The Role of Tax Subsidies in the Market for Health Insurance

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Abstract

This paper investigates the role of tax subsidies in linking the market for health insurance to the employment relationship. Using both American and Canadian data, it investigates how these subsidies influence whether health insurance coverage is offered in different sized firms and whether it is offered through an employer versus the individual private market. The findings indicate that tax subsidies encourage the provision of insurance in smaller firms. Removal of the subsidies would cause the level of insurance in small firms to decline significantly, but would not cause a large change in the level of insurance in larger firms. Part of this decline would be offset by increases in the market for individually purchased insurance.

Key words: tax subsidies, health insurance

1. Introduction

The workplace has become much more than a source of income for most people. Employers administer pension plans, life insurance and health insurance for many workers. As many as ninety percent of privately insured Americans receive their primary health insurance through the workplace [EBRI, 1996]. Similarly, in Canada, more than two-thirds of the population receives supplemental health insurance through an employer (author's calculations). There are several reasons why the health insurance market is primarily administered through the workplace: large groups of employees may enjoy lower premiums because of the pooling advantages offered by groups. Administration of plans and informational asymmetries may be reduced by allowing employers to negotiate and interpret offers from insurance companies. Finally, governments in both countries subsidize health insurance provided through an employer by exempting the employer's contribution towards the employee's health insurance from the employee's taxable income. Previous literature has shown that subsidizing health insurance through the tax system by exempting employer contributions from income tax increases the quantity of health insurance demanded [Pauly, 1986, Stabile, 1999].

This paper investigates the role of tax subsidies in linking the health insurance market to the employment relationship. It investigates how these subsidies influence whether health insurance coverage is offered in different sized firms and whether it is offered through an employer versus the private individual market. The paper uses

variation in tax subsidies across Canadian provinces and American states to examine whether provinces and states which offer greater subsidies to employer-provided insurance have more small firms offering insurance than provinces or states which offer smaller subsidies. It investigates how levels of private health insurance, purchased outside the employment relationship, are affected by the tax subsidies. Using these estimates it calculates how the removal of the tax subsidies would alter the distribution of health insurance benefits across the workforce as well as in the private market.

2. How Do Tax-Subsidies Alter the Provision of Health Insurance in the Market?

Providing health insurance through employers as part of a compensation package instead of through individual markets for health insurance has several advantages for employees. These advantages have been explored and documented in previous studies. Firstly, providing health insurance to a firm instead of an individual may be more attractive to an insurance company because they can pool risk across the firm. This may result in lower premiums for individuals who would otherwise be higher risks [Pauly, 1986]. Secondly, group insurance may lower the administrative costs of providing insurance by using payroll systems to keep track of individual contributions [Gruber and Poterba, 1996]. Thirdly, exempting employer contributions from the employee's income tax significantly subsidizes the cost of an insurance package [Pauly, 1986, Gruber and Poterba, 1994].

The first two reasons outlined above suggest that larger firms should be able to offer the most attractive health insurance plans. Administrative costs generally increase at a decreasing rate and hence the employee's share of these costs decreases with the

number of employees. Further, more employees allow for greater risk pooling, lowering the impact of individuals who consume large amounts of health care on the average employee's premium. The data suggest that this is indeed the case. In Canada, in firms with less than twenty employees, only 24% of workers held supplemental health insurance benefits (health or dental). Among the largest firms, with over five hundred employees, 79% of workers held supplemental health insurance benefits (Table 1). In the United States, in firms with ten or fewer employees 30% of workers held health insurance benefits, while among the largest firms, with over one thousand employees, 72% of workers held health insurance benefits (Table 2).

On the other hand, the third advantage of employer-provided insurance, the tax subsidies, depend not on the size of the firm, but on the employee's marginal tax rate, and are available only on employer provided packages. The subsidies lower the price of insurance purchased through an employer relative to the private market. In the absence of government subsidies we might expect to see health insurance benefits concentrated in the largest firms and not in smaller firms or individual markets because of the pooling and administrative advantages afforded them. Small firms are unlikely to realize considerable cost savings from pooling or administrative efficiencies. However, in the presence of government subsidies, small firms now also have an incentive to offer health insurance benefits to their employees. By providing health insurance tax-free, even the smallest firms can offer health insurance at highly subsidized costs. Since many large firms would be likely to offer health insurance even in the absence of a subsidy, we might expect that the measured marginal effect of government subsidies on the decision to offer health insurance be larger in small firms.

The extent to which tax subsidies influence the decision of different types of firms to offer insurance is important to understanding the role of the employment market in providing health insurance. If the above arguments hold, tax policy which is designed to increase the number of insured individuals may be more effective if it is geared towards smaller firms where it is likely to have a greater impact. However, to the extent that workers are heterogeneous they may, in part, sort themselves across firms according to their preferences for health insurance. In this case, the effect of tax policy geared at increasing the number of insured individuals may be depressed. Removing the subsidies is likely to have a disproportionately large effect on health insurance coverage in small firms.

3. Empirical Framework

The empirical work attempts to measure the impact of tax subsidies on the firms' decisions to offer insurance. The arguments above suggest that we should expect the largest measurable effect of tax subsidies to be on insurance coverage in smaller firms. We would not expect significant changes in coverage rates in large firms, given the other advantages they enjoy apart from tax subsidies. To test these hypotheses, I exploit the variation in tax subsidies across Canadian provinces and American states. I examine differences in mean values of health insurance coverage by firm size across provinces and states, and then extends the analysis to examine individual insurance holdings across several firm types and regions.

In Canada, I exploit unique tax laws in Quebec, which do not exclude employer contributions to an employee's health insurance from the employee's taxable income. Therefore, employees in Quebec who have the same income and pay the same taxes as similar employees in the rest of Canada receive a subsidy to their health insurance which is considerably smaller (almost half the size) of that in other provinces. We would expect, then, that if these subsidies affect whether health insurance is purchased through the workplace, then this effect would be smaller in Quebec.

I use a difference-in-differences framework to estimate the effect of tax subsidies to employer provided health insurance on firm size. I compare the distribution of health insurance across large and small firms for provinces and states with varying tax-subsidies.

In Canada I compare the gap in supplemental health insurance coverage between small and large firms in Quebec with the gap in coverage between firm sizes in other Canadian provinces . The difference-in-differences estimator is then:

$$(1) \qquad \hat{d}_{dd} = (\bar{y}_{O,L} - \bar{y}_{O,S}) - (\bar{y}_{Q,L} - \bar{y}_{Q,S})$$

where subscript O denotes other provinces, subscript L denotes large firms (defined as five hundred or more employees), subscript Q denotes Quebec and subscript S denotes small firms (defined as fewer than twenty employees[1]).

In the United States I compare states with no state income taxes with those states with the highest rates of income tax. The states with no income taxes are Alaska, Florida, Nevada, South Dakota, Texas, Washington and Wyoming. The states with the highest

[1] The definition of small firm is restricted by the categories available in the data sets. Therefore, small firms are defined as less than twenty employees in the SWA data and less than 25 employees in the CPS data. The CPS also has a category of 10 or fewer employees, but samples for these firms are small.

income taxes are California, Iowa, Montana, New York, North Dakota, Oregon and the District of Columbia. I use a difference-in-differences estimator identical to that described in equation (1), replacing the Canadian provinces with the states outlined above.

The estimate, $\hat{d}$, represents the difference in employer-provided health insurance coverage between small and large firms in the high subsidy versus low subsidy environments. A negative value of $\hat{d}$ suggests that the differences in health insurance coverage between large and small firms are greater in those states/provinces where subsidies for insurance are smaller. I interpret this as suggesting that higher tax subsidies encourage employer based health insurance coverage.

I then use a multivariate framework to control for other factors which may influence the distribution of health insurance in particular states/provinces. Differences in wages, occupations, industry composition, as well as other demographic characteristics, may influence the distribution of health insurance benefits. To control for these differences I estimate a logit model for the probability of holding health insurance (*hi*):

(2)

$$Prob(hi_i = 1) = Prob[\, e_i > -(Small * \mathrm{Re}gion_i \boldsymbol{d} + SmallFirm_i \boldsymbol{q} + \mathrm{Re}gion_i \boldsymbol{a} + \ln(w_i (1 - t_{fi} - t_{pi}) \boldsymbol{g} + X_i \boldsymbol{b})]$$

Where $\boldsymbol{d}$, the coefficient on the interaction between being in a small firm in a low subsidy region is the multivariate difference-in-differences estimator. *X* is a vector of demographic characteristics including industry and union controls. *w* is the individual's after tax wage, *region* includes a vector of state or provincial dummy variables and *small*

firm is a dummy variable for being in a small firm, where a small firm is defined as less than twenty employees in Canada and less than twenty-five in the U.S.. The multivariate specification pools individuals from all firm sizes and regions and examines whether the interaction between the size of the subsidy (determined by the location of the employee) and the size of the firm impact the probability of holding health insurance. A priori I expect that this interaction, as specified above, should be negative, reflecting the fact that while there are unlikely to be differences in coverage levels in large firms across areas with different subsidies, low subsidy states/provinces are likely to have lower levels of coverage in smaller firms.

The above empirical analysis exploits differences in subsidies between two groups of provinces and states. However, there is considerable variation in the tax price of insurance across all 10 provinces and 14 states in my sample. I exploit this additional variation by creating a variable equal to the median tax price of insurance in each province and state which the variation across states and provinces in tax subsidies. I interact the median tax price with firm size to examine the implications of differing subsidies by firm size across all provinces instead of just comparing Quebec and the rest of Canada or low tax states and high tax states. There is also variation within states and provinces which may affect the probability of holding health insurance. For example, individuals may sort themselves across firms, within a particular state or province, according to their preferences. To capture this component of the variation in health insurance I interact the individual's tax price of health insurance (one minus the individual's marginal tax rate) with firm size. The inclusion of both the interaction between median tax price by state/province and firm size and the interaction between the

individual's tax price and firm size allow me to separate the between region and within region variation and control, in part, for heterogeneity of workers within states/provinces. I can then focus on the effects of differing provincial/state tax subsidies on health insurance coverage among small firms.

My analysis ignores a potentially important avenue for purchasing insurance: through group association. An alternative form of pooling risks and reducing administrative costs is to offer group insurance to individuals who belong to a common organization or group. For example, many academics may be able to purchase insurance through memberships with academic societies. These societies would then replace the employer as a means of pooling risk and reducing costs[2]. However, while offering these advantages, such organizations can not offer subsidized health insurance by exempting member contributions from the individual's wage. Therefore, while we might expect that some individuals choose to purchase health insurance through a non-employment related group, we would expect that individuals would switch to employer-provided plans if the tax subsidies were large enough such that it became economically superior for them to do so. In this case, we can treat these individuals as private insurance holders when examining the effects of tax subsidies on insurance in the workplace.

3.1 Non-Employer Provided Private Insurance

The model outlined above suggests that tax subsidies provide substantial advantages to purchasing insurance through an employer. If we expect that more small firms will offer insurance as a result of higher tax subsidies, we might also expect that the levels of individual (private, non-employer provided) insurance will be higher in areas

with low tax subsidies. I test this hypothesis by comparing individual health insurance coverage levels in states with high tax subsidies to individual health insurance coverage in areas with smaller (no state level) tax subsidies. I first directly test the mean levels of private coverage and then extend this analysis into a multivariate framework similar to that outlined above using individually purchased private insurance as the dependent variable.

4. Data

My empirical analysis draws on two data sources. The first is the 1995 Survey of Work Arrangements (SWA). The SWA is a national cross-sectional survey conducted as a supplement to the larger Canadian Labor Force Survey, a monthly survey of employment and demographic data. The SWA sample contains information on approximately 25,000 employed individuals. In addition to information on employment status, the SWA provides detailed information about job characteristics for a subset of the workers surveyed in the Labor Force Survey. The SWA asks a series of questions on non-wage benefits, including supplemental health insurance and dental insurance. Benefit questions were only asked of non-self-employed individuals. The SWA also includes detailed information regarding the labor status and income of spouses. After eliminating self-employed individuals and individuals missing important information, the data set consists of 15,688 observations. I calculate marginal tax rates for individuals in the SWA using tax information from the 1995 federal and provincial tax handbooks and from information contained in *Tax Facts* (KPMG, 1996). These marginal tax rates take into

[2] I thank Mel Fuss for pointing this out.

account the federal and provincial tax rates, federal and provincial surtaxes, and standard deductions, including pension plan deductions, unemployment insurance deductions, and deductions that might result from marital status and dependent children (see Stabile, 1999) for details.

Table 3 shows the differences in tax rates by province. We can see that there is considerable variation in the marginal tax rate, and hence the subsidy for employer based health insurance, across provinces. In Quebec, where employer-provided health insurance is not exempt from provincial income taxes, the variation in the tax price of insurance is considerably magnified.

The second data source is the 1995 March Current Population Surveys (CPS)[3]. The March CPS is a national survey of approximately fifty thousand households that includes demographic and labor force information, as well as information on health insurance coverage. In each survey year the CPS asks whether or not the individual is covered by Medicare, Medicaid or private health insurance. Those with private coverage are asked whether this coverage was made available through a current or former employer or whether they purchased the coverage privately. I keep only those individuals who are working and exclude the self-employed unless I specifically note otherwise. I calculate federal and state income tax rates on wage and salary income only for the CPS sample using information from federal tax forms and publications as well as the Advisory Commission on Intergovernmental Relations (1995). These tax rates are for a single individual or a married individual filing separately. The rates account for deductions of federal taxes at the state level where appropriate. The average price per

[3] I choose to use the 1995 CPS for consistency with the 1995 SWA. I have replicated the analysis using more recent years of the CPS with no significant change in the results.

dollar of employer provided health insurance in those 7 states with the highest state taxes is $0.80. In those states with no state taxes the average price per dollar of employer provided health insurance is $0.73.

5. Empirical Results

5.1 Difference-in-Differences:

To test whether tax subsidies affect the level of coverage in the workplace I examine the differences in mean employer-provided supplemental health insurance coverage between large and small firms in Quebec and in the rest of Canada. I examine employer-provided coverage in firms with less than 20 people and compare them with firms with more than 20 people. In Quebec, tax laws do not permit workers to exempt employer contributions from their provincial income taxes; in the rest of Canada workers can exempt contributions from provincial taxes. Therefore, the subsidy for a dollar of health insurance is considerably smaller in Quebec than in the rest of Canada. While the other provinces receive combined federal and provincial subsidies as high as 54 percent, subsidies in Quebec are limited to a maximum of 31 percent. One would then expect, given the model outlined above, that fewer smaller firms would offer insurance in Quebec relative to larger firms. The difference-in-differences results confirm this hypothesis. Table 4 presents these results. In large firms levels of coverage in Quebec exceed those in the rest of Canada. In small firms levels of coverage in Quebec are significantly lower than the rest of Canada. The gap in coverage levels between small firms and large firms in Quebec is 7 percentage points larger than in the rest of Canada. That is, not only are individuals in small firms in Quebec less likely to get insurance than

individuals in large firms, but this difference is significantly larger than individuals in similar sized firms in the rest of the country.

Table 5 presents similar difference-in-differences results for the United States. Here I compare states with no state level income tax (and hence a smaller subsidy for employer-provided health insurance) to states with the highest levels of state income tax (and hence the largest subsidies for employer-provided health insurance). I choose the top seven states ranked by top income tax bracket to match the seven states without state level income tax. Again, a priori, we would expect that in individuals in smaller firms, those with less than 25 employees, are less likely to have health insurance than individuals in larger firms, those with 25 or more employees. Moreover, we expect that this difference will be larger in those states with small tax subsidies for employer-provided insurance. The data provide evidence to suggest that this is indeed the case. In large firms coverage levels do not differ between high subsidy and low subsidy states. In small firms, levels of coverage are lower in low subsidy states. The gap in coverage levels between large and small firms is 3 percentage points larger in those states with low tax subsidies than in those states with high tax subsidies. This difference is significant at the 5% level.

5.2 Multivariate Results:

I extend this analysis into the multivariate framework outlined above by fitting a logit regression to the SWA and CPS data. The multivariate analysis allows me to control for other variation which may influence the probability of holding employer-provided health insurance. The multivariate version of the difference-in-differences takes on three

forms. First, using the entire sample of ten provinces I interact firm size and being in Quebec. For the U.S. I replace Quebec with a dummy for being in a low tax state. This tests whether the effect of being in a small firm relative to larger firms is different in Quebec than in the rest of Canada, holding all else equal. Second, I interact the median provincial/state tax price with being in a small firm. This is a measure of the variation across provinces/states in tax prices and is meant to capture the tax environment faced by the firm's employees when the firm is deciding whether to offer health insurance. Finally, I interact the individual's tax price of insurance with firm size and include this variable along with the interaction between median tax price and firm size. The former interaction term accounts for the variation within provinces (potentially across firms) and the latter interaction term accounts for the variation across states/provinces. The coefficient of particular interest is the effect of the across province variation on the probability of holding health insurance. The results from the Canadian data are presented in Table 6.

The multivariate results confirm the results above. The gap in coverage levels between individuals in small firms and large firms in Quebec is 7.5 percentage points larger than in the rest of Canada. Again, this reflects the difference between small and large firms in Quebec as compared to the difference between firms of similar sizes in the rest of the country. Other explanatory variables have their expected effects on the probability of holding health insurance. The tax-price of a dollar of insurance has a negative and significant effect (see Stabile, 1999 for a full discussion of the impact of the tax-price on the decision to offer insurance). After-tax wages have a positive and significant effect on the decision to hold insurance. Individuals who work more hours, are

members of a union, have longer tenures with their employers, and in larger firms are all more likely to have health insurance. Industry and occupation dummies are included. A chi-squared test for the joint significance of these dummy variables suggests that both sets are jointly significant variables in determining whether an individual holds supplemental health insurance through an employer.

The second column of Table 6 presents the results using the median tax price across all ten provinces. I use the median tax subsidy in each province and interact this subsidy with a dummy variable for being in a small firm. The resulting coefficient is then a measure of how different provincial tax subsidies alter the probability of holding health insurance in small firms across all provinces. I find that the gap in coverage levels between individuals in small firms and large firms is larger in provinces with lower tax subsidies which is consistent with the results presented above.

The third column of Table 6 shows the results including both the interaction between individual tax price and firm size and the interaction between median tax price and firm size. The between province variation is captured by the latter interaction term and the within province variation is captured by the former. The interaction between median tax price and firm size is once again negative and significant, consistent with the hypothesis that the gap in insurance coverage between large and small firms is greater in regions with low tax subsidies. Once we control for the within province variation it is also larger in absolute value than in column two. The interaction between individual tax prices and firm size is positive and significant, although smaller than the between region variation. While I do not try to explain all the potential sources of within provinces differences across firm sizes, once story which is consistent with this results is that

individuals sort themselves across different sized firms based, at least in part, on their preferences for health insurance coverage.

One concern with examining employer-sponsored coverage in small firms is that some workers in small firms may have insurance coverage from other sources. In particular, workers who have coverage through a spouse's employer may choose to work in a firm without insurance in order to earn a higher wage. To try and test whether this type of behavior is driving the results reported above, I repeat the above analysis limiting my sample to non-married individuals. The results from this analysis are not presented here, but are almost identical (similar magnitude and significance) to the results obtained from using the entire sample. This suggests that while joint maximization of benefits between spouses may be occurring, it is not driving the results presented above.

I estimate similar equations using CPS data for the U.S. population (Table 7). The Multivariate analysis examines individuals from 14 states and across all firm sizes. The first column examines the interaction between being in one of the 7 no state tax states and being in a small firm . The multivariate analysis confirms, and even bolsters, the difference-in-differences results presented above. The gap in coverage levels for individuals in a small firms relative to large firms is 5 percentage points larger in low subsidy states than the gap in coverage levels for individuals in states with higher subsidies. This result is strongly significant and slightly larger than the difference-in-differences result above. Other explanatory variables have similar effects to those in the Canadian data. The tax-price of health insurance has a negative and very significant effect on the probability of having health insurance. Wages are positively correlated with holding employer-provided health insurance, as is being a member of a union. Age is

positively correlated with having health insurance whereas it is negatively correlated in the SWA data. The reason for this is that the SWA data has information on tenure with the current employer. Without the tenure information, the coefficients on age are similar in both data sets. Including tenure removes the positive correlation between age and health insurance suggesting that age is a proxy for tenure. Once again, industry dummy variables are included, although not reported in Table 7.

The second column of table 7 examines the interaction between the median state tax rate and firm size. Again I use median tax rates to capture the between state variation which reflects the subsidy environment available to individuals in a firm when firms are deciding whether to offer health insurance to their employees. Again I find that the differences in coverage levels between larger and smaller firms is larger in states with low subsidies than in states with higher subsidies[4]. The third column of Table 7 is analogous to the third column of Table 6 which uses Canadian data. Again I split the variation in subsidies into a component which reflects the variation between states and a component which reflects the variation within states. The interaction between median tax price and firm size (the between state component) is once again negative and very significant, consistent with the evidence above which suggests that the gap in health insurance coverage between small and large firms is larger in those regions with smaller tax subsidies. As with the Canadian data, the coefficient on the within state variation is positive and significant, although smaller than the coefficient on the interaction between

[4] As with the Canadian data, I repeat this analysis using single individuals only to check whether individuals with spousal coverage who work in small firms without coverage may be driving the results above. Once again, the results using non-married individuals only are of similar magnitude and significance to those presented above.

median tax price and firm size, and is consistent with the hypothesis that there is some sorting of individuals across firms within states.

In sum, the difference-in-differences analyses and the multivariate analyses in both Canada and the United States present evidence that the tax subsidies to employer-provided health insurance result in greater insurance coverage among individuals in smaller firms. Therefore, the primary mechanism by which tax subsidies affect the measured level of employer-provided health insurance coverage is by promoting such insurance in small firms.

5.3 Non-Employer-Provided Health Insurance

The evidence above suggests that offering greater subsidies to health insurance provides incentives for individuals in small firms to obtain coverage through an employer. In regions where tax subsidies are low there is less of an incentive to purchase insurance through a small sized employer, and we might expect that individuals whose indirect utility from purchasing insurance is greater than not purchasing insurance will obtain coverage through the individual private market instead. An initial examination of the CPS data suggests that this is indeed the case. Individuals in states with no state taxes (and hence lower subsidies for employer-provided health insurance) are approximately 16 percent (1 percentage point) more likely to hold privately purchased individual health insurance coverage. This difference is statistically significant at the 5 percent level.

I use a difference-in-differences estimator to examine whether the difference in individual private insurance rates between employees of small and large firms is greater

in low tax states than in high tax states. I examine the difference between employees in small and large firms because we should expect that larger firms can offer insurance well below the private market rate and as a result, employees of large firms who want health insurance would be very unlikely to purchase such insurance on the individual private market. Table 8 presents the difference-in-differences results. We see that in all firms with 25 or more employees rates of private coverage among employees are identical. However, in small firms rates of private coverage among employees are approximately 2 percentage points higher in low subsidy states than in high subsidy states. The difference-in-differences is approximately 2 percentage points and is significant.

I extend this into a multivariate regression framework by fitting a linear probability model to holding private health insurance outside the workplace[5]. I examine a model which simply includes a dummy variables for being in a low subsidy area and then extend this model to a difference-in-differences framework, interacting low subsidy areas with being employed in a small firm. Table 9 presents the results. The first column of Table 9 looks at whether being in a low tax state increases the probability that an individual holds private coverage outside the workplace. Being in a low tax state increases the probability of holding private coverage by approximately half a percentage point, although, unlike the analysis of straight means presented above, the multivariate analysis is not significant at the 10 percent level. The second column of Table 9 reproduces the difference-in-differences analysis in a multivariate framework. Similar to the straight difference-in-differences result, the gap in private, individually purchased health insurance coverage between workers in large and small firms is 1.5 percentage

[5] I use linear probability models corrected for heteroskedasticity instead of logit models. The point estimates differ slightly between the two, although qualitatively the results are simliar.

points greater in low subsidy states than in high subsidy states, and this difference is significant at the 10 percent level. This is consistent with the hypothesis that tax subsidies encourage individuals to buy insurance through an employer. As the tax price of insurance comes closer to the price of insurance on the individual private market (one dollar) individuals may choose to hold insurance purchased on the individual private market, instead of through an employer. Similarly, working in a small firm has a positive effect on holding private insurance outside an employment relationship. Relative to being in a small firm, each of the firm size dummies are negative and significant, suggesting that levels of private coverage decrease dramatically as the size of the firm at which the individual is employed increases.

These results suggest that tax subsidies may have a small impact on the propensity to hold private insurance outside the workplace. Individuals who face larger subsidies more likely to purchase insurance through and employer and less likely to purchase through the private market[6].

5.4 Implications

[6] If individuals do not value health benefits they may choose to work in a firm which does not offer benefits, or alternatively, they may choose to be self-employed. If avoiding health insurance costs were a primary motive for choosing self-employment we would expect that levels of private coverage (obtained outside the employment relationship) would be quite low among such workers. However, data from the CPS suggests otherwise. If we examine all workers without employer provided health coverage, self-employed workers are much more likely to purchase private coverage, all else equal, than are not self-employed workers without employer coverage. This suggest that avoiding paying for health insurance is not causing people to select themselves into self employment. Research by Holtz-Eakin, Penrod and Rosen [1994] suggest that lack of health insurance coverage has had no noticeable effect on the movement of workers into self-employment, providing further evidence that health insurance coverage, or lack thereof, does not have a sizeable impact on the decision to be self-employed.

I can use my estimates of how the tax subsidies affect coverage levels for workers in different sized firms and the decision to purchase insurance through an employer instead of on the individual market to examine how the subsidies have changed the distribution of health insurance coverage in the United States. I can then examine the implications of removing the tax subsidies on health insurance coverage across firms and in the individual private market.

I can extrapolate how removing the subsidies would affect the gap in insurance coverage and the level of individually purchased private coverage using the differences observed in data between low tax and high tax states. I assume that the level of coverage in large firms will not be affected by removing the subsidy[7] (although we would expect that the amount of insurance purchased would decrease as the marginal cost of an additional dollar increases by an average of $0.24). The removal of the subsidies would result in decreases in coverage levels in small firms and perhaps increases in coverage levels on the private market. Using an average gap in coverage levels between large and small firms of 35 percentage points in the U.S. and an average tax-price of insurance of $0.76 in the U.S., my estimates suggest that removing the subsidy to employer provided health insurance completely would cause coverage levels in small firms to decrease by approximately 50 percent, increasing the gap between small and large firms to approximately 51 percentage points. The level of employer-provided health insurance coverage in small firms would then fall from its current level (1995 data) of 32% to 16% (see table 10). This decline would be partially offset by increases in coverage in the private market. Extrapolating from the differences in private insurance coverage between

[7] In the data presented the number of insured in large firms does not vary by the level of the tax subsidy across states.

states with high and low tax subsidies, removing the subsidies all together would cause an increase in private insurance coverage among workers in small firms from 9 percent to 14 percent (table 10).

Therefore, by removing the subsidies for employer provided health insurance we would see large changes in both the number of insured individuals and the method by which people choose to obtain health insurance. Workers in large firms would continue to purchase insurance through an employer because of the benefits, other than the tax subsidies, of doing so. Among the smallest firms, levels of coverage would drop dramatically because without the subsidy there is little advantage to buying insurance through an employer. Part of this drop would be offset by increases in the number of people buying health insurance on the individual private market instead of through an employer. Presumably, part of the drop would result in a rise in the number of uninsured individuals. It is difficult to accurately measure how the number of uninsured individuals would change with such a policy change as other options for insurance, such as coverage through a family member, would presumably be a potential substitute, along with private coverage, for coverage through an employer.

6. Conclusions

Tax subsidies to employer-provided health insurance lower the costs of providing health insurance through an employer, regardless of the size of the firm. Unlike the other advantages of employer-provided health insurance, the tax-subsidies are determined by the individual employee's characteristics, namely his or her marginal tax rate. While smaller firms are still much less likely to offer insurance than larger firms, the subsidies

may make insurance more attractive to workers in a small firm than purchasing insurance outside the workplace, or not purchasing insurance at all. Subsidies are unlikely to have any observable affect on coverage levels in large firms because of advantages large firms offer in the administration of insurance. The findings reported above confirm this hypothesis. Data from both the United States and Canada support the claim that the insurance coverage gap between small and large firms is smaller in those states or provinces which have higher tax subsidies. The gap is due to differences in coverage levels across small firms. Levels in large firms do not differ significantly according the to the value of the subsidy. These findings are significant and consistent across several specifications. Furthermore, there is some evidence that rates of private coverage obtained outside any employment relationship are higher in those states with lower tax subsidies. Subsidies to employer-provided health insurance, therefore, have an observable effect on the marginal decision to hold insurance in smaller sized firms, thereby reducing the level of individually purchased health insurance. The subsidies thereby contribute to the link between employment and health insurance coverage, particularly among smaller firms.

My findings suggest that removing the subsidies to employer-provided health insurance will have a significant effect on the level of employer-provided health insurance coverage in small firms. Removing the subsidies all together would cause the level of coverage in small firms to fall by 50%. On the other hand, coverage levels in large firms are unlikely to change by very much with the removal of the subsidies. Small gains in individually purchased private insurance would offset only a fraction of this decline.

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Table 1 Percentage of Workers with Employer Provided Health Insurance by Firm Size in Canada

# of Employees	Canada	Quebec	Canada excluding Quebec
< 20	21.4	18.8	22.3
20-99	54.1	52.4	54.7
100-500	68.1	76.1	65.4
500+	75.8	79.4	74.7

a. Source: 1995 Survey of Work Arrangements
b. Weighted tabulations using SWA final weights.

Table 2 Percentage of Workers with Employer Provided Health Insurance by Firm Size in the United States

# of Employees	All States	States with No State Income Tax	States with State Income Tax
<10	30.1	26.5	30.9
11-24	40.8	35.5	41.8
25-99	57.4	55.3	57.8
100-499	67.6	62.1	68.4
500-999	71.8	70.8	71.9
1000+	72.6	71.5	72.9

a. Source: 1995 Current Population Survey
b. Weighted tabulations using CPS March supplemental weights.

Table 3 Provincial Marginal Tax Rates and Tax Prices for Health Insurance

Province	Mean Marginal Tax Rate (%)	Variance in Marginal Tax Rates	Median Marginal Tax Rate (%)	Median Tax Price of Insurance ($)
Newfoundland	30.4	0.026	29.1	0.71
P.E.I.	28.4	0.019	27.6	0.72
Nova Scotia	27.1	0.022	27.6	0.72
New Brunswick	29.6	0.020	28.4	0.72
Quebec	35.1	0.008	38.2	0.82
Ontario	32.3	0.021	41.8	0.58
Manitoba	31.3	0.021	28.4	0.72
Saskatchewan	29.6	0.021	28.9	0.71
Alberta	28.0	0.018	25.8	0.74
British Columbia	31.3	0.020	40.3	0.60

a. Source: 1995 Survey of Work Arrangements. Marginal tax rates are calculated by author.

Table 4 Difference-in-Differences: Employer-Provided Health Insurance Coverage in Quebec versus the Rest of Canada

	Other Sized Firms	Small Firms	Difference
Rest of Canada	0.677	0.224	-0.453
	(0.005)	(0.008)	(0.009)
Quebec	0.712	0.187	-0.525
	(0.009)	(0.015)	(0.017)
Difference	0.036	-0.037	**-0.072**
	(0.010)	(0.017)	**(0.020)**

a. Source: 1995 Survey of Work Arrangements
b. Standard Errors in Parentheses
c. Small firms are defined as <20 employees.
d. Difference-in-Differences is displayed in the bottom right corner.

Table 5 Difference-in-Differences: Employer-Provided Health Insurance Coverage in States with no state tax versus states with highest state tax

	Other Sized Firms	Small Firms	Difference
High Tax States	0.668	0.329	-0.338
	(0.005)	(0.009)	(0.010)
Low Tax States	0.667	0.298	-0.369
	(0.006)	(0.009)	(0.011)
Difference	0.000	-0.031	**-0.030**
	(0.008)	(0.012)	**(0.014)**

a. Source: 1995 CPS
b. Standard Errors in Parentheses
c. Small firms are defined as <25 employees.
d. Difference-in-Differences is displayed in the bottom right corner.

Table 6 The Effect of Health Insurance Subsidies on the Probability of Health Insurance Coverage in Small Firms; Canadian Data

N=15621	Employer-Provided Health Insurance	Employer-Provided Health Insurance	Employer-Provided Health Insurance
Quebec* Small firm	-0.078**	---	---
	(0.033)		
Median Provincial Tax-price*Small Firm	---	-0.912**	-1.21**
		(0.342)	(0.324)
Tax-price*Small Firm	---	---	0.267**
			(0.135)
Tax-price	-0.339**	-0.340**	-0.393**
	(0.092)	(0.101)	(0.096)
Wage	1.04**	1.04**	1.05**
	(0.130)	(0.137)	(0.139)
Wage Squared	-0.140**	-0.140**	-0.143**
	(0.025)	(0.026)	(0.026)
Age	-0.014**	-0.014**	-0.014**
	(0.0057)	(0.0068)	(0.0068)
Number of children	-0.010*	-0.010**	-0.0098**
	(0.0052)	(0.0032)	(0.0032)
Hours worked	0.013**	0.013**	0.013**
	(0.00080)	(0.0017)	(0.0017)
Married	0.070**	0.069**	0.069**
	(0.018)	(0.019)	(0.019)
Male	-0.019	-0.019	-0.019
	(0.014)	(0.018)	(0.018)
Spouse employed	-0.0073	-0.0073	-0.0072
	(0.017)	(0.022)	(0.022)
Tenure with Current Employer	0.096**	0.096**	0.095**
	(0.0043)	(0.0098)	(0.0097)
Senior member present in household	-0.021	-0.021	-0.021
	(0.022)	(0.030)	(0.030)
Spouse's age	-0.019**	-0.019**	-0.019**
	(0.0036)	(0.0035)	(0.0035)
Firm size 20-99	0.260**	-0.403	-0.435*
	(0.018)	(0.265)	(0.246)
Firm size 100-500	0.329**	-0.334	-0.366
	(0.019)	(0.275)	(0.256)
Firm size 500+	0.346**	-0.317	-0.349
	(0.017)	(0.275)	(0.256)
Union	0.202**	0.202**	0.201**
	(0.014)	(0.029)	(0.030)
Constant	-2.31**	-1.65**	-1.60**
	(0.216)	(0.180)	(0.156)

a. Source: 1995 Survey of Work Arrangements.
b. Standard Errors in parentheses.
c. Includes occupational dummies, industry dummies and provincial dummies.
d. Coefficients presented as marginal effects.

Table 7 The Effect of Health Insurance Subsidies on the Probability of Health Insurance Coverage in Small Firms; U.S. Data

N=21663	Employer-Provided Health Insurance	Employer-Provided Health Insurance	Employer-Provided Health Insurance
Low Subsidy State* Small Firm	-0.057**	---	---
	(0.019)		
Median State Tax-price*Small Firm	---	-0.516**	-1.12**
		(0.219)	(0.233)
Tax-price*Small Firm	---	---	0.805**
			(0.121)
Tax price	-0.762**	-0.761**	-0.971**
	(0.091)	(0.091)	(0.096)
Wage	0.509**	0.508**	0.502**
	(0.034)	(0.034)	(0.034)
Wage Squared	-0.065**	-0.065**	-0.064**
	(0.0071)	(0.0071)	(0.0070)
Age	0.0052**	0.0051**	0.0051**
	(0.00036)	(0.00036)	(0.00035)
Hours worked	0.012**	0.012**	0.012**
	(0.00047)	(0.00047)	(0.00046)
Male	-0.016*	-0.016*	-0.015*
	(0.0092)	(0.0092)	(0.0091)
Married	-0.051**	-0.051**	-0.050**
	(0.0088)	(0.0088)	(0.0088)
Firm Size 10-24	0.120**	0.120**	0.114**
	(0.016)	(0.016)	(0.016)
Firm Size 25-99	0.204**	-0.188	-0.056
	(0.017)	(0.178)	(0.175)
Firm Size 100-499	0.281**	-0.111	0.021
	(0.017)	(0.178)	(0.175)
Firm Size 500-999	0.352**	-0.040	0.092
	(0.022)	(0.178)	(0.176)
Firm Size 1000+	0.375**	-0.017	0.115
	(0.016)	(0.178)	(0.175)
Union	0.168**	0.168**	0.165**
	(0.026)	(0.026)	(0.026)
Constant	-1.05**	-0.663**	-0.623**
	(0.112)	(0.212)	(0.209)

a. Source: 1995 CPS
b. Standard Errors in parentheses.
c. Includes State and Industry dummies. Only the 14 states representing the high and low tax states are included in the model.
d. Coefficients presented as marginal effects.

Table 8 Difference-in-Differences Estimates of Private (Non-Employer Provided) Insurance

	Large Firms	Small Firms	Difference
High Tax States	0.026	0.081	0.055
	(0.002)	(0.005)	(0.005)
Low Tax States	0.026	0.099	0.073
	(0.002)	(0.006)	(0.006)
Difference	0.000	0.018	**0.018**
	(0.003)	(0.008)	**(0.008)**

a. Source: 1995 CPS
b. Standard Errors in Parentheses
c. Difference-in-difference estimate in lower right corner
d. Small firms are defined as <25 employees.

Table 9 The Effect of Health Insurance Subsidies on Private (Non-Employer Provided) Insurance Coverage

N=21663	Private Health Insurance	Private Health Insurance
Small firm* low subsidy state	---	0.014*
	---	(0.0081)
Low Tax State	0.0051	---
	(0.0033)	---
Tax price	0.00094	0.061**
	(0.027)	(0.028)
Wage	-0.012	-0.0080
	(0.0086)	(0.0092)
Wage Squared	0.0018	0.0023
	(0.0016)	(0.0018)
Age	0.0018**	0.0018**
	(0.00016)	(0.00016)
Hours worked	-0.00057**	-0.00044**
	(0.00018)	(0.00018)
Male	0.0084**	0.0090**
	(0.0031)	(0.0031)
Married	-0.017**	-0.018**
	(0.0030)	(0.0030)
Firm Size <10	0.079**	0.070**
	(0.0060)	(0.0068)
Firm Size 10-24	0.040**	0.032**
	(0.0058)	(0.0067)
Firm Size 25-99	0.018**	0.015**
	(0.0041)	(0.0042)
Firm Size 100-499	0.0062*	0.0040
	(0.0035)	(0.0035)
Firm Size 500-999	-0.0037	-0.0045
	(0.0044)	(0.0044)
Union	-0.0055	-0.0045
	(0.0056)	(0.0057)
Constant	0.0065	-0.052
	(0.033)	(0.033)

a. Source: 1995 CPS
b. Standard Errors in parentheses.
c. Includes Industry dummies. Only the 14 states representing the high and low tax states are included in the model. Column 2 includes state dummies.

Table 10

Health Insurance Coverage by Firm Size with Tax Subsidies

Firm Size	Employer-Provided Health Insurance (%)	Private, non-employer provided health insurance (%)
Small Firms (<25)	32	9
Larger Firms (>=25)	67	3

a. Source: 1995 CPS

Health Insurance Coverage by Firm Size without Tax Subsidies

Firm Size	Employer-Provided Health Insurance (%)	Private, non-employer provided health insurance (%)
Small Firms (<25)	16	14
Larger Firms (>=25)	67	3

a. Source: 1995 CPS