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DO WORKERS HAVE A CHOICE AND SORT STRATEGICALLY FOR EMPLOYER SPONSORED INSURANCE OFFERS?

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Section 1.
Introduction

This paper explores a fundamental assumption implicit in economic analysis of health insurance coverage decisions: workers make strategic job choice decisions based upon an explicit trade-off between employer-sponsored health insurance and wages. Empirical evidence supports the notion that job mobility is affected by health insurance concerns (Gruber 2000); however, there is little understanding of the variation in the extent to which workers have access to their preferred form of compensation. If a significant share of workers find it difficult to obtain their preferred compensation package, predictions of behavior given new subsidies or other mechanisms intended to increase insurance coverage may give inaccurate pictures of individual responses to reform proposals.

The first part of the analysis is an assessment of the extent to which particular labor markets provide individuals the flexibility to choose their preferred compensation package mix. Because variation in the availability of insurance could reflect worker preferences, rather than market imperfections, we then explore the extent to which two-earner couples have joint ESI offers such that they can obtain their preferred mix of compensation at the family level.

How many workers have a choice of jobs with and without ESI?

Economists generally model employer-sponsored health insurance offers as the outcome of worker preferences for in-kind benefits relative to wages. This implies that workers can choose a job with their preferred bundle of wages and benefits along a

continuum of options. However, actual labor markets may offer some types of workers more options than others, perhaps because the worker preferences in those job markets are heavily concentrated in one direction, leaving little flexibility for the minority with different preferences. For example, low-wage workers in certain markets in some geographic locations may find it difficult to find a job with an offer, regardless of their preferences for insurance. In addition, some high-wage workers may find it difficult to find a job without an offer, even if they prefer not to have coverage through their own employers. A third group of workers is likely to have a range of choices of compensation packages that vary in the provision of ESI and wages.

We hypothesize (consistent with the theory in Blumberg and Nichols 2004) that workers can be categorized into three groups of currently unknown size: those who would find it difficult to obtain an employer offer (low-offer workers), those who would find it difficult not to have an employer offer (high-offer workers), and those who face substantial opportunities for employment with and without offers (mixed offer workers). The first component of this analysis assesses how workers with particular characteristics and occupations are distributed across these three groups. The second component uses two-earner couples to evaluate the extent to which spouses' ESI offers are complementary, exploring whether labor market characteristics affect the likelihood of such complementarity.

Section 2 describes the data used for the analyses. Section 3 describes our approach to estimating the probability that workers in different labor markets will receive an employer-sponsored insurance (ESI) offer. Section 4 presents empirical evidence

suggestive of constraints facing workers in obtaining ESI offers. Section 5 describes the analysis of strategic sorting by married couples. Section 6 provides conclusions and policy implications.

Section 2.
Data

This analysis uses data from a merged file of the February and March Current Population Surveys. The 2001 March Current Population Survey (CPS) collects respondent information from the year 2000 and the 2001 February CPS Contingent Worker Supplement collects February 2001 health insurance coverage and offer information from workers. Every two years between 1995 and 2001, the CPS fielded a February Contingent Worker Supplement (CWS) which includes data on a nationally representative sample of workers and their employment characteristics, including whether their current employer offers health insurance and what the worker's health insurance coverage status is at the time of the interview. The February file does not, however, include data on health insurance coverage of non-workers (adults or children), nor does it include information on wages. The March survey includes the health insurance coverage status of all individuals (workers and non-workers, adults and children), but does not include the information on employer offers. The March survey also contains detailed data on income not available from the February survey, including earnings, wages, and individual and family income. Information on worker firm size is also available from the March survey, but not from the February survey.

In order to have the benefit of both sets of variables, the February and March files were merged to develop the analytical file for this analysis. CPS participants are

interviewed for four consecutive months, excluded for eight months, then included for an additional four months. Approximately one-quarter of the sample will not be in the survey in the next month (i.e., are in an outgoing rotation group). Those working units who are in the February sample but who are not in the March or who are in the March but not in the February are dropped from the file used for our analysis. In addition, because the CPS is a survey of households, not individuals, a family living in a particular location might be replaced with a completely different family in the next month (e.g., a family sells their house and another family moves in). In such cases, the entire household is dropped from the file. Following the February/March merge procedure results in a sample including 83,896 households.

Additional groups of workers were excluded due to missing information on critical variables. The most important of these groups are those individuals who are working in one month, but not the other-- those working in March, but not in February are missing information on offer and current health insurance coverage; those working in February, but not in March are missing information on firm size, income, and wages.

Re-weighting the Merged Feb/March CPS file. Because groups of workers and their families are dropped during the merging process, our merged CPS file might not be nationally representative using the weights supplied by CPS. We re-weight our merged CPS data using a regression-based method that results in a weighted sample that reflects the population represented in the March CPS. The process involves three steps. First, we estimate a probit equation on workers and their families from the entire March CPS. The dependent variable is an indicator for whether the individual is in the merged

February/March file. The independent variables are demographics, including age, sex, race, annual wages, family status, work status, education, region and coverage status and some interactions of these variables. Second, we use this probit equation to predict a probability of inclusion for each individual in the merged file. Third, we invert the predicted probability for each individual in the merged CPS file and multiply it by his/her March CPS weight. This approach will place more weight on an individual who is not being adequately represented in the merged file, and less weight on an individual who might be over-represented in the merged file relative to the March CPS. For a simplified example, assume that ethnicity is the only characteristic included in the probit equation, instead of the array actually used. If a Hispanic worker has a 0.5 probability of being in the merged file (i.e., the March CPS reports 12% Hispanic workers but the merged file only has 6%), we would apply a weight adjustment of 2 to each Hispanic worker so that the merged file would have the right number of weighted Hispanic workers.[1] We also re- weight our non-workers using a similar approach so that our merged CPS donor file is representative of the entire U.S. population. After completion of the re-weighting process, we delete any elderly individuals from the donor file who do not have a worker in their health insurance unit or who do not report having ESI. Following all of these adjustments, the merged February/March file is comprised of 32,052 workers and 31,621 non-workers (including children), a total sample size of 63,673.[2] As will be made clear below, these analyses focus almost entirely on the workers in this merged data set.

[1] The re-weighting regression results for workers can be seen in Table 3.2.1.1 of Blumberg, et al. 2003.
[2] Comparison of individual demographics and insurance coverage between the merged CPS file and the March CPS is presented in Section 3.5. of Blumberg et al. 2003.

Section 3.
Estimation of Worker Probability of Receiving an ESI Offer

As noted previously, we hypothesize that workers can be divided into three groups: those who would find it difficult to obtain an ESI offer (low-offer workers), those who would find it difficult not to have an employer offer (high-offer workers), and those who face substantial opportunities for employment with and without offers (mixed offer workers). Our first objective is to assess how workers with particular characteristics and occupations are distributed across these three groups.

Computing the Predicted Probability of Offer for Each Worker

We estimated the probability of having an ESI offer in the labor market of each adult (age of 18 or older) worker in the merged CPS data file. For this purpose, individuals are defined as having an offer if they work for an employer that sponsors an ESI plan and are eligible for enrollment in that plan. Probability of offer in the labor market was estimated as a function of: education, gender, race/ethnicity, citizenship status, metropolitan area of residence, census region of residence, an index of state per capita health expenditures in the worker's state of residence, and occupation. These explanatory variables were chosen to define the probability of an ESI offer in a given labor market because they are unlikely to be manipulated in order to obtain a health insurance offer, i.e., they are characteristics whose values can reasonably be assumed to be exogenous to the decision to choose a job with an ESI offer. We exclude explanatory variables that may reflect strategic job sorting, including firm size and part time status.

The results of the probit are shown in table 3.1. Education is highly significant, with those having less than a high school education and those with some college but not

receiving a diploma having a lower probability of having an offer than those with a high school diploma. College graduates are significantly more likely to have an offer than high school graduates. There is no discernable difference in probability of an offer for Hispanic and white workers, but black workers were more likely than white workers to have an offer given our definition of the labor market. This last finding is inconsistent with estimates of individuals' probability of an ESI offer found elsewhere (e.g., Davidoff, Blumberg, and Nichols 2003). The difference reflects our focus on the probability of ESI offer in the individual's labor market, rather than probabilities of an ESI offer given the full range of individual and job characteristics.[3] As is expected, non-citizens are significantly less likely to have an offer than are citizens. Those who live in metropolitan areas are more likely than non-metropolitan residents to have an offer. We also find significant differences by region.

The index of 1998 per capita health expenditures is computed using state level data posted on the web site of the Center for Medicare and Medicaid Services (CMS).[4] These expenditures are transformed into an index with per capita expenditures in Iowa set as 1.0 (Iowa is approximately at the national average), and the remaining state index values were computed by dividing their per capita personal expenditures by those in Iowa. As expected, the probability of offer declines significantly with increasing values of the expenditure index.

[3] For example, our set of explanatory variables excludes firm size and part time status, as well as individual's health status.
[4] 1998 is the most recent year available for state specific estimates.

Forty-five detailed occupation categories were also included as measures of the individual's labor market. Occupations associated with particularly low probability of ESI offer (holding other factors constant) were household service, food service, personal service and sales and retail workers. Farm workers, farm managers and construction workers were also among those least likely to receive an ESI offer. Professional occupations, including scientists, computer operators, public administrators and engineers had high probabilities of an ESI offer. Overall these results were in the expected directions – for example, low skilled jobs tend to be associated with lower probabilities of offer.

Using these probit results, a predicted probability of ESI offer was computed for each individual worker in the sample. The results are shown in Figure 3.1. The values range from 2.1 percent to 99.3 percent. The median value is 84.2 percent.

Categorizing Workers by their Probability of Offer

In addition to using the full distribution of predicted probability of ESI offer, we also define three categories--low probability of offer workers, mixed probability of offer workers, and high probability of offer workers. The low offer category is defined as being in a labor market with a predicted probability of offer equal to 50 percent or below. This group includes approximately 8 percent of workers. The mixed offer category includes those in labor markets with a predicted probability of offer between 50 and 85 percent (about 46 percent of workers fall into these labor markets). The high offer group includes those workers in labor markets with a predicted probability of offer in excess of 85 percent (approximately 46 percent of the sample of workers fall into this group).

Tables 3.2 and 3.3 provide descriptive statistics on low, mixed and high-offer workers. Table 3.2 displays column percents and shows how workers within a particular offer category (low, mixed, or high) are distributed across a particular attribute (e.g., firm size). Table 3.3 displays row percents, and shows how workers with a particular attribute (e.g., firm size fewer than 10 workers) are distributed across the three offer categories (low, mixed, high).

As we see in table 3.2, the mean predicted probability of offer in high offer labor markets is 91 percent, compared to 73 percent in mixed offer markets, and only 39 percent in low offer markets. Twenty-five percent of low offer workers are employed by the smallest firms, those of less than 10 workers. This is almost twice the share of mixed offer workers and more than 3 times the share of high offer workers in the smallest firms. We also see that a much larger share of high offer workers than low offer workers are employed by the largest firms (500 workers or more), 57 percent versus 35 percent. The distribution of workers within each offer category across firm sizes is consistent with expectations – larger firms are significantly more likely to offer ESI to their workers than are small firms – even though firm size was not controlled for in the offer equation.

The third panel of table 3.2 shows the distribution of workers in each offer category across occupations. Almost three-quarters of low offer workers are in 2 occupations: general service (50 percent) and sales (23 percent). These two occupations comprise less than a quarter of workers in the mixed offer and less than 10 percent of workers in the high offer labor markets. The mixed offer group has a more even distribution of occupations; however, administrative support occupations, service, and precision

production, craft, and repair occupations comprise roughly half of these labor markets. More than half of workers in high offer labor markets are in executive, administrative, managerial and professional specialty occupations.

The fourth panel shows the distribution of workers in each category across industries. Again, although industry was not a variable included in the model, expected patterns emerge. Workers in low offer labor markets are more likely than others to work in retail trade, construction, agriculture, and services, all low offer industries. They are less likely than others to work in mining/manufacturing, finance/insurance/real estate, public administration, and wholesale trade, each relatively high offer industries.

Workers in high offer labor markets are significantly more likely to be in the highest income category (400 percent of the federal poverty level or higher) and are much less likely to have incomes below 200 percent of the poverty level. High offer workers are more likely to be married and to be employed full-time than are low offer workers. They are much more likely to be white and much less likely to be Hispanic than are their low offer counterparts.

About 64 percent of workers in high offer markets have college degrees, while only 18 percent of those in mixed offer and 2 percent of those in low offer markets have such degrees. More than half of those in low offer markets never received a high school diploma, whereas the share of those in high offer markets with no high school degree is less than 1 percent. Women make up a majority of the low offer and mixed offer labor markets, while men comprise a majority (61 percent) of workers in high offer markets.

The differences in composition of the three groups by citizenship status are also striking. Approximately one-third of the low offer labor markets are comprised of non-citizens, whereas non-citizens account for only 8 percent of mixed offer and 3 percent of workers in the high offer markets.

Table 3.3 reflects the same underlying relationships shown in Table 3.2, but a few results are worth noting. Only 8 percent of the total workforce is in a low offer labor market. However, workers in low offer labor markets comprise 100 percent of those in household service occupations, 50 percent of those in farming, forestry, and fishing occupations, over 40 percent of those employed in the agriculture industry, about 30 percent of those with incomes below the poverty level, over 40 percent of workers with no high school diploma, 35 percent of all non-citizens, and 50 percent of Hispanic non-citizens.

Section 4.
Empirical Evidence Suggestive of Sorting Constraints

The variation in the extent to which workers have access to ESI offers is open to multiple interpretations. While measuring the variation in ESI offers is a first step to identifying the presence of constraints in a worker obtaining his/her preferred offer opportunities, the implications for policy depend on the extent to which this variation is inconsistent with differences in worker preferences. If offer rates in a particular labor market are low (high) as a consequence of low (high) shares of workers in these markets preferring ESI over wages (wages over ESI), then those low (high) offer rates are not evidence of constraints but are instead manifestations of preferences.

It is, however, very difficult to distinguish preferences from constraints given that survey data do not explicitly address the attitudes/preferences of respondents. Because workers in low offer labor markets are of particular policy interest, we first present a series of empirical results that, while not definitive, are suggestive of constraints facing such workers.

First, we compare the offer rates of workers defined to be in the same labor market with the exception of geographic location. For example, how do the offer rates of workers in a particular occupation, education, gender and race/ethnicity/immigrant status who live in traditionally high offer rate areas compare to the offer rates of similar workers who live in traditionally low offer rate areas. Assuming that individuals generally do not move to regions based on their preferences for health insurance offers, and that preferences to not vary systematically by region, the differences between high and low offer rate labor markets for the same types of workers can be attributed to constraints of opportunity. These differences provide one potential indication of constraints in flexibility.

We also examine very low offer rate labor markets for indicators that would suggest the presence of constraints on the ability to obtain an offer. For example, a high concentration of low wage workers, defined as those with wages within an average insurance premium's distance from the minimum wage, would suggest that regardless of worker preferences, an employer would be unable to pass employer-sponsored insurance costs to workers.

Job tenure is also highly correlated with the probability of receiving an ESI offer. Employers with high turnover workforces are less likely to offer coverage to their employees, and even workers in firms that do sponsor health plans but who have been on the job for less than a year are often not eligible for those plans. Administrative costs to employers of providing coverage to high turnover workers may be a strong disincentive to offer, and workers who know they will not be at a particular job long may prefer wages to health insurance for a variety of reasons (Nichols, et al 1997).

Heterogeneity of workers within specific labor markets also will be important for determining the extent to which particular reforms may increase insurance coverage. For example, a reform that affects the purchasing power, and thus demand for insurance, of 5 percent of a labor market has very different implications than one that affects 50 percent of a labor market. Employers who do not offer today are more likely to change their decision to offer if a large share of their workers change their preferences. We assess the extent to which subsidies targeted by total family income would affect differential shares of the workforces in labor markets with low offer rates.

Geographic Variation in Probability of Offer.

As the probit results in table 3.1 indicated, geographic area of residence affects the probability of offer, even when controlling for other labor market characteristics and relative price of medical care. Measured relative to workers in the South Atlantic division of states, workers in the Middle Atlantic, West North Central, West South Central, Mountain, and Pacific divisions all have significantly lower probabilities of being offered ESI. Workers in the Mountain and Pacific divisions have the lowest

probability of offer (all else equal), then comes the West South Central division, and next the Middle Atlantic and West North Central divisions. In addition, living in a non-metropolitan area also significantly reduces the probability of obtaining an offer.

As noted previously, if one assumes that area of geographic residence is not chosen based upon the likelihood of receiving an ESI offer, variations in the likelihood of an offer are at least indicative that similar workers living in different parts of the country are more or less constrained in their ability to obtain an offer. Using some examples of workers in particular labor markets, we demonstrate how these variations manifest themselves.

Table 4.1 shows the predicted probabilities of offer for three prototypical workers in two regions with contrasting levels of ESI offer rates: the Pacific Region (low ESI offer rates) and New England (high ESI offer rates). As an example of a worker in a low-offer labor market we consider the predicted probability of ESI offer for a Hispanic woman who has not completed high school and who works in food service. This worker, living in a metropolitan area within the Pacific region would face a probability of obtaining an ESI offer of 37 percent. If she lived in a non-metropolitan area within the same region, her probability of an offer would fall to 33 percent, a drop of 11 percent. If, however, the same worker resided in a metropolitan area within the New England division of states, her probability of an offer would be 50 percent. Her offer probability would be 46 percent in a non-metropolitan area within New England. In other words, the predicted likelihood of receiving a health insurance offer for a worker of this type varies by more than 50 percent from one geographic area to another.

For workers in labor markets which are more likely to receive ESI offers, the geographic differential shrinks. Our second prototypical worker, facing a mixed offer market, is a white female high school graduate who works in administrative support. The probability that such a worker would receive an ESI offer if she lives in metropolitan New England is approximately 92 percent. Non-metropolitan residence in New England reduces that probability by roughly 2 percentage points, to 90 percent. If, however, this worker lives in the Pacific division of states, her likelihood of receiving an offer would be 85 percent in a metropolitan area and 83 percent in a non-metropolitan area. The difference between the two extremes is about 9 percentage points, or 11 percent.

For a worker in a labor market that has a high likelihood of offer, such as a white male college graduate working as an executive/administrator/manager, the difference in the probability of offer across geographic location is quite small, both in absolute and in relative terms. Such a worker faces a probability of offer of 98 percent in metropolitan New England and of 95 percent in the non-metropolitan Pacific. This difference of 3 percentage points is a 3 percent relative difference between the two.

These results imply that workers do face variation in their ability to obtain offers of health insurance as a function of the geographic location in which they live. These potential constraints are largest for workers in labor markets characterized by low rates of ESI offer and diminish in size as the ESI offer rate of the relevant labor market increases. Similar results obtain if separate probit regressions are estimated for workers in low, mixed, and high offer labor markets. These alternative regressions allow the relationships between labor market characteristics and probability of offer to vary

according to the offer category of the workers. The consistent results indicate that the findings reported above are not simply an artifact of the coefficients on the geographic variables being held fixed across high and low offer labor markets.

Minimum Wage Constraint.

Given evidence that workers pay for at least a substantial portion of their employers' contributions to health insurance through reduced wages (Blumberg 1999; Gruber 2000; Gruber and Krueger 1991; Eberts and Stone 1985; Woodbury 1983), we also investigated the importance of the minimum wage constraint on those without current offers. To the extent that a large share of workers without offers do not earn sufficient wages to allow for a wage reduction to compensate for the cost of ESI, these workers are likely to be constrained in their ability to obtain a job with an offer if they desire one.

For each worker without a current ESI offer, we annualized their earnings to full-time equivalent levels. We then compared their annualized earnings to their applicable annualized minimum wage.[5] This difference was then compared to the average employer contribution to ESI, as published from the Medical Expenditure Panel Survey – Insurance component (MEPS-IC) data.[6] We use employer contributions for single (as opposed to family premiums). Within each offer category (low, mixed, high) we then compute the share of workers without offers who would face a minimum wage constraint if their employer offered them health insurance. In other words, we computed the share of

[5] The state minimum wage was used for those residing in states with a minimum wage exceeding the federal one. For all others, the federal minimum wage was used.
[6] http://www.meps.ahrq.gov/Data_Pub/IC_Tables.htm

workers currently without an offer whose full-time equivalent earnings do not exceed the minimum wage by at least the average employer contribution to ESI.

Table 4.2 shows the proportion of workers without offers, and the share of these with full time equivalent earnings over the minimum wage insufficient to cover the employer share of an ESI offer. Our calculations suggest that overall, 21.5 percent of workers do not have an ESI offer, and of these, 31 percent face a minimum wage constraint. The proportion constrained by wages varies considerably by labor market. For those in low probability labor markets about half (51 percent) of workers without offers are constrained in this way. Twenty-nine percent of those in mixed labor markets and 15 percent in high offer labor markets have full time equivalent earnings insufficient to cover the employer share of ESI offer. These results imply a significant constraint in the compensation options available to workers in the low offer labor markets in particular and in the mixed offer markets as well.

Short Job Tenure

Workers with short job tenure are substantially less likely to receive an offer of health insurance than are their longer-term counterparts. As table 4.3 shows, roughly one third of workers without ESI offers have short job tenure, compared to only 14 percent of workers with offers. The proportion of workers without ESI offers who have job tenure of under one year varies fairly modestly across labor markets: in the low offer labor market, 37 percent of workers without an offer have less than a year of job tenure. Among workers in the mixed and high offer labor markets, 32 percent and 28 percent of

workers without an offer have low job tenure.[7] The fact that a significant share of those without offers have short job tenure suggests the presence of another important constraint. Finally, we note that the low offer labor market is also characterized by higher turnover—about 30 percent of workers in the low offer labor market have worked in their current job for less than a year, compared to 20 percent of workers in the mixed offer market and 14 percent of workers in the high offer labor market.

Table 4.4 shows the share of workers in each labor market who face at least one of the short job tenure and minimum wage constraints. These two constraints alone affect roughly two-thirds of the workers without offers in the low offer labor markets, and almost half of those in the mixed offer labor markets.[8]

Financial Constraints and Worker Heterogeneity

It is difficult to clearly identify income levels at which health insurance should be "affordable". Individuals with similar observable income and family characteristics may make different decisions with regard to purchasing health insurance or taking jobs with an ESI offer attached. Policy makers, however, tend to focus on the poor (those with incomes at or below the federal poverty level) and the near poor (those with incomes at or below 150 percent of the federal poverty level) when discussing subsidization for purposes of expanding employer-sponsored health insurance. It is not difficult to imagine that trading off wages for health insurance within this group could lead to

[7]The proportion of workers with short job tenure is sensitive to the definition used. For example, while 32 percent of workers without an ESI offer reported working in the current job for less than a year, 43 percent reported working one year or less (i.e. 11 percent reported working one year).

[8] A minority (27%) of these workers without offers identified as constrained either by minimum wage or by short tenure are employed in firms which offer coverage to some other workers. Depending upon how the pass-back of benefits costs to wages occurs in practice, these workers may already have had their wages reduced to some extent, reflecting a portion of the costs of coverage provided to their co-workers.

hardships with regard to the purchase of other necessities of daily living. The poverty level for a family of 4 in 2004 is less than $19,000, for example.

Table 4.5 shows the share of workers in each labor market category with family incomes that fall at or below 100 percent and 150 percent of the poverty level. These figures provide a rough indicator of financial hardship (among those with and without ESI offers) with regard to the absorption of premiums for ESI. Twenty-two percent of workers without offers in low offer labor markets are poor, and 37 percent have incomes below 150 percent of poverty. These figures fall to 12 and 24 percent in the mixed offer labor markets, and 5 and 11 percent in the high offer markets.

The figures in table 4.5 are also informative with regard to developing subsidization strategies intended to expand coverage. If subsidies are considered a tool to lower the price of health insurance to workers, thereby increasing demand for insurance, and thereby leading to increases in employer offers, too narrow of targeting of those subsidies should be of some concern. If subsidies for the purchase of ESI were made available only to workers with incomes below 150 percent of poverty, only a minority of workers without offers would be subsidized, even in the low offer markets. Leaving the preferences of the majority of those without offers unchanged may mean that such subsidies would be insufficient to create enough demand for employers to change their offer decisions, assuming that employers act as agents for their employees with heterogeneous preferences.

Section 5.
Do workers have a choice and sort strategically?

Evidence from an analysis of spouses' ESI offers

As discussed above, while we can identify markets with a range of ESI offer rates, we cannot fully assess the discrepancy between worker preferences and offers because we lack credible measures of worker preferences. One important exception to this arises in the case of two-worker couples. If two-worker couples can choose from a variety of wage-benefit packages, we would expect that they would generally choose jobs such that only one spouse would be offered ESI (assuming the employer offered family coverage, which is true in 99 percent of cases (Kaiser/HRET 1999). We would expect this type of sorting since empirical evidence suggests that employer contributions to workers' health insurance are passed back (at least in significant part) to workers through lower wages (Gruber 2000; Blumberg 1999; Gruber and Krueger 1991; Eberts and Stone 1985; Woodbury 1983). In contrast, data suggest that many two-earner couples have either two offers of ESI or no offers of ESI.

To appropriately evaluate the extent to which spouses strategically sort into jobs with or without ESI offers, it may be important to recognize that many workers face either low-offer or high-offer job markets, and the ability to sort may vary across these labor markets. In this section we evaluate the extent to which spouses' ESI offers are complementary, and then explore the implications of accounting for the expected mix of ESI offers faced by each spouse.

There are a number of reasons why we might expect a relationship between spouses' ESI statuses. Spouses may make strategic job search decisions in an effort to benefit from complementary ESI offers (i.e. to get a single offer). On the other hand,

given the tendency for individuals to marry others with similar employment-relevant skills (positive assortative mating), as well as generally identical locations, spouses may tend to be in job markets with similar distributions of ESI offers. More specifically, if there is a systematic relationship between skill level and probability of ESI offer, then positive assortative mating on skills may lead to a tendency for both spouses to face either low- or high-offer job markets. While classic models of assortative mating (Becker, 1974, 1973) suggest negative assortative mating on labor market characteristics, more recent theoretical and empirical work suggests increasing positive assortative mating on education and other characteristics (Kalmijin, 1994; Lam 1988; Mare, 1991, Sweeney and Cancian, 2004).

To illustrate, consider a model of husbands' ESI offer status (we use gendered terminology for ease of exposition; a parallel treatment of wives' status is straightforward).

ESI Offer Status of Husband=
f (Wife's offer status, Individual characteristics, Labor market)

Where:

- Wife's offer status equals one if the wife has an ESI offer
- Individual characteristics include Education and Race
- Labor market includes information on region, urbanicity (metro/nonmetro), and local health care cost index.

A spouse having an ESI offer should itself reduce the value of an offer to the individual, suggesting a negative relationship between wife's offer and husband's offer. However, wife's offer may reflect other shared characteristics that are unmeasured. The positive correlation of spouses' unobserved characteristics which are associated with ESI offer status may lead to a positive relationship between offer statuses. Evaluations of

couples' strategic job sorting behavior that do not account for this will be biased because any tendency to strategically search for complementary wage-benefit packages may be counteracted by the tendency for spouses with similar characteristics to face similar distributions of ESI offers.

Prior research provides some evidence that couples may engage in joint decision-making with regard to obtaining ESI offers. Royalty and Abraham (2003) identify the significant effect of a spouse's offer on own offer, net of the offsetting effects of assortative mating and common location, by comparing unmarried with married couples in a difference-in-differences approach. Essentially, they find less of a positive relationship between partners' offers when the partners are married (and therefore potentially eligible for ESI coverage through their partner) than when the partners are cohabiting. Assuming that assortative mating on unmeasured characteristics (and co-residence) is similar for married and cohabiting partners[9], Abraham and Royalty attribute the smaller positive relationship for married couples to strategic sorting by couples who are eligible for insurance through their spouse.

Our analysis similarly focuses on estimating strategic sorting—i.e. whether spouses sort into jobs with complementary ESI offers, so as to achieve the optimal single offer. Using a merged file of the February and March CPS, which includes information on job tenure, we ask whether individuals who change jobs are more likely to take a job without an offer when their spouse is already in a position with an ESI offer. By

[9] Abraham and Royalty argue that assortative mating can be expected to be stronger among married couples than among cohabiting couples, in which case their estimates provide a lower bound on the size of the effect of a spouses offer on own offer (2003: 12).

comparing the offer status of those whose spouses have an offer *in jobs with and without longer tenure*, we hope to identify the strategic response to a known offer.

The general form of our estimated equations is as follows:

$$\text{Prob(own offer)} = \beta_0+\beta_1\text{spoffer} +\beta_2\text{splonger} +\beta_3(\text{splonger*spoffer}) + \beta_4(\text{Individual Characteristics}) + \beta_5(\text{Labor Market Characteristics}).$$

The equations are estimated as probits and are estimated separately for husbands and wives in two-earner couples. The probability of having an employer sponsored insurance offer for which the individual is eligible to enroll is estimated as a function of: a binary variable equal to one if the individual's spouse has an employer sponsored insurance offer (spoffer); a binary variable equal to one if the individual's spouse has held their job longer than the individual him/herself (splonger); an interaction term between the two; a vector of variables representing characteristics of the individual which are presumed to be exogeneous to the likelihood of offer but which affect the labor market available to the individual (i.e., education, race/ethnicity, citizenship) and a vector of labor market characteristics (i.e., urbanicity, health care cost index in the state of residence, region of residence). We control for months worked in current job so that our measure of spouses' relative tenure captures order of entry to jobs, net of job tenure. We also test the sensitivity of our results to including occupation among the individual characteristics.

We describe our interpretation of our difference-in-differences findings with the use of figure 5.1 (ignoring β_4 and β_5 for expository convenience):

Figure 5.1 Difference-in-Differences Approach

	Spouse has had job longer?		***Difference***
	Yes (A)	***No (B)***	***(C)***
Spouse has offer (1)	$\beta_0+\beta_1+\beta_2+\beta_3$	$\beta_0+\beta_1$	$\beta_2+\beta_3$
Spouse does <u>not</u> have offer (2)	$\beta_0+\beta_2$	β_0	β_2
Difference (3)	$\beta_1+\beta_3$	β_1	β_3

Box C3 shows the key difference in differences result of β_3, which represents the isolated effect on the probability of own offer of having a spouse with an offer and longer job tenure.

Our strategy rests on the assumption that the relationship between a worker's own offer and *spouse's* longer tenure in a job with an offer reflects strategic job sorting. We are comparing those who have taken a job when their spouse already had an ESI offer, to those whose spouses had an unknown (to us) offer status. We estimate our base model on a sample of dual earning couples in which both spouses have worked for more than two years. Both spouses having substantial tenure increases our confidence that the primary implication of longer tenure relates to the strategic implications resulting from one spouse having a known job (and offer status) at the time the other moved.[10] In the absence of this restriction, spouses' longer tenure might be expected to in part capture short tenure (or an unstable work history) for the worker. We did not want such

[10] We seek to identify the effect of spouse's offer status on the worker's subsequent search for a job with or without an offer. Of course, it is possible that spouse's offer status is not only related to offer status of a new job given a change in job, but is also related to the worker's decision to change jobs.

complications to confound our results, and so we limited our sample to workers evidencing stable work habits.

Following a similar logic, we use spouse's actual offer status, rather than predicted offer status, in our estimates. Since our estimates of predicted offer status reflect generally stable observed characteristics, known to the spouse, we would not expect to identify a strategic response to predicted offer status by comparing those in jobs with and without longer tenure. Rather, we expect the response to the new information gained from observing actual offer status, when the individual's spouse already holds a job at the time the individual last changed jobs.

After identifying the strategic response to spouse's offer status, we also assess the extent to which strategic behavior is non-linear as it relates to the probability of own offer. In other words, we are interested in whether workers in labor markets with high predicted probability of offer are less able to strategize in this way than those workers in labor markets that are more flexible with regard to offer status. In this regard, we use the framework of constrained and unconstrained labor markets described earlier, using dual earning couples to assess the importance of considering workers' abilities to choose between jobs with and without ESI offers.

Identifying job sorting among dual earning couples

We first attempt to identify strategic sorting for optimal compensation packages (i.e., one employer offer within the couple) among all married workers, regardless of whether they fall into low, mixed, or high offer labor markets. These results are summarized in table 5.1 for husbands and wives (full regression results are provided in

appendix tables 1 and 2 for husbands and wives respectively). We consider the relationship between ESI offer status and the timing and offer status of spouses' employment. In particular, the columns show the estimated relationship between offer status (the dependant variable) and spouses' offer status, whether spouse has longer tenure, and the interaction between spouses' offer status and longer tenure. The final column shows the key estimates of interest—we hypothesis that having a spouse in a job with an ESI offer at the time of last job change should create an incentive to search for a job without an ESI offer.

Noteworthy in both the husband and wife regressions is the positive and highly significant effect of spouse offer on own offer, evidence of the role of positive assortative mating and joint location discussed earlier. Spouse having longer job tenure has no discernable relationship—the coefficient estimates are positive but insignificant.[11] We find that in these broadest samples, there is only weak evidence that husbands are less likely to take a job with an offer if their wife already has a job with an offer, since the coefficient on the interaction term (β_3 in Figure 5.1) is negative (-.364) and not quite statistically significant at conventional levels (p=.107). There is no evidence from this regression that the wives are behaving strategically in this way (the estimate of β_3 for wives is equal to -.178 with p-value equal to .440). It is worth noting here that there is no substantive difference in these results if the occupation dummy variables are excluded

[11] We note that this is in the context of a sample that includes only couples in which both spouses have at least two years tenure and a model that includes own months of tenure, which is consistently positive and significant

from the regressions completely, or if the broader 13 occupation categories are used in place of the more detailed categories.

Non-Linearity of Strategic Behavior Among Mixed and High Offer Workers

The weak results summarized in Table 5.1 may reflect the limitations of our strategy for identifying strategic job sorting, limited strategic sorting, or a combination. We are particularly interested in the extent to which the ability to sort strategically might be related in complex ways to the type of labor markets that workers are in and to the consequent likelihood that any worker could obtain the mix of wages and health insurance that she/he would prefer. We estimated separate models for mixed and high predicted offer husbands and wives (we do not estimate separate models for workers in low offer markets because of insufficient sample sizes). We first use the categorizations of these labor markets defined in the first part of the paper (mixed probability of offer including those with predicted probabilities between .50 and .85 and the high probability of offer consisting of those with predicted probabilities in excess of .85), and then test the sensitivity of our results to these somewhat arbitrary delineations.

Table 5.2 summarizes the key results of our analysis of husbands and wives in mixed versus high offer labor markets.[12] The first panel provides results for the husbands. We focus our discussion on the key difference-in-differences result in the third column. Consistent with our hypothesis that workers in a mixed labor market will be best able to strategically sort for an optimal set of offers, we find stronger evidence of

[12] These results reflect regressions excluding the occupation dummies. Again, the inclusion or exclusion of these variables does not make a substantive difference in the results. Excluding them does maximize the sample size, however, since certain detailed occupations perfectly predicted the outcome and were dropped in the regressions in which they were included.

strategic sorting among husbands in the mixed labor market (ESI probability between .5 and .85). The estimated coefficient for of β_3 is equal to -.627 with p-value equal to .067. For husbands in the high offer group (ESI probability over .85) the estimated coefficient of β_3 is equal to -.478, and is not significantly different from zero at conventional levels, p=.148.

The second panel shows results for wives. The key estimates of interest both have the predicted sign, but only the coefficient for wives in the more constrained job markets is substantial and significant. Contrary to our hypothesis, the coefficient estimate for wives in more flexible job markets is small and not significantly different from zero.

We set out to identify strategic job sorting by dual earning couples in order to get a single ESI offer. Exploiting the order of entry into jobs, we sought to identify strategic sorting net of the positive relationship of spouses' offers due to assortative mating and joint location. Overall, our results provide some evidence to suggest spouses do sort to get a single offer. We also set out to test the extent to which couples' abilities to sort strategically might be compromised by their being in a labor market with little choice in ESI offer statuses. Our estimates do not provide consistent evidence for or against this hypothesis—we find statistically significant estimates of strategic sorting by husbands in the less constrained mixed market, and statistically significant estimates of strategic sorting for wives in the more constrained high offer market.

Sensitivity tests

We tested the sensitivity of these results to different sample definitions and categorizations of mixed and high offer labor markets. The key difference-in-difference results from these sensitivity analyses are shown in table 5.3. The first row shows the results for a sample which includes both mixed and high-offer spouses (excluding only those with less than a .5 probability of offer). We find evidence of strategic sorting for husbands (p=.007). Among wives our estimates are not significant at conventional levels (p=.131). The remaining rows distinguish estimates for mixed and high offer spouses, using different cut-off points. In particular, we show estimates when individuals are defined as facing mixed offers if they are in labor markets with a predicted probability of ESI offer of .5 to .85, of .5 to .9, or of .6 to .85.

For husbands in mixed offer markets we find a statistically significant negative relationship across definitions. For husbands in high offer markets there is no discernable relationship when high offer is defined as probability of ESI offer over .90 (in which case p=.907). As noted in the discussion of the base case reported in Table 5.2, the relationship is not significant at conventional levels, but is close (p=.148), when high offer is defined as a probability of ESI over .85.

For wives, no strategic behavior was evidenced in either the mixed or the high offer groups under the alternative categories, a result which differed from the base case high offer category. In that case, as also reported above in Table 5.2, we found statistically significant evidence of strategic behavior only for the high offer category.

In recent work Royalty and Abraham (2003) have compared married couples (whose ESI offers often cover their partners) and cohabiting couples (whose ESI offers

generally do not cover their partners[13]) in order to identify the strategic behavior of married couples with respect to ESI offers. We use the same strategy to verify our results.[14] We replicate our analysis for both married couples and cohabitating couples. Because of limited sample size for cohabiting couples we do not divide workers in mixed offer labor markets from those in high offer markets (i.e. flexible v. constrained) and we consider couples with over a year of job tenure, rather than limiting to those with two years of job tenure.[15]

The results reported in Table 5.4 confirm our previous analysis for men. Both husbands and unmarried male partners are more likely to have an offer themselves if their partner has an offer (consistent with similar patterns of assortative mating and joint location for married and cohabiting partners). However, while we again find that married men are significantly less likely to have an ESI offer when their wife has an offer in a job that she held when he last changed jobs, we find no such relationship for cohabiting men.

As with men, both wives and unmarried female partners are more likely to have an offer themselves if their partner has an offer. However, we do not find a significant relationship between own offer status and partner having a prior offer for either group--both coefficient estimates are insignificant.

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[13] Evidence suggests that the number of employers offering benefits to domestic partners has increased significantly since 1996, the data year of Royalty and Abraham's study (Human Rights Campaign 2003). However, such benefits are still quite uncommon. In addition, where such benefits are available, they are considered taxable compensation under federal law.

[14] We do not know from CPS data whether couples were married or cohabiting at the time of last job change. Since cohabiting unions are less stable (Bumpass and Lu, 2000), cohabitors are more likely not to have been in the same relationship at the time of last job change. Nonetheless, the comparison between married and cohabiting couples provides a check of our interpretation of the relationship between ESI offer and the timing of partners' offer.

[15] Without these changes we do not have sufficient sample for cohabiting couples to estimate the model.

Explaining the difference for husbands and wives

Our analysis suggests substantially different patterns for husbands and wives. What might explain this difference? Early models of married couples' labor supply often assumed wives were secondary earners. In this context, husband's employment, and associated ESI offer, could be taken as exogenous. Wives might be expected to make strategic decisions about their jobs (and particularly whether to work full or part time) in response to their husbands' primary employment and ESI offer status. Married women's labor force participation rate has increase dramatically, and many more wives' hours and weeks of work are equal to their husbands'. At the same time, men continue to enjoy a wage premium, and relatively few wives' are equal earners (Cancian & Reed, 2004). Thus, the assumption that wives are secondary earners, making employment decisions contingent on their husbands' (independent) employment, is no longer generally justified. However, it is also not the case that husbands' and wives' earnings and employment patterns are generally indistinguishable.

Despite increases in market work, married women, especially mothers, often face greater constraints associated with nonmarket work (Spain and Bianchi, 1996; Bianchi et al, 2000). They may, for example, be less flexible regarding the location or hours of employment. Given these constraints, they may be less likely to respond to ESI, or other pecuniary aspects of an employment offer.

We note, also, that our approach does not account directly for full-time or part-time work in predicting ESI status, since this may be endogenous—that is individuals may choose to work full time in order to qualify for an ESI offer. Notwithstanding the concern about endogeneity, if we restrict our models to full time workers, we get more

similar results for wives, although these results appear to be quite sensitive to the specification of mixed and high offer labor markets.

Finally, we note that Royalty and Abraham's related analysis of strategic sorting, which suggests that married couples are more likely to have a single offer than are cohabiting couples, also finds different results for men and women. They find that "all of the predicted positive effects of eligibility (i.e. marriage) on having only one partner offered insurance are concentrated in the category of male only being offered insurance" (2003: 17).

Section 6.
Summary and conclusions

Do workers have a choice and sort strategically to get the optimal wage and benefit package? When we observe workers without an ESI offer it is difficult to be certain whether the lack of an offer reflects worker preferences for alternative compensation (for example, higher wages), or an inability to find a job with an offer. In this paper we have reviewed suggestive evidence of constraints in the wage and benefits packages faced by some workers. We then analyzed the ESI offers of dual earner married couples. We attempted to identify strategic job sorting for complementary offers (i.e. a single ESI offer), and then considered whether there is evidence that strategic sorting is constrained for couples in particular labor markets.

In our first set of analyses (in Section 4) we find suggestive evidence that workers in some labor markets face a constrained set of choices when searching for their preferred mix of wages and benefits. We find substantial differences in the availability of ESI offers by region, especially among those in low offer labor markets. We also find

evidence that substantial portions of workers without offers may face a minimum wage constraint—that is, their full time equivalent earnings over the minimum wage may not be sufficient to cover the employer share of ESI costs. Many workers without offers may also face limited options given short job tenure.

The minimum wage constraint implies that subsidies focusing only on worker's share of premiums (particularly those with significant requirements for employer share contributions) may be insufficient to change offer decisions of employers because the employer share cannot be recaptured from wages. The tenure issue has implications for the efficiency of ESI in these low offer labor markets. It is quite costly and inefficient to provide insurance coverage to high turnover workers.[16] These issues highlight the potential advantages of purchasing pools where employers can make pre-tax contributions for coverage when employing a particular worker and the worker can maintain coverage there even when changing employers (see for example, Holahan, Nichols, and Blumberg 2001).

The results in Section 4 also suggest the difficulty of increasing ESI offer rates by offering tax or other employer incentives, given the heterogeneous characteristics and preferences of workers without ESI offers. Employers must respond to this heterogeneity with blunt tools (offer or not, a single or very limited number of benefit packages if offering). Our description of the incomes of workers without ESI offers suggest that subsidies directed only to low income workers may be ineffective in creating increases in demand sufficient for employers to change their offer decisions.

[16] Administrative costs become a more important factor in ESI costs for high turnover workers. ESI may be an inefficient approach for high turnover workers given the reduced ability to maintain relationships with providers, and to maintain continuity of care. In addition, the demand for coverage is lower among

In the second set of analyses (Section 5) we consider evidence of strategic job sorting for complementary offers among dual earning married couples. Identifying strategic job sorting is challenging given assortative mating on unobserved characteristics which are associated with ESI offer status. We use information on each spouse's job tenure and exploit differences in the timing of job entry to identify workers' responses to their spouses' ESI offer status.

We do find evidence of strategic job sorting—at least among husbands, who are more likely to enter a job without an ESI offer when their wife is already in a job with an offer. For most specifications, we do not find statistically significant evidence of wives' strategic response to their husbands' ESI offer status.

While we do find some evidence of strategizing, we know it's far from complete—most dual earning couples have two offers. We hypothesis that this is evidence of constraints, but we have not been able to identify these in this analysis. In particular, we do not find consistent evidence of more strategic sorting among spouses in mixed offer markets than in high offer markets.

It is difficult to identify the role of constraints in determining the observed compensation packages of dual earning couples. The initial estimates reported here provide some intriguing evidence of differences by gender, as well as differences by availability of ESI offers within labor markets. However, additional analyses are needed. Among the issues to consider is the extent to which multiple offers are necessarily suboptimal-- might some couples prefer multiple offers, and can they be identified? We

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high turnover workers, due to perception of health insurance as a longer term benefit, with low expected benefits in the near term.

are also interested in better approaches to accounting for full or part time work status and the implications for eligibility for ESI. We hope to address these and other issues in future analyses.

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