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Keywords

employee, health, cost, insurance, decision, flexible benefit, benefit, option, determinant, selection, premium, deductible, coinsurance, age, gender, salary, marital status

Comments

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Employee Health Insurance Decisions
in a Flexible Benefits Environment

Firms are increasingly turning to flexible benefit plans to meet the benefits needs of a diverse workforce, and to contain spiralling health insurance costs. In 1991, 46% of the Fortune 100 firms offered flex plans, compared to 28% in 1986 (Hewitt Associates, 1992). The plans are predicated on the belief that factors in employees' personal situations and the costs and coverage of various options influence employees' decisions. Further, supporters believe that offering employees the opportunity to make choices improves attitudes, and that the benefits options can be structured so as to control costs (Lawler, 1971, EBRI, 1991).

Empirical evidence is sparse regarding the factors that may influence employees' decisions, and hence the costs and satisfaction with flex benefits. Several studies have examined employee preferences among different types of benefits (e.g., medical insurance vs. vacation vs. pensions). In some studies, preferences were constrained by hypothetical budget or dollar amounts, thereby requiring respondents to make the kinds of cost/benefit trade-offs inherent in flex plans. (Mahoney, 1964; Nealey, 1963). Generally, these studies report evidence of significant relationships between benefit preferences and individual characteristics such as age, income level and the like (Nealey, 1963, 1964; Mahoney, 1964; Huseman, Hatfield and Robinson, 1978; Davis, Giles and Feild, 1988).

Applying these findings to improve understanding of the flexible plans currently offered to employees is problematic. First, most of this research analyzes employees' preferences among hypothetical options rather than actual decisions. Next, preferences among multiple options within each type of benefit (e.g., multiple medical insurance

options), which lies at the heart of the current use of flexible plans, have not been studied. Further, the effects of each of the multiple options' coverage and costs to employees were not considered. Finally, this stream of research is virtually devoid of any theoretical framework, with the possible exception of expectancy theory, to help guide the development of a model to explain employee choices in different decision contexts.

Health care economists have also studied benefit choices in terms of the demand for different types of health care coverage (e.g., Friedman,1974; Holmer, 1984; Feldman, Finch, Dowd and Cassou, 1989) Results have been inconsistent, perhaps reflecting the lack of controls for the substantially different contexts in which the studies were conducted. For example, some studies investigated decisions among a single fee-for-service plan (such as Blue Cross/Blue Shield) and a Health Maintenance Organization, while others investigated decisions among multiple fee-for-service plans with variable cost-sharing provisions (such as deductible and coinsurance rates). To our knowledge, no study has investigated decisions among the multiple types, levels and costs of options typically offered under conventional flexible benefits plans. Thus, the results from these studies are difficult to generalize to the current flexible benefits decision environment.

Our study examines a set of hypotheses related to individual employees' health care decisions in a flexible benefits environment. The hypotheses are inferred from the expected utility maximization model. The goal is to identify factors that influence employees' decisions about the health insurance options they face. The study assesses the nature of the relationship between the employee benefit decisions and the characteristics of the multiple options (e.g., coverage, copayments, deductibles, costs) and the demographics of employees (e.g., age, gender, marital status, income). We decided to

focus on health care decisions because they have become a primary focus of current flexible approaches (Hewitt, 1991). Employers' focus on health care makes sense considering that health care costs have been increasing by approximately 15-22% annually (Foster Higgins, 1991). Further, a recent Gallop poll found that employees consider their health care benefit to be the most important benefit they receive, and it offers some evidence that employees make decisions about their health care benefit first, independent of their other benefit options (EBRI, 1991).

Theoretic Rationale and Analytic Model

Expected Utility Maximization (EUM)

The theory of expected utility maximization (EUM) predicts that, when deciding among options of unknown consequences, individuals will select the one with the highest expected utility (Friedman and Savage, 1948). The basic idea is that, since outcomes are unknown, decisions will be based on expectations about likely outcomes and the relative value, or utility, of these outcomes to the decisionmaker. An option's expected utility is thus the sum of the subjective values of all possible outcomes weighted by the probability of their occurrence. In the context of health insurance decisions, the expected utility of an option plan is assumed to be a function of expectations about net wealth (after paying out-of-pocket health care costs) under the option, and perceptions of the quality of the option (Holmer, 1984). Therefore any variables that influence the size and/or probability of health care costs, or the perceived quality of a health care plan, also influence the expected utility of that option. We are hypothesizing that these variables will include attributes of both the options and the decisionmakers.

Dependent Variable: Employee Decisions about Health Benefits

Under flex plans, employees typically have choices among multiple types and levels of health insurance coverage. There are two general types: (1) Fee-for-service (FFS) plans, such as Blue Cross/Blue Shield, are those in which reimbursement of health care providers is based on actual utilization of their services by the insured; and (2) prepaid plans, such as Health Maintenance Organizations (HMOs) or Independent Practice Associations (IPAs), are those in which providers receive no reimbursement beyond the initial enrollment fee. The level of coverage for medical expenses may vary across and within FFS plans, HMOs and IPAs. Prepaid plans may have lower cost-sharing provisions (deductibles and coinsurance), but tend to cover fewer types of care (e.g., they often limit mental health treatment) as compared to FFS plans. Also, FFS plans typically offer a range of deductible and coinsurance amounts.

Determinants: Plan Characteristics

The EUM model assumes that utility rises with income (Friedman and Savage, 1948). All else equal, the more employees expect to pay for health-related expenditures the lower the expected utility of the option, because their net wealth will be less and they will be able to purchase fewer goods and services. The premium charged to the employee under an option is a known cost; the higher it is, the lower the employee's net wealth. In return for paying this premium, however, the employee will receive partial reimbursement for health care expenditures based on the cost-sharing provisions of the plan. Holding premium constant, the lower the cost-sharing requirements, the less the employee has to pay out-of-pocket for health care services, and the higher the net wealth.

Empirical evidence regarding the effect of employee premiums has been inconsistent. Some studies have concluded that premium differentials have an insignificant effect on health plan decisions (Friedman, 1974; Juba, Lave and Shaddy, 1980; Holmer, 1984; Marquis and Holmer, 1986), but others contended that the effect is significant (Feldman, Finch, Dowd and Cassou, 1989; McGuire, 1981; Piontkowski and Butler, 1980; Welch, 1986). Similarly, studies of the effects of cost-sharing provisions have generated evidence indicating that the effects are significant (Feldman, et al., 1989) and non-significant (Welch, 1986). Part of the reason for this inconsistency, as argued earlier, may be that the studies have been conducted in substantially different decision contexts.

Based on the EUM model, we predict that:

Hypothesis 1: As the premium charged to employees for an option increases, the probability that they will select it will decrease, all else equal.

Hypothesis 2: As the deductible amount for an option increases, the probability of selecting that option decreases, all else equal.

Hypothesis 3: As the coinsurance amount for an option increases, the probability of selecting that option decreases, all else equal.

Determinants: Employee Characteristics

Expectations about health-related expenditures under an option may also be related to employees' anticipated health care needs. Employees who anticipate needing a lot of health care can expect to pay less overall by paying a high premium for an option that requires low levels of cost-sharing, than by paying a low premium for an option that requires high levels of cost-sharing, since they will be paying less out of pocket for all of their health care bills. On the other hand, employees who anticipate minimal

health care needs can expect to pay less overall by purchasing the low premium plan, rather than by paying a high premium for coverage that they will not be using. Thus, the costs under an option, and the utility associated with it, will vary according to employees' expectations of their health care needs. Although these needs cannot be predicted with certainty, the probabilities of health care episodes occurring appear to be systematically related to a variety of social and demographic characteristics of individuals. For instance, age is positively related to medical expenditures (Friedman, 1974; Taubman and Rosen, 1982), and health care utilization rates are higher among women than men (Sindelar, 1982). Health status also varies as a function of marital status; specifically, married individuals are in better health than unmarried individuals (Taubman and Rosen, 1982).

If employees base their decisions about health plans on costs alone, then those employees (e.g., older, single, female) with high expected health care needs should prefer the plan that requires the least amount of cost-sharing. Prepaid plans should therefore be the most popular plan among such employees. However, as discussed above, the expected utility of a health plan is assumed to be a function of both costs and employees' perceptions of the quality of options. There is some evidence that younger, healthier employees are more likely to join prepaid plans than are older, less healthy employees (Dowd and Feldman, 1985; Feldman et al., 1989; Jackson-Beeck & Kleinman, 1983). Perhaps this is because, having had minimal contact with health care providers, young, healthy employees have not developed strong preferences for a particular physician and thus are not constrained by the limited number of physicians typically participating in a prepaid plan. In fact, such employees may prefer a plan that does not require them to "shop" for a physician, since they may have limited information upon which to base their decisions.

Theory and evidence thus suggest that employees with high expected health care needs will prefer a fee-for-service arrangement that requires the least amount of cost-sharing. Thus,

Hypothesis 4: The probability that an employee will select the FFS plan with the lowest level of cost-sharing will increase with age, all else equal.

Hypothesis 5: The probability that an employee will select the FFS plan with the lowest level of cost-sharing will be lower among married than among single employees, all else equal.

Hypothesis 6: The probability that an employee will select the FFS plan with the lowest level of cost-sharing will be higher among female than among male employees, all else equal.

While employees may value plans with low levels of cost-sharing, their ability to purchase them is constrained by their income. Insurance premiums are calculated on the basis of expected costs, and the plan(s) that pays the largest portion of covered expenses will therefore charge the highest premiums. Employees with relatively low incomes may find that the purchase of low cost-sharing plans leaves them with inadequate funds for their other needs. As income increases, employees can purchase greater amounts of all valued goods, including health care coverage. Earlier we argued that, holding all else (including income) equal, an increase in the cost to the employee of selecting an option would lower its utility, and hence the probability of selecting it. Here we argue that, holding all else (including plan cost characteristics) equal, the probability of selecting a low cost-sharing plan will increase with the decisionmaker's ability to purchase it.

Again, since prepaid plans often require the least amount of cost-sharing, the probability of selecting them should therefore increase with income. However, there is

some evidence of just the opposite, that higher incomes are associated with relatively lower probabilities of selecting a prepaid plan over a FFS plan (Juba et al., 1980; Merrill et al, 1985), suggesting that there may be some income-related differences in perceptions of quality. For example, if waiting times are longer in prepaid plans, then they may be less attractive to high income employees whose job responsibilities limit the time they can be away from work. These arguments suggest that the attractiveness of fee-for-service plans, and the probability of selecting one with the lowest cost-sharing requirements, will increase with income.

On the other hand, there is some evidence that the willingness of employees to expose themselves to the risk of incurring uncovered medical expenses varies with their income (Friedman, 1974). Employees with relatively low incomes may be more risk averse, and place a higher value on complete health care coverage, compared to employees with relatively high incomes. This suggests that the probability of selecting the health plan with the lowest level of cost-sharing will decrease as employee income increases.

Based on EUM and this mixed bag of evidence the best we can hypothesize is that health care decisions will be influenced by employees' income level. The direction is ambiguous. Thus,

Hypothesis 7: The probability that employees will select a particular health plan will vary with their salary.

Method

Data and Setting

Actual health plan decisions made by participants in a flexible benefits plan were analyzed. Employee-specific selection and demographic data, as well as plan documentation, were provided by a large manufacturing firm for the 1989 enrollment period. Analysis was confined to a single location (N=5194) to control for the effects of unmeasured characteristics of the prepaid plans and other contextual differences on health plan choice.

The data set included exempt and non-exempt employees, and covered a broad range of job titles and salary levels. Approximately 70% of the study population was married and about 36% was female. The average age was 40 years and the average salary was $39,000 per year. Approximately 4% selected the HMO, 27% the IPA Plan 2, 9% the IPA Plan 1, 7% the catastrophic FFS plan, 13% the transitional FFS plan, and 40% the traditional FFS plan.

The firm's flexible benefits plan offered employees six FFS and prepaid health insurance options. Employees were required to select one plan; they could not waive health insurance coverage. There were three FFS options, referred to here as traditional (low deductible and coinsurance), transitional (moderate deductible and coinsurance) and catastrophic (high deductible, no employee copayment) plans. Prepaid plans were provided by contractual arrangement with external agencies. Two were Independent Practice Associations (IPAs), in which participants could choose their health care provider from among a network of independently operating practitioners. The third prepaid plan was a Health Maintenance Organization (HMO); participants received medical services from one of the plan's medical centers and choice of physicians was

limited to those employed by the plan. Of the six plans, the HMO required the lowest

level of cost-sharing and the highest premium. The lowest premium option was the

catastrophic FFS plan.. Premiums for the traditional FFS plan and the two IPAs were

roughly equivalent.

Benefits were purchased with credits provided by the employer. Benefits credits

provided by the firm were allocated based on self-declared dependent status (employee

only, employee plus one dependent, employee plus two or more dependents). In each

dependent status category, employees received enough credits to purchase the benefits

package they received prior to the implementation of the flex plan (traditional health

insurance indemnity plan, and pre-flex levels of life, accidental death and

dismemberment, and long term disability insurance).

Measures

The dependent variable was a categorical discrete choice variable describing the

menu of six health plans available to the employee. For purposes of estimation, the

dependent variable was expressed as the probability that a particular health plan was

selected. The six choices were: three FFS plans (traditional, transitional and

catastrophic) and three prepaid plans.

Determinants used to examine employee choices included both plan and employee

characteristics. Plan-specific factors were employee premium, deductible, and

inpatient coinsurance. Employee premiums reflected the full cost to the employer of

providing each of the health plan options. Coinsurance amounts varied according to type

of care (inpatient versus outpatient) under prepaid plans, but because of

multicollinearity problems, we were unable to include both in the model. We used

inpatient coinsurance, since it exhibited more variance across plans. Employee

characteristics included age, gender (female=1), marital status (married=1), and salary.

Results

Logistic regression procedures were used to estimate the effects of the determinants on the probability of choosing each of the health care options. Results are shown in Table 1. Note that, because employee characteristics do not vary across options, logistic regression procedures involving employee-specific variables and more than two choices are conducted as a series of pairwise analyses of the probability of selecting a reference option (here the traditional FFS plan) versus each of the other five options. The analyses thus yielded one coefficient on the option-specific variables (employee premium, deductible, and coinsurance), and five coefficients on the employee-specific variables (age, marital status, salary and gender). The coefficient on the choice-specific variables indicate how a change in these variables for any of the options will affect the probability of selecting that option. A coefficient on an employee-specific variable provides information about the effects of employee characteristics on a comparison between two options only. The age coefficient for the transitional FFS plan, for example, describes the effect of age on the probability of selecting that plan versus the reference plan, here the traditional FFS plan. This coefficient provides no information about the effect of age on decisions among the reference plan and other options (e.g., the prepaid plans).

Insert Table 1 about here

We found strong support for Hypothesis 1 and 2, that the probability of selecting a health care option will decrease as the cost provisions of the plan increase. The estimated coefficients on employee premium and deductible were negative and statistically significant. Surprisingly, we obtained a positive and significant coefficient on inpatient coinsurance, suggesting that, as employee copayment requirements increase, the plan becomes more attractive. This counterintuitive result may be a function of incongruities in the coverage provisions in the catastrophic FFS plan. This plan requires high overall cost-sharing, but zero coinsurance. Thus, when a plan with lower overall cost-sharing, but a higher coinsurance rate (e.g., transitional and traditional FFS plans) is selected over the catastrophic plan, it appears, when considering the effects of coinsurance only, that high coinsurance is preferred, when in fact what is preferred is low overall cost-sharing. Thus, it seems probable that in a different context involving plans with more consistent cost-sharing provisions, we may find more support for Hypothesis 3.

We also found support for Hypothesis 4, that the probability that an employee will select a plan other than the traditional FFS plan will decrease with age. Estimated coefficients are negative and statistically significant across all plans. Thus, as age increases, the probability of selecting any one of these options over the traditional FFS plans decreases. If the average age of the workforce were to increase, we would expect to see a shift in participation rates away from the prepaid plans, for example, and into the traditional FFS plan, all else constant.

Hypothesis 5 states that the probability that an employee will select the traditional FFS plan will be lower among married than among single employees. We found partial support for this hypothesis. Coefficients on the three prepaid plans and the catastrophic FFS plan were positive, suggesting that marriage increases the probability

of selecting one of these plans over the traditional FFS plan. However, the coefficients were significant on only two of these plans - the catastrophic FFS plan and IPA Plan 2. Furthermore, we obtained a negative and significant coefficient on the transitional FFS plan, suggesting that married employees prefer the traditional FFS plan to this plan. It is interesting to note that the largest effect was found for the catastrophic FFS plan, perhaps reflecting the preference of employees covered under a spouse's plan for the least costly option.

Our hypothesis about the effect of employee gender was not confirmed. Hypothesis 6 asserted that the probability that an employee will select the traditional FFS plan will be higher among female than among male employees. Estimated coefficients were positive and significant on all but IPA Plan 1, indicating that females are more likely to select plans other than the traditional FFS plan. Our hypothesis was based on the assumption that employee gender was an indicator of health risk. However, it may be that when evaluating health care needs, employees consider the needs of all family members, and family health care needs may not vary closely with gender of the employee. Thus, employee gender is probably not a good indicator of expected health care needs for employees with dependents. It clearly has an effect on health plan decisions, but the exact nature of this effect needs clarification. The strongest effect was found for the catastrophic FFS plan; as above, this may reflect the influence of alternative health care coverage. The tendency to select prepaid plans over the FFS plan may reflect the influence of health plan preferences that vary with employee gender. There is some evidence, for example, that females value coverage for preventative care (Feldman, et al., 1989), a type of coverage which prepaid plans typically provide and FFS plans do not.

Hypothesis 7 states that the probability of selecting a health plan will vary with employees' income. Estimated salary coefficients were negative and statistically significant on all but the transitional FFS plan, indicating that the probability of selecting a plan other than the traditional FFS plan decreases as income increases. This suggests, as discussed earlier, that high income employees prefer FFS plans to prepaid plans, and that they value low levels of cost-sharing. Our alternative argument that high income individuals might be more willing to take the risk of incurring uncovered medical expenses in exchange for a low premium was not confirmed. The findings imply that when considering the choice between the traditional FFS plan and the HMO, for example, an increase in employee salary will decrease the probability of selecting the HMO. Thus, if the average salary of the workforce were to increase, then we would expect to see a higher proportion of employees selecting the traditional FFS plan, and a lower proportion selecting the HMO, than is currently the case. To the extent that HMO coverage is more (less) costly than the traditional FFS plan, then salary increases have cost implications beyond those associated with higher wages and payroll-related taxes (e.g., Social Security).

In the logit model, estimated coefficients represent the effect of a one unit change in the independent variables on the transformed dependent variable (the logit). Furthermore, the nonlinear effects of each determinant on the outcome of interest - the probability of selecting one of the options - depends on where, in the range of possible values of the variable, the change is being evaluated. Thus, the effect of a salary increase on an employee with low earnings will be different from the effect of an equivalent increase on an employee with high earnings. To better illustrate the magnitude of the effects of explanatory variables, estimated coefficients were used to predict employee decision patterns associated with selected changes in each of the

variables. Results are reported in Table 2. The first line indicates the actual fraction of employees in the study population selecting each of the options. The remaining figures represent predicted participation rates, and were calculated by estimating (using model coefficients) the probability of selecting an option for each employee and then taking the mean. The second line shows estimated participation rates based on characteristics of the study population. We next estimated the effect of an increase of ten years in the average age of the workforce. The results suggest that such an increase would generate an increase of about 17% in the portion of employees selecting the traditional FFS plan, and a decrease in the portion selecting the transitional FFS plan and IPA Plan 2. A 10% increase in the average salary, on the other hand, would result in relatively minor changes, suggesting that only salary changes of substantial magnitude will have a noticeable impact on selection patterns. Because gender and marital status are discrete, categorical variables, we could not simulate the effects of a percent change in individual values on these variables. We therefore estimated the effects of having an all female, male, married, or single workforce. Results indicate that if the number of females in the workforce increased substantially, the traditional FFS plan would become less popular, while the catastrophic FFS plan would become more popular. Just the opposite effects would be observed if the number of males in the workforce were to increase. An increase in the number of married employees is predicted to generate a move away from the traditional FFS plan and into the transitional and catastrophic FFS plans, while an increase in the number of single employees would generate a move out of these plans and IPA Plan 2 and into the traditional FFS plan. Looking next at the effects of changes in plan characteristics, the results indicate that only a change in employee premium is expected to cause any noticeable changes in selection patterns. A 10% increase in the premium for the traditional FFS plan, for example, is predicted to generate a substantial

decrease (about 17%) in participation in that plan, and an increase in participation in the transitional FFS plan and the two IPA plans. Similar increases in the deductible and coinsurance amounts appear to have negligible effects on selection patterns. This suggests that changes in employees' health care selections are more likely to be induced by restructuring the premiums.

Insert Table 2 about here

Discussion

The results of our study provide insight into the factors that influence employees' health plan choices under flexible benefits plans. While a number of studies have investigated decisions among different types of health plan coverage (prepaid plan versus FFS), and a few have investigated decisions among different levels of coverage, we know of no other empirical study of decisions among the different types and levels of coverage typically offered in flexible benefits plan. Further, our study goes beyond previous research on benefits preferences by examining more realistic decisions, developing a theoretical framework for analyzing these decisions, and considering the influence of the cost and coverage characteristics of options. We examined actual decisions among health plan options, rather than preferences among hypothetical benefit options. In today's inflationary health care environment, decisions among health insurance plans with substantially different premium and cost-sharing characteristics involve trade-offs of much greater magnitude than those involving any other benefit. Health care decisions are therefore likely to be central to employees' benefits decisions.

Our study considers these decisions in much greater depth than earlier studies of benefits preferences, and provides a theoretical framework for examing these decisions in a variety of contexts.

This study shows that decisions among multiple health plans are significantly influenced by characteristics of both the options and the employees. We found that increases in employee premiums and deductibles tend to have a negative effect on the probability of selecting an option. In contrast, our results also suggest that an increase in employee coinsurance requirements tend to increase the probability of selecting an option, an unexpected finding which we have argued is a function of the peculiarities of plan design specific to the flex plan investigated in this study. Turning to employee characteristics, we found that as age and salary increase, the probability of selecting a plan other than the traditional FFS plan decreases. Married employees seem to prefer the traditional FFS plan over the transitional FFS, but find it less preferable than the catastrophic FFS plan and the prepaid plans. Finally, we found that the probability of selecting an alternative to the traditional FFS plan is higher among female than among male employees.

Our finding that option premiums and deductibles significantly affect decisions among health care plans is consistent with other researchers' findings that individuals' decisions about health care plans are sensitive to costs (Piontkowski and Butler, 1980; McGuire, 1981; Welch, 1986; and Feldman, et al., 1989). Others have found, however, that individuals are highly risk averse when it comes to health insurance and that only a price increase of substantial magnitude will induce individuals to change health plans (Friedman, 1974; Holmer, 1984; Marquis and Holmer, 1986). These studies have primarily investigated decisions among levels of coverage, in contrast to the studies finding a significant effect, which have primarily investigated decisions among

types of coverage (e.g., FFS versus prepaid plans). This suggests the possibility, consistent with the findings of Merrill, et al. (1985), that employees may be more resistant to changing level of coverage (e.g., from traditional to catastrophic) than they are to changing type of coverage (e.g., from a FFS plan to a prepaid plan), and that decisions among different types of coverage may be more sensitive to cost changes than decisions among different levels of coverage. Our findings lend support to this hypothesis. We found that an increase in the premium for the traditional FFS plan would generate a reduction in participation in that plan, but we also found that almost half (43%) of the increase in other plans would be observed in IPA Plan 2 and that the portion observed in the highest cost-sharing plan would be relatively small (14%). Since IPA Plan 2 requires minimal cost-sharing and offers a fairly broad choice of providers, employees may perceive the coverage offered by this and the traditional FFS plan to be roughly equivalent.

Our finding that the preference for the traditional FFS plan over prepaid plans increases with income is consistent with the evidence found in other studies that individuals with relatively high incomes are unlikely to select prepaid plans over FFS plans (Juba et al., 1980; Merrill et al., 1985). Our finding that the preference for the traditional versus catastrophic FFS plans also increases with income is consistent with Holmer's (1984) finding that employees' willingness to pay for high cost medical coverage increases as income increases, and contrasts with Friedman's (1974) finding that low income employees are more risk averse than high income employees and are willing to pay relatively larger premiums for complete coverage. It may be that, due to the high rate of increase in health care costs since Friedman conducted his study, the financial consequences of incomplete health care coverage have become an equal source of concern to individuals within a much broader salary range.

The observed negative effect of age on the probability of selecting a prepaid plan are consistent with other researchers' findings of biased selection of younger employees into prepaid plans (Jackson-Beeck and Kleinman, 1983; Dowd and Feldman, 1985; Lairson and Herd, 1987; Feldman, et al., 1989). Others, however, have found that no significant differences exist in the age of prepaid and FFS plan participants (Juba, Lave and Shaddy, 1980; McGuire, 1981; Welch and Frank, 1986). Since these studies examine different plans, it is possible that the effects of these variables vary with characteristics of the plan options. Where levels of coverage provided by the options differ substantially, as in the flex plan examined in our study, variables such as age which are related to expected medical care needs may have a significant influence on health plan selection.

Our results suggest that EUM theory can help guide the identification of factors that affect health plan choice in a flexible benefits environment. We have identified seven variables - option premium, deductible, and coinsurance, and employee age, marital status, salary, and gender - that appear to influence employees' decisions among multiple health care plans. We know the direction of the effects, and the size of the effects, but we do not yet know precisely how these factors influence the decision-making process. For example, we found that the tendency to select the traditional FFS plan increased with age. We hypothesized that the age effect was due to age-related differences in health risk. Alternatively, it may simply be due to the fact that benefits purchasing power increases with age, since credit allocations are partially based on the cost of purchasing the core life insurance plan, and since older employees also tend to have more vacation days, which may be traded for benefits credits. A third explanation is that there are age-related differences in attitudes that are driving these decisions. There is some evidence, for example, that employees' willingness to accept human

resource innovations such as flexible benefits decreases as tenure with the firm increases (Kossek, 1989). Age and tenure are highly correlated in the sample used for this study, and thus the observed tendency of older employees to select the traditional FFS plan - the plan offered prior to the implementation of flex - may simply reflect the preference of employees who have been with the firm for an extended period of time for the health care plan with which they are the most familiar. If this is the case, then our prediction that participation in the traditional FFS plan will increase as the workforce ages may be inaccurate. Rather, as younger employees in this workforce who have tended to select prepaid plans age, and their reluctance to change health care plans increases, and as older employees currently enrolled in the traditional FFS plan retire, the overall participation rates in prepaid plans should increase while those in the traditional FFS plan should decrease. Clearly, it is important to learn more about the influence of age and other variables on health plan decisions.

It may be that the capacity of the EUM model to explain individuals' decisions is limited. Recently, researchers have questioned the model's assumption that individual utilities are stable and well-defined (Stevenson, Busemeyer, and Naylor, 1990). Thus, depending on the circumstances under which decisions are investigated, the results may be quite different. Furthermore, the explanatory power of the model is constrained by the fact that "utility" is difficult to measure or observe. Variables which are believed to be proxies for utility must therefore be used to make predictions about individuals' decisions, and any deviation from predictions can be attributed to a failure to accurately operationalize the construct. The theory is pliable in this sense; predictions about decision-making behavior can vary substantially, depending on the assumptions about the determinants of individual utility. For example, if we assume that wealth is a primary determinant of utility, then we can predict that employees will select the health

insurance option that has the lowest expected costs. A young, healthy employee would therefore be expected to select a low cost, low coverage option. If we find, however, that such individuals select the high cost, high coverage option, we can still argue that they are maximizing utility by reducing their risk of incurring uncovered medical bills. In the latter case, the assumption is that utility is more a function of risk exposure than of wealth.

A number of psychological models for risky decision making have been proposed as viable alternatives to the EUM theory (Stevenson, et al., 1990). After reviewing these models, however, Stevenson et al. (1990) conclude that EUM is still the model of choice:

> When considering crude measures of fit, such as the overall percentage of correct predicions based on a random sample of stimuli, the expected utility model does a remarkably good job. However, when special designs are constructed to test some of the basic assumptions of expected utility theory, systematic violations of the basic axioms are obtained. Several alternative psychological models have been proposed, but these models also fail to provide a complete description of the known facts. In addition, these psychological models tend to be more complex and more difficult to apply when compared with the expected utility model. Therefore, despite the fact the theory is known to be wrong, at the present time there are no strong contenders, and expected utility theory continues to be the major force in the field (p. 350).

Implications for policy-makers and managers

Policy-makers and employers have been trying for some time to develop policies that will help contain the escalating costs of health insurance. Our results suggest that

employers can induce changes in employees' selection behavior by changing the cost structure of the options. A ten percent increase in the premium for the traditional FFS plan, for example, is predicted to generate a 17% reduction in the fraction of employees electing that option. However, as noted above, such a cost increase will not generate a substantial movement of employees into a plan with a high level of cost-sharing. Movement into this plan is more associated with changes in workforce demographics. Thus, policies aimed at reducing the demand for health care by increasing the costs of health care to consumers may only work if higher costs are imposed directly on consumers, rather than trying to induce them to accept them through premium changes. However, policies which are aimed at reducing health care inflation by inducing individuals to join prepaid plans may be more effective. Our findings suggest that an increase in the premium for the traditional FFS plan will generate a migration away from that plan into a prepaid plan.

Our findings also suggest that workforce demographics have a significant influence on participation rates among health care plans. Therefore, any HR program or policy (e.g., downsizing, retirement bonuses, Affirmative Action programs aimed at increasing the hiring of women) that significantly affects the makeup of the workforce also has a potential effect on benefits participation rates and costs. Clearly, managers need to take these outcomes into account when considering HR programs that affect the demographic make-up of the workforce.

Future Research

There are clearly generalizability issues, since our study is based on a single firm, in one time period. This work needs to be expanded to other settings, though securing sensitive personnel benefits decisions data remains a challenge.

Direct measures of employees' (and their dependents') health status might improve the prediction model, as would information about the availability of alternate health care coverage (e.g., through an employed spouse), and the attractiveness (in terms of coverage and cost) of alternative plans. Further, our study examined employees' health care decisions during one enrollment period. These decisions probably change over time. While it is almost pro forma to call for more research, given the state of research on employee benefits we feel this call is warranted.

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TABLE 1
Determinants of Health Plan Choice: Estimated Logit Coefficeints
(t-statisitcs in parentheses, Traditional FFS plan is reference category)

| Variable | | Fee For Service Plans | | Prepaid Plans | | |
		Transitional	Catastrophic	IPA Plan 1	IPA Plan 2	HMO
Premium	-0.16***					
	(-6.39)					
Deductible	-0.07***					
	(-9.01)					
IP Coinsurance	0.06***					
	(5.41)					
Age		-0.05***	-0.04***	-0.02***	-0.02***	-0.03***
		(-13.54)	(-8.25)	(-5.69)	(-7.83)	(-4.40)
Salary		0.0	-0.01***	-0.03***	-0.02***	-0.02***
		(0.46)	(-3.08)	(-9.74)	(-7.28)	(-4.08)
Female		0.18*	1.46***	0.07	0.29***	0.33**
		(1.76)	(12.33)	(0.70)	(3.61)	(2.04)
Married		-0.48***	2.17***	0.03	0.57***	0.25
		(-3.88)	(11.72)	(0.29)	(6.45)	(1.41)

N = 5194

Log-Likelihood	-7459.14	
Chi-Square (DF)	1694.52	(18)

*Significant at p = .10 in two-tailed test
**Significant at p = .05 in two-tailed test
***Significant at p = .01 in two-tailed test

Table 2
Effects of Plan and Employee Variables: Illustrative Probabilities

| | Probability of Selecting Health Plan[a] | | | | | |
| | Fee For Service Plans | | | | Prepaid Plans | |
Plan/Employee Change	Traditional	Transitional	Catastrophic	IPA Plan 1	IPA Plan 2	HMO
Actual Fraction Selecting	0.40	0.13	0.07	0.09	0.27	0.04
Baseline Probabilities	0.41	0.11	0.07	0.10	0.27	0.04
Age Up 10 years[b]	0.48	0.08	0.06	0.10	0.25	0.03
Salary Up 10%[b]	0.42	0.12	0.07	0.09	0.26	0.03
All Female Employees[b]	0.35	0.11	0.13	0.09	0.28	0.04
All Male Employees[b]	0.44	0.12	0.04	0.11	0.26	0.03
All Married Employees[b]	0.38	0.09	0.13	0.09	0.28	0.03
All Single Employees[b]	0.46	0.17	0.02	0.11	0.20	0.03
Premium for Traditional FFS Plan Up 10%[b]	0.34	0.13	0.08	0.11	0.30	0.04
Deductible for Traditional FFS Plan Up 10%[b]	0.41	0.12	0.07	0.10	0.27	0.04
IP Coinsurance for Traditional FFS Plan Up 10%[b]	0.42	0.11	0.07	0.10	0.26	0.04

[a] Predicted probabilities are computed by averaging responses across all employees using coefficient estimates from Table 1.
[b] All else held constant.