers and exchanges. This is the case because the cost of dependents' coverage is included in our estimates of the cost of health insurance for all main policy-holder workers.

[24] This stylized calculation can be thought of as the cost of avoiding disemployment effects. Without the expansion of Medicaid, we would expect a substantially larger number of wage-constrained employees to be at risk of job loss. The Medicaid expansion substantially lowers that risk, but it comes at a higher cost to taxpayers.

cases, assuming that all the behavioral changes we discuss in our dynamic scenarios fully played out in 2008. We do not consider additional tax revenue or fines brought in from individuals who earn higher wages after employer health insurance is dropped. However, we do consider what those higher wages do to the means-based exchange subsidy for which they would qualify. On the other hand, we also do not add in the cost of cost-sharing subsidies that would be additional government expenditures. We perform our cost change calculation to focus on the importance of the two key assumptions surrounding the language of the ACA with respect to affordable coverage rules and the behavior that the Act's use of employee ESI premium payments as its measure of affordability would induce.

We focus on these two key ACA assumptions to measure the effects on the way health insurance is provided in the United States.[25] The main cause of the substantial difference in who provides health insurance between the most and least dynamic of our cases is a result of the unintended crowd-out of ESI brought on by the generous exchange subsidies for workers living in families with incomes less than four times the poverty line that provide sufficient money on the table to induce employers and their workers to change compensation packages.

DISCUSSION AND SUMMARY

The implementation of the ACA may cause large changes in the share of workers with ESI coverage and the resulting distribution in the sources of health insurance coverage across the income distribution, depending on two key factors. We show that predictions of the share of workers who will keep their current ESI are quite sensitive to behavioral assumptions—an increase in ESI coverage from 74.29 to 78.62 percent in the static case where no workers currently receiving ESI move to the newly created exchanges, to a drop from 74.29 to 65.89 percent in the most dynamic case. Furthermore, in the most dynamic case, the vast majority of those with ESI coverage will now have incomes greater than four times the poverty line ($89,400 for a family of four in 2011), most exchange users will have family incomes that are 1.33 to four times the poverty line, and all those with family incomes below 1.33 of the poverty line will receive their health insurance via Medicaid. This huge swing in predicted ESI coverage from 78.62 to 65.89 percent and its consequence of a much more segregated way of

[25] We also modeled the story proposed by Holtz-Eakin and Smith (2010) to measure ESI crowd out with our work (Table A-2). Here, workers in large firms are allowed to sort into firms based on whether they find it in their interest for the firm to offer health insurance or not. In large firms a fine of $2,000 applies if the firm does not offer coverage. Workers in small firms do not face this fine so all who would qualify for an exchange subsidy will go as long as the subsidy is at least as great as the tax deductibility they would lose of ESI. When not offered coverage, workers and families can go to the exchange and receive subsidies to which they are entitled. As shown in the appendix this results in a fall in ESI coverage in our population from 78.62 percent in our least dynamic case to 61.89 percent in the Holtz-Eakin and Smith case. This result assuming zero transactions cost and hence perfect sorting is not that much greater than our most dynamic result with no job changes of 65.89 percent.

providing health insurance coverage by family income depends on two critical assumptions whose implications are not well understood.

The first implication is common to any prediction. To what degree will behavior change because of a change in the law? In this case, the degree firms and their workers will alter their current contractual relations with respect to the share of the explicit ESI premium that workers pay. We have shown that the amount of ESI crowd out that is possible is much larger than previous estimations have modeled. This is the case because they have not explicitly modeled the ability of employers and employees to renegotiate their compensation agreements to maximize the number of ESI covered workers who could be eligible for exchange premium subsidies. We find a very large percentage of these family income eligible ESI covered workers would prefer to take these subsidies with their employers' approval. This would happen even though firms will be fined $3,000 for each worker whose ESI is judged unaffordable and who obtains subsidized coverage. This is despite the fact that such workers will have to pay their share of the exchange premium with post-tax dollars.
The second is the unsettled question of how the affordable coverage rule will be codified in the final ACA regulations. The language in doubt is whether the affordable coverage rule applies to single coverage or family coverage for workers with families. We show that this as yet uncodified interpretation of the language of the ACA will dramatically affect the degree that the ACA crowds out ESI.

Our intention here is not to take a stance on what should happen with respect to codifying affordable coverage language in the ACA or on how employers and employees will change their compensation agreements to take advantage of the incentives in the ACA. Rather, it is to point out the potential importance of these ACA issues on coverage patterns and gross exchange subsidy costs—potential implications that have received little attention thus far.

We have primarily focused on the employment effects of the ACA which are likely to be small and on ESI crowd-out effects that have the potential to be much more important. The total cost of exchange subsidies to tax payers is $66 billion in our most dynamic case relative to $19 billion in our least dynamic case. Our findings here echo those first suggested in Holtz-Eakin and Smith (2010) that if employees are fully able to sort across large firms based on the demand for health insurance, exchange subsidies could be about three times as large as estimated by the CBO. But our analysis using data from the CPS more clearly shows the distributional consequences of these unintended effects across income, wage, and firm size. In fact, when we replicate the Holtz-Eakin scenario with our method in Appendix Table 2, we find that full sorting across large firms would

lead to coverage rages around 62 percent. The corresponding subsidy costs (not shown in a table) to the government come to about $75 billion.

In our models we show that even without costly sorting of workers into firms along health insurance lines, we could have behavioral changes that lead to almost as large a loss in ESI as if workers were able to sort. Doing so, we show that not accounting for these dynamic behaviors and depending on static models that ignore such behavior could lead to a substantial underestimation of the number of workers who will move out of ESI plans and into the subsidized exchanges. This will lead to much higher costs for taxpayers from these subsidies. Although we do not have a comparable model or population to compare our most dynamic case results to the CBO case, the fact that the assumptions about affordable coverage rules and premium adjustments we make in the least dynamic case are the same as the CBO's assumptions make a comparison of our two cases informative.[26] The magnitude of this understatement is such that in our static or least dynamic case, the estimated cost of exchange subsidies is one third as much as we forecast for our most dynamic case. Our findings show how sensitive predictions of the consequences of the Affordable Care Act of 2010 on ESI and exchange coverage and costs are to assumptions made with respect to employer and employee responses to exchange subsidies.

We provide two major contrasting examples—a static or least dynamic case that assumes little behavioral change and a dynamic case where employers and employees take full advantage of the current subsidies under a broad definition of the affordable coverage rule. It is not possible with certainty to know precisely what the consequences of the implementation of the ACA will be.[27] But what is clear is that estimates ignoring these possible different interpretations of the affordable care rule and the flexibility in premium share adjustments, will significantly understate the actual decline in ESI coverage and the growth of exchange coverage and subsidy costs, if firms and workers take full advantage of the current subsidies.

[26] There are many other differences between our approach and the CBO approach. To name a few, they use different samples (we use a sub population of private sector workers while CBO uses the whole US population, different methods (we provide a simple and transparent simulation calculation while the CBO uses a sophisticated utility based simulation model), the CBO (and Holtz Eakin and Smith) assumes some crowd out due to employers dropping coverage, while we assume no firms will drop coverage.

[27] In July 2007, Massachusetts was the first state to implement a package of reforms that included an expansion of public health insurance, subsidized exchange coverage, and employer and individual fines. It is still too early to determine the full effect of these reforms on strategic behavior of employers and employees, but very early evidence indicates no drops in employer coverage (Long and Masi , 2008).

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Table 1. Insurance Status of Workers, by Firm Size, Income, and Wage Categories – Percent within Each Category

		All (1)	Uninsured (2)	Own Employer (3)	Dependent Employer (4)	Non-group (5)	Publicly Insured (6)
Weighted Percent		100.00	17.61	58.90	15.39	5.09	2.99
Number of Observations		36,950	6,047	21,619	6,276	1,809	1,242
Population Count		95,496,817	16,818,385	56,252,143	14,697,092	4,864,240	2,856,417
Row Percentages							
Firm Size	Small Firm	32.47	49.70	22.51	41.44	52.97	45.46
	Large Firm	67.53	50.30	77.49	58.56	47.03	54.54
Total (all firms)		100.00	100.00	100.00	100.00	100.00	100.00
Income-to-needs ratio	100 or less	4.55	14.43	1.35	0.72	4.38	29.05
	101-133	3.18	8.93	1.64	0.66	3.09	12.26
	133-200	9.20	21.52	6.22	3.47	9.46	22.95
	201-300	15.29	21.86	14.59	10.20	15.09	16.77
	301-400	15.17	13.25	16.09	15.03	16.04	7.65
	More than 400	52.62	20.02	60.12	69.92	51.94	11.31
Total (all incomes)		100.00	100.00	100.00	100.00	100.00	100.00
Wage category	$0-$6.24	2.40	5.27	1.00	3.19	3.94	5.92
	$6.25-$7.25	3.37	7.74	1.08	5.24	4.49	12.27
	$7.26-$13.50	34.85	57.57	24.57	40.55	40.49	62.56
	More than $13.50	59.38	29.42	73.35	51.02	51.08	19.25
Total (all wages)		100.00	100.00	100.00	100.00	100.00	100.00

Source: CPS data estimated by the authors.

Notes:

1. The sample consists of private sector workers ages 17 to 64 years who were interviewed in the March 2009 Current Population Survey (CPS). We restrict the sample to those with wage data available in the Outgoing Rotation Group questionnaire of March, April, May or June CPSs of 2009, and whose firm size was non missing. We lost 302 observations out of an initial 64,046 due to improper merge results, 75 observations due to missing hours, 26,897 observations due to lack of wage data, and 649 observations due to missing firm size. See data appendix for further details. Half of the workers in firm size 25-99 were randomly assigned to the large firm category (more than 50 workers) while the other half were randomly assigned to a small firm. All figures are weighted to represent the US population by weights provided in the CPS March supplement. Workers are assigned to only one insurance status, using a hierarchy described in the text. Income to needs ratio is calculated based on data reported for 2008. Workers whose wages appeared to be below the applicable state minimum wage were re-assigned to small firms so that the employer mandate did not apply to them. This affected 827 observations.

Table 2. Distribution of Uninsured Workers, by Firm Size and by Part-Time vs. Full-Time

	Part Time	Full Time	Totals
Small Firm	1,677,626	7,087,463	8,765,089
Large Firm	1,506,389	6,546,907	8,053,296
Totals	3,184,015	13,634,370	16,818,385

Source: CPS data estimated by the authors. Population counts are presented.

Notes:

1. See Table 1 Note 1

Table 3. Distribution of Insured and Uninsured Workers, by Firm Size, Income, and Wage Categories

		All (1)	Uninsured (2)	Own Employer (3)	Dependent Employer (4)	Non-group (5)	Publicly Insured (6)
Column Percentages							
Firm Size	Small Firm	100.00	26.96	40.84	19.64	8.31	4.19
	Large Firm	100.00	13.12	67.59	13.35	3.55	2.42
Total (all firms)		100.00	17.61	58.90	15.39	5.09	2.99
Income-to-needs ratio	100 or less	100.00	55.93	17.51	2.44	4.91	19.12
	101-133	100.00	49.44	30.32	3.21	4.94	11.53
	133-200	100.00	41.19	39.81	5.80	5.24	7.46
	201-300	100.00	25.17	56.19	10.26	5.03	3.28
	301-400	100.00	15.39	62.48	15.25	5.39	1.51
	More than 400	100.00	6.70	67.30	20.45	5.03	0.64
Total (all incomes)		100.00	17.61	58.90	15.39	5.09	2.99
Wage category	$0-$6.24	100.00	38.70	24.67	20.47	8.38	7.39
	$6.25-$7.25	100.00	40.46	18.80	23.93	6.79	10.89
	$7.26-$13.50	100.00	29.09	41.53	17.91	5.92	5.37
	More than $13.50	100.00	8.73	72.76	13.22	4.38	0.97
Total (all wages)		100.00	17.61	58.90	15.39	5.09	2.99

Source: CPS data estimated by the authors.

Notes:

1. See Table 1 Note 1

Table 4. Percent of Workers Insured, by Firm Size, Income, and Wage Categories – After Simulated Static Reform Steps

		Insured (Base) (1)	ESI (Base) (2)	Insured (Employer Mandate) (3)	ESI (Employer Mandate) (4)	Insured (Medicaid Expanded) (5)	ESI (Medicaid Expanded) (6)	Insured (Uninsured to Exchange) (7)	ESI (Uninsured to Exchange) (8)
Weighted Percent		82.39	74.29	89.99	81.97	92.73	78.62	99.12	78.62
Number of Observations		30,903	27,895	33,509	30,535	34,491	29,282	36,666	29,282
Population Count (millions)		78,678,432	70,949,235	85,933,695	78,282,806	88,551,414	75,078,153	94,653,751	75,078,153
Row Percentages									
Firm Size	Small Firm	73.04	60.49	74.76	62.23	81.04	60.10	97.86	60.10
	Large Firm	86.88	80.93	97.31	91.47	98.35	87.52	99.72	87.52
Total (all firms)		82.39	74.29	89.99	81.97	92.73	78.62	99.12	78.62
Income-to-needs ratio	100 or less	44.07	19.95	62.02	37.90	100.00	0.00	100.00	0.00
	101-133	50.56	33.53	68.08	51.36	100.00	0.00	100.00	0.00
	133-200	58.81	45.61	76.88	63.69	76.88	63.69	100.00	63.69
	201-300	74.83	66.45	85.84	77.57	85.84	77.57	100.00	77.57
	301-400	84.61	77.74	91.79	84.99	91.79	84.99	100.00	84.99
	More than 400	93.30	87.76	96.70	91.24	96.70	91.24	98.32	91.24
Total (all incomes)		82.39	74.29	89.99	81.97	92.73	78.62	99.12	78.62
Wage category	$0-$6.24	61.30	45.14	62.13	45.97	76.18	44.24	98.14	44.24
	$6.25-$7.25	59.54	42.73	73.90	57.24	84.84	49.33	97.76	49.33
	$7.26-$13.50	70.91	59.44	84.21	72.82	88.91	66.43	98.59	66.43
	More than $13.50	91.27	85.98	95.41	90.20	96.09	88.82	99.54	88.82
Total (all wages)		82.39	74.29	89.99	81.97	92.73	78.62	99.12	78.62

Source: CPS data estimated by the authors.

Notes:

1. See Table 1 Note 1
2. Employer Mandate column reflects only the effect of having an employer mandate, the Medicaid Expansion column builds on the employer mandate by putting all persons at or below 133% FPL into Medicaid, and the Uninsured to Exchanges column builds on this further by allowing uninsured individuals to access coverage via the exchange. We assumed that individuals value health insurance at 10% of income, and became uninsured if what they paid for coverage exceeded this amount.

Table 5. Percent of Workers Insured, by Firm Size, Income, and Wage Categories – After Simulated Dynamic Reform Steps

		Narrow, No Premium Adjustments			Broad, Full Premium Adjustments		
		All Insured	ESI	Exchange	All Insured	ESI	Exchange
		(1)	(2)	(3)	(4)	(5)	(6)
Weighted Percent		99.12	78.62	10.23	99.05	65.89	22.89
Number of Observations		36,666	29,282	3,474	36,640	23,734	8,996
Population Count (millions)		94,653,751	75,078,153	9,771,176	94,592,220	62,926,138	21,861,660
Row Percentages							
Firm Size	Small Firm	97.86	60.10	23.58	97.82	48.72	34.92
	Large Firm	99.72	87.52	3.81	99.65	74.15	17.11
Total (all firms)		99.12	78.62	10.23	99.05	65.89	22.89
Income-to-needs ratio	100 or less	100.00	0.00	0.00	100.00	0.00	0.00
	101-133	100.00	0.00	0.00	100.00	0.00	0.00
	133-200	100.00	63.69	27.98	100.00	23.49	68.18
	201-300	100.00	77.57	18.26	100.00	41.56	54.27
	301-400	100.00	84.99	12.58	99.84	62.37	35.04
	More than 400	98.32	91.24	5.62	98.25	91.07	5.71
Total (all incomes)		99.12	78.62	10.23	99.05	65.89	22.89
Wage category	$0-$6.24	98.14	44.24	29.06	98.14	34.16	39.14
	$6.25-$7.25	97.76	49.33	17.23	97.71	38.12	28.39
	$7.26-$13.50	98.59	66.43	14.07	98.53	50.80	29.63
	More than $13.50	99.54	88.82	6.82	99.47	77.61	17.97
Total (all wages)		99.12	78.62	10.23	99.05	65.89	22.89

Source: CPS data estimated by the authors.

Notes:

1. See Table 1 Note 1
2. The dynamic scenario allows individuals to choose ESI, exchange coverage or uninsurance, based on several rational decision rules.

Figure 1. Deciding Between ESI and Exchange Coverage

This shows “money on the table”, after taking taxes and fines ($3,000) into account. Net of fines and taxes, there are still these incentives for those who have ESI in the static scenario (covered by employer mandate, and all who otherwise also have ESI).These figures include all workers (small and large firm, full time and part time workers.) Positive values are potential benefits from dropping ESI and obtaining exchange coverage.

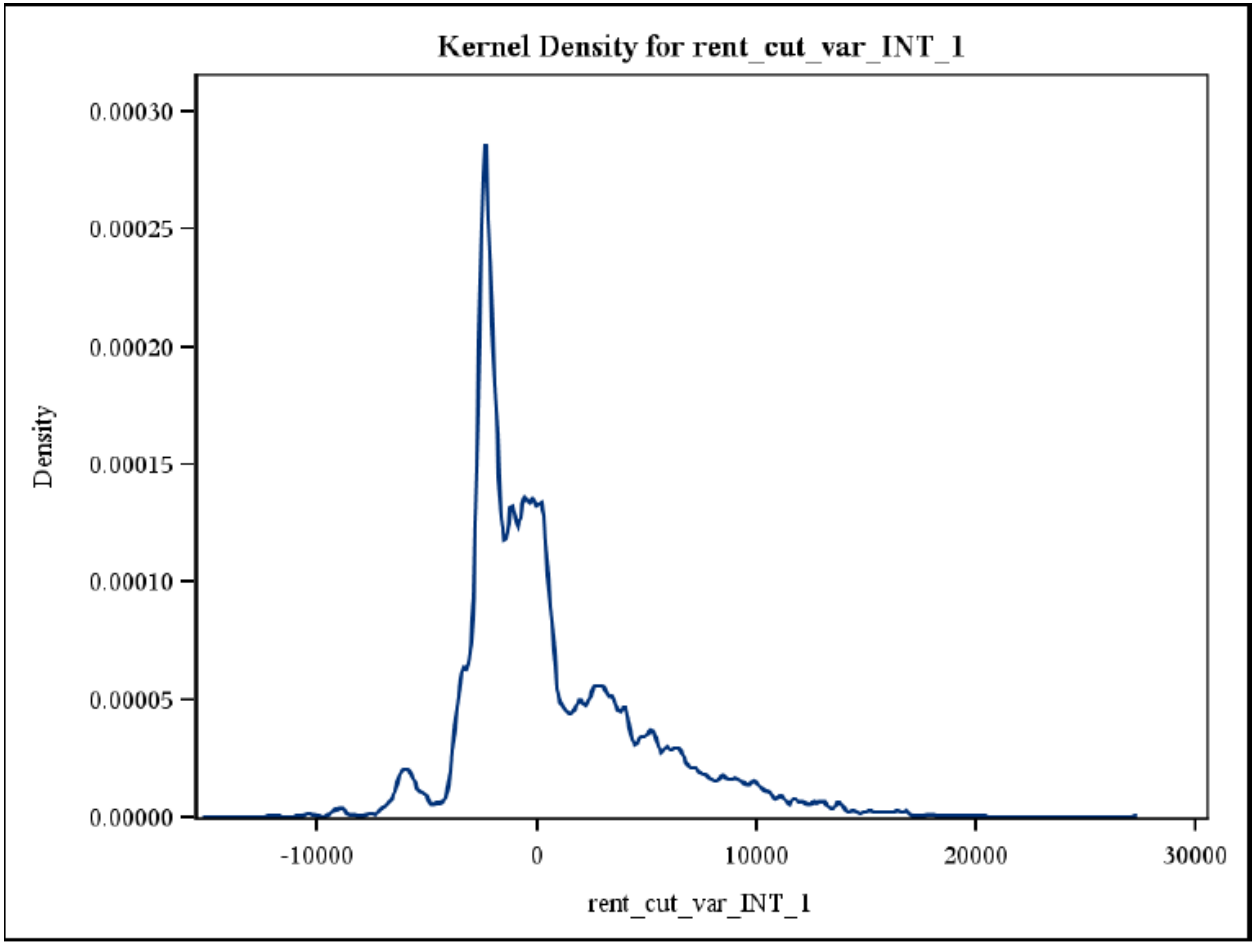

Figure 2a. Deciding Between ESI and No Insurance

This shows "money on the table" for those workers from Figure 1's universe who favor ESI over exchange coverage (are in the negative area), but were uninsured in the base case. Positive values indicate benefits from being uninsured, while negative values indicate benefits to staying with ESI. Unlike Figure 1, Figure 2a depends on the particular scenario in question. For illustrative purposes and in the interest of brevity, we show here Figure 2a only for the fully flexible case (broad definition, full premium adjustments).

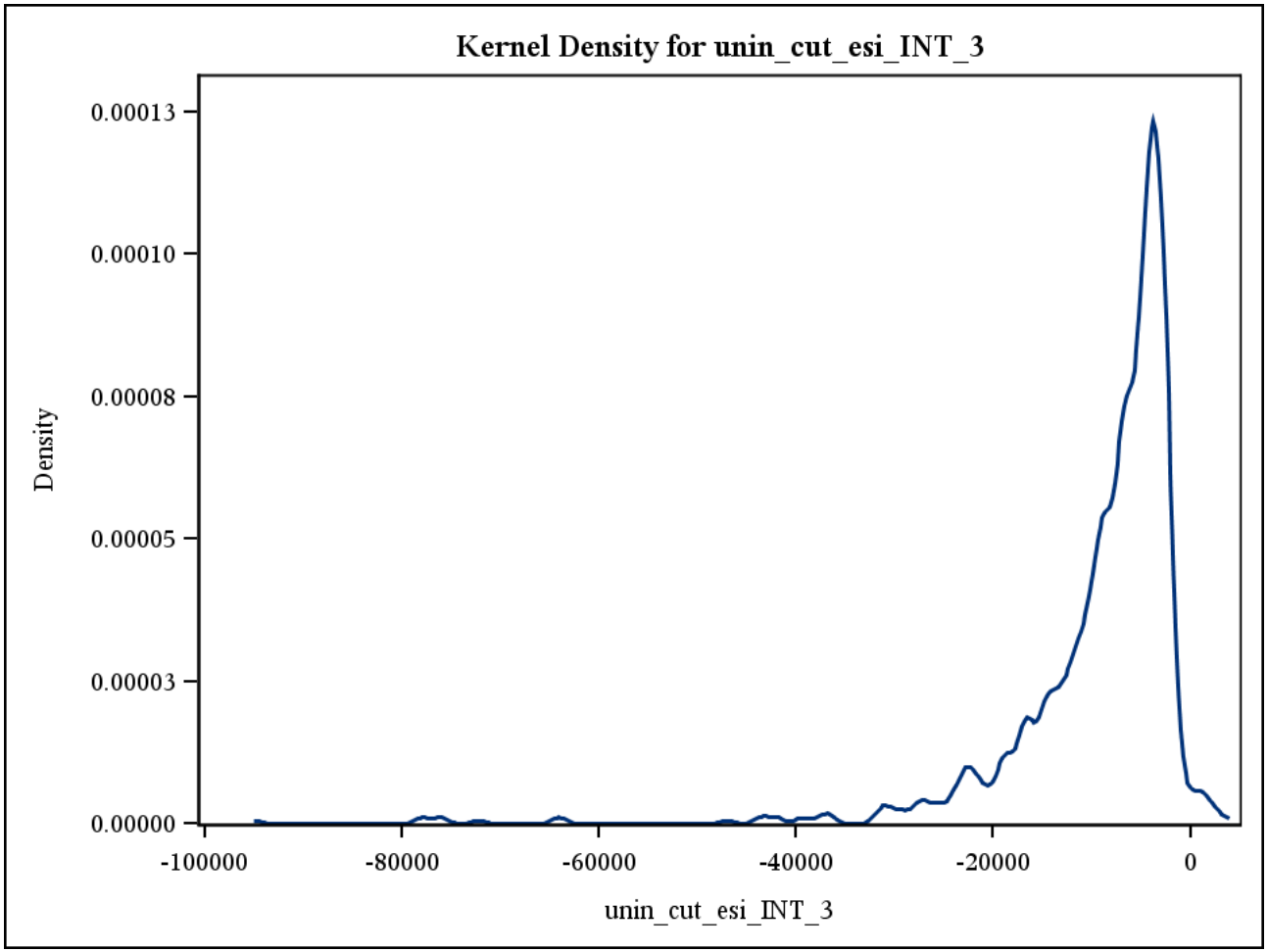

Figure 2b. Deciding Between Exchange Coverage and No Insurance

This shows "money on the table" for those workers from Figure 1's universe who favor exchange over ESI coverage (are in the positive area), but were uninsured in the base case. Positive values indicate benefits from being uninsured, while negative values indicate benefits to staying with exchange coverage. Unlike Figure 1, Figure 2b depends on the particular scenario in question. For illustrative purposes and in the interest of brevity, we show here Figure 2b only for the fully flexible case (broad definition, full premium adjustments).

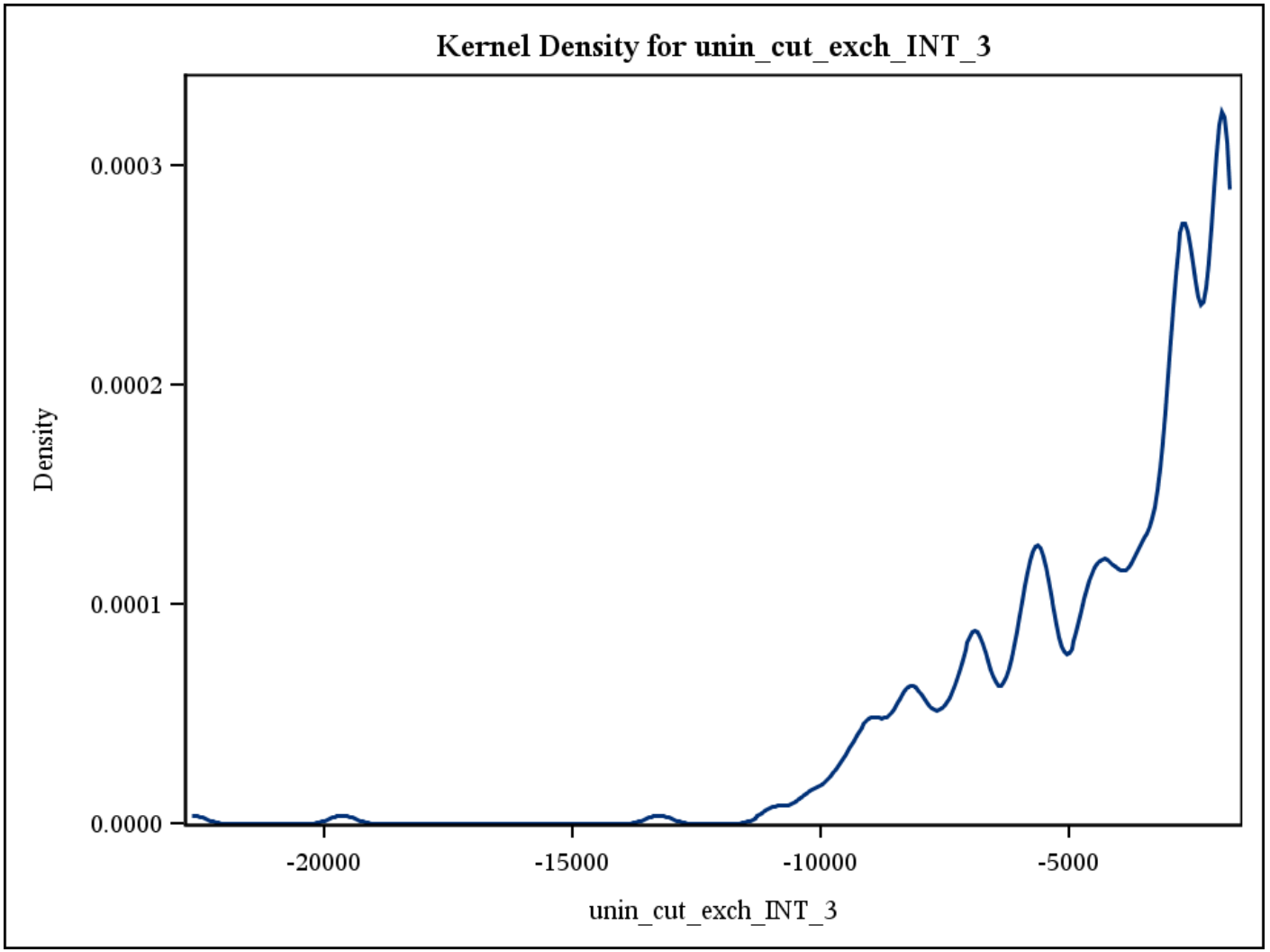

Table 6. Percent of Workers Insured, by Firm Size, Income, and Wage Categories – After Simulated Dynamic Reform Steps

		Narrow, Full Premium Adjustments			Broad, No Premium Adjustments		
		All Insured	ESI	Exchange	All Insured	ESI	Exchange
		(1)	(2)	(3)	(4)	(5)	(6)
Weighted Percent		99.12	73.95	14.90	99.12	76.74	12.11
Number of Observations		36,666	27,575	5,181	36,666	28,420	4,336
Population Count (millions)		94,653,751	70,616,065	14,233,265	94,653,751	73,283,028	11,566,301
Row Percentages							
Firm Size	Small Firm	97.86	56.03	27.65	97.86	58.35	25.34
	Large Firm	99.72	82.56	8.78	99.72	85.58	5.75
Total (all firms)		99.12	73.95	14.90	99.12	76.74	12.11
Income-to-needs ratio	100 or less	100.00	0.00	0.00	100.00	0.00	0.00
	101-133	100.00	0.00	0.00	100.00	0.00	0.00
	133-200	100.00	33.44	58.22	100.00	50.36	41.31
	201-300	100.00	66.11	29.73	100.00	73.50	22.33
	301-400	100.00	84.08	13.48	100.00	84.79	12.78
	More than 400	98.32	91.24	5.62	98.32	91.24	5.62
Total (all incomes)		99.12	73.95	14.90	99.12	76.74	12.11
Wage category	$0-$6.24	98.14	39.93	33.37	98.14	43.08	30.21
	$6.25-$7.25	97.76	44.32	22.24	97.76	47.05	19.51
	$7.26-$13.50	98.59	58.86	21.64	98.59	64.00	16.50
	More than $13.50	99.54	85.85	9.79	99.54	87.26	8.38
Total (all wages)		99.12	73.95	14.90	99.12	76.74	12.11

Source: CPS data estimated by the authors.

Notes:

1. See Table 1 Note 1
2. See Table 6 Note 2

Table 7. Subsidy Costs

	Exchange Subsidy (1)	Exchange Beneficiaries (2)	Average Subsidy (3)
Base	0	0	
Static	18,948,488,265	4,716,243	4017.71
Narrow, no adjustments	18,948,488,265	4,716,243	4017.71
Broad, full adjustments	66,464,221,594	13,432,032	4948.19
Broad, no adjustments	31,117,953,251	6,078,762	5119.13
Narrow, full adjustment	38,371,018,082	8,680,090	4420.58

Source: CPS data estimated by the authors.

Table 8. Foregone Subsidies

	Exchange Subsidy (1)	Exchange Beneficiaries (2)	Average Subsidy (3)
Base	0	0	0
Static	62,170,631,036	20,451,312	3039.93
Narrow, no adjustments	62,170,631,036	20,451,312	3039.93
Broad, full adjustments	19,576,982,673	12,078,903	1620.76
Broad, no adjustments	51,412,201,500	19,235,371	2672.79
Narrow, full adjustment	46,040,935,957	17,210,719	2675.13

Source: CPS data estimated by the authors.

Table A-1. Number of Workers: Firm Size, Income and Wage Categories by Insurance Status

		All (1)	Uninsured (2)	Own Employer (3)	Dependent Employer (4)	Non-group (5)	Publicly Insured (6)
Weighted Percent		100.00	17.61	58.90	15.39	5.09	2.99
Number of Observations		36,950	6,047	21,619	6,276	1,809	1,242
Population Count		95,496,817	16,818,385	56,252,143	14,697,092	4,864,240	2,856,417
Firm Size	Small Firm	31,006,012	8,359,146	12,663,940	6,090,728	2,576,803	1,298,432
	Large Firm	64,490,805	8,459,239	43,588,202	8,606,365	2,287,436	1,557,984
Total (all firms)		95,496,817	16,818,385	56,252,143	14,697,092	4,864,240	2,856,417
Income-to-needs ratio	100 or less	4,340,427	2,427,547	760,036	105,781	213,180	829,831
	101-133	3,036,811	1,501,296	920,877	97,430	150,095	350,066
	133-200	8,786,121	3,618,571	3,497,625	509,901	460,379	655,600
	201-300	14,604,018	3,675,763	8,205,781	1,499,029	734,001	479,154
	301-400	14,482,678	2,228,727	9,049,458	2,209,096	780,170	218,567
	More than 400	50,246,763	3,366,480	33,818,366	10,275,855	2,526,414	323,198
Total (all incomes)		95,496,817	16,818,385	56,252,143	14,697,092	4,864,240	2,856,417
Wage category	$0-$6.24	2,289,247	885,871	564,704	468,659	191,741	169,176
	$6.25-$7.25	3,218,338	1,302,258	605,120	770,182	218,553	350,447
	$7.26-$13.50	33,281,578	9,682,068	13,823,305	5,960,226	1,969,456	1,787,043
	More than $13.50	56,707,654	4,948,188	41,259,013	7,498,025	2,484,489	549,750
Total (all wages)		95,496,817	16,818,385	56,252,143	14,697,092	4,864,240	2,856,417

Source: CPS data estimated by the authors.

Notes:

1. See Table 1 Note 1

Table A-2. Holtz-Eakin Simulation (Comparison with Static Scenario)

		Static			Holtz-Eakin Simulation		
		All Insured (1)	ESI (2)	Exchange (3)	All Insured (4)	ESI (5)	Exchange (6)
Weighted Percent		99.12	78.62	10.23	99.12	61.66	27.19
Number of Observations		36,666	29,282	3,474	36,666	22,261	10,495
Population Count (millions)		94,653,751	75,078,153	9,771,176	94,653,751	58,887,862	25,961,467
Row Percentages							
Firm Size	Small Firm	97.86	60.10	23.58	97.86	43.45	40.23
	Large Firm	99.72	87.52	3.81	99.72	70.42	20.91
Total (all firms)		99.12	78.62	10.23	99.12	61.66	27.19
Income-to-needs ratio	100 or less	100.00	0.00	0.00	100.00	0.00	0.00
	101-133	100.00	0.00	0.00	100.00	0.00	0.00
	133-200	100.00	63.69	27.98	100.00	13.28	78.38
	201-300	100.00	77.57	18.26	100.00	27.61	68.22
	301-400	100.00	84.99	12.58	100.00	54.65	42.92
	More than 400	98.32	91.24	5.62	98.32	91.10	5.76
Total (all incomes)		99.12	78.62	10.23	99.12	61.66	27.19
Wage category	$0-$6.24	98.14	44.24	29.06	98.14	30.42	42.88
	$6.25-$7.25	97.76	49.33	17.23	97.76	34.04	32.52
	$7.26-$13.50	98.59	66.43	14.07	98.59	43.99	36.51
	More than $13.50	99.54	88.82	6.82	99.54	74.87	20.77
Total (all wages)		99.12	78.62	10.23	99.12	61.66	27.19

Source: CPS data estimated by the authors.

Table A-3: Static and Dynamic Case Definitions

Cases	Type	Definition
Static		No individuals who are offered ESI attempt to obtain subsidized exchange coverage.
Dynamic	Narrow definition , current premiums	Affordable coverage rule is defined as single coverage only, and employer/employee ratio of premiums cannot change.
	Broad definition, new premiums	Affordable coverage rule is defined as single or family coverage as applicable to the workers family situation and employer/employee ratio of premiums can change.
	Narrow definition, new premiums	Affordable coverage rule is defined as single coverage only, and employer/employee ratio of premiums can change.
	Broad definition, current premiums	Affordable coverage rule is defined as single or family coverage as applicable to the workers family situation and employer/employee ratio of premiums cannot change.

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