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The Effects of Offering Health Plan Choice Within Employment-Based Purchasing Groups

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Abstract

Employers may offer employees a choice of health plans either to promote competition among plans or to better cater to employee preferences for different types of products. This article examines whether the relationship between the availability of choice and insurance costs and coverage are consistent with these models of employer behavior. The results indicate that employers who offer choice have lower average premiums, primarily because employees are enrolled in less generous plans, and cover a greater proportion of workers than those who do not. The results are consistent with employers offering choice to accommodate diverse worker preferences.

Introduction

Employers are the primary source of health insurance for the vast majority of the nonelderly insured population in the United States (DeNavas-Walt, Proctor, and Lee, 2004). Over the last two decades, employers have increasingly offered workers a choice of health plans. Between 1977 and 1998, the percentage of employees offered more than one plan by their employer grew from 18 percent to 66 percent (Gabel, 1999).

The economic literature provides two explanations as to why employers might offer workers a choice among health plans. First, employers may offer choice to promote greater competition among plans. This rationale underlies the well-known "managed competition" approach to benefit design (Enthoven and Kronick, 1989). An alternative explanation is that employers are responding to heterogeneity in employees' preferences for health insurance (Goldstein and Pauly, 1976). In theory, employers minimize total compensation costs by offering workers their optimal combination of cash wages and fringe benefits (Summers, 1989). Thus, when employees vary in their preferences for coverage, employers have an incentive to offer multiple plans to cater to the diverse preferences of their workers.

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In this article, I identify the implications of these two explanations for employer behavior for the relationship between the availability of choice and health insurance premiums and rates of coverage within a firm. I then examine whether observed outcomes are consistent with these models of employer behavior.

THE DETERMINANTS AND EFFECTS OF HEALTH PLAN CHOICE

Employers serve as the intermediary between consumers and insurers in the purchase of the vast majority of private health insurance in the United States. This prominent role for employers is due to the favorable tax treatment of employer-sponsored health insurance, which creates a subsidy of approximately 30 percent for health insurance purchased through an employer (Gruber and Poterba, 1996); to economies of scale in insurance selection and administration, which make coverage cheaper when purchased as part of a group than when purchased as an individual; and to the potential for employment-based group purchasing to minimize problems of adverse selection in health insurance markets (Gruber, 2000).

Historically, employers typically offered a single plan and often did not require employees to contribute out of pocket to the premium (Pauly, 1986). During the last two decades, however, employers have increasingly offered workers a choice of health plans and have required employees to make out-of-pocket contributions when they enroll. From 1977 to 1998, the percentage of employees offered more than one plan, among those offered coverage from their employer, increased from 18 percent to 66 percent, and the average monthly employee contribution, measured in 1998 dollars, increased from $26 to $91 (Gabel, 1999).

The economic literature offers two explanations for why employers offer a choice of plans. First, employers may offer choice to stimulate health plan competition. Under a "managed competition" approach to benefit design, employers offer multiple plans with standardized benefits, require workers to pay an incremental premium for more expensive plans, and provide workers with information on plan quality (Enthoven and Kronick, 1989). By creating incentives for employees to consider cost as well as quality when choosing among plans, this approach may stimulate health plan competition along both dimensions, ultimately leading to lower premiums and higher quality coverage. Although not explicitly advocating managed competition, Bradford (1996) argues that the role of the employer reduces the competitiveness of the market for health insurance by limiting the choices available to an individual worker.[1] By offering more plans, employers can restore competition and reduce insurer profit margins. Vistnes, Cooper, and Vistnes (2001), by contrast, propose that within-firm choice does not necessarily maximize insurer competition. They suggest that employers face a trade-off between offering fewer plans, which promotes competition among insurers to be offered, and offering more plans, which increases competition among plans for enrollment.

[1] The restricted choice set, combined with uncertainty on the part of insurers when pricing coverage for a new group on its risk, creates market power on the part of the insurer. The fixed costs to the employer of switching insurers allow insurers to retain this market power over time.

The limited empirical literature on the competitive benefits of health plan choice produces mixed findings. An early study of the effects of HMOs on premiums for employer-sponsored coverage found that average premiums were higher in firms offering an HMO, which was generally done in conjunction with offering a more traditional plan, than in firms offering only a fee-for-service plan (Feldman, Dowd, and Gifford, 1993). This raised the concern that "cream skimming" on the part of HMOs ultimately increased employer spending on health insurance. Although HMOs generally priced their products lower than the indemnity plan for a given firm, the HMO premium exceeded the cost of indemnity coverage for the relatively healthy employees who ultimately chose to enroll. Among the more recent literature, one study found little evidence of competitive benefits associated with within-firm choice (Bradford and Mobley, 2004), while others have found that offering multiple plans reduces both insurer premiums (Vistnes, Cooper, and Vistnes, 2001) and insurance prices, defined as the difference between the total premium and the expected benefits (Ma and Browne, 2005). Vistnes, Cooper, and Vistnes (2001), however, find that plan choice lowers premiums only when employers make fixed dollar contributions. Offering multiple plans without the fixed dollar contribution is associated with higher premiums.

An alternative explanation for why employers offer multiple plans is that they are responding to variation among workers in their preferences for health insurance (Goldstein and Pauly, 1976). In this type of model, employers balance the costs of greater customization of health benefits with the benefits of offering employees plans that more closely match their preferences (Goldstein and Pauly, 1976; Danzon, 1989). The costs of customization include the fixed costs to the employer of offering an additional plan as well as the fixed costs to the insurer of selling and administering a plan, which result in scale discounts for larger groups.[2] Also, employers must meet certain nondiscrimination requirements, which prevent them from offering plans to subsets of workers, for their coverage to qualify for tax-favored treatment. In this model of employer behavior, employee premium contributions serve as a mechanism to induce workers to self-select into particular plans.

A few empirical studies provide evidence consistent with this model of employer behavior. Employee preferences for health insurance, as measured by tax prices, are associated with the decision of the employer to offer coverage as well as the dollar value of coverage offered (Gruber and Lettau, 2004). In addition, variation among workers in a firm in the demographic composition of employees is positively associated with the decision of employers to offer a choice of plans and the extent of variation in the plans offered (Moran, Chernew, and Hirth, 2001; Bundorf, 2002). Finally, research suggests that employers adopt employee premium contributions in response to variation among workers in their health insurance preferences (Levy, 1997; Dranove, Spier, and Baker, 2000).

The availability of choice, whether to promote health plan competition or to respond to preference heterogeneity among workers within a firm, may lead employees to

[2] Although employers often cite these administrative costs as a barrier to offering multiple plans, little empirical evidence of their quantitative importance exists. Insurers may also charger higher premiums for plans covering fewer workers due to the increased risk associated with a small group.

select into health plans based on health risk (Ellis, 1989; Ma and Browne, 2005).[3] The welfare implications of this type of risk selection, however, depend on the equilibrium outcome in the absence of choice. For example, in a standard model of asymmetric information in insurance markets, insurance contracts that induce low and high risks to self-select into different levels of coverage, though inefficient relative to the first-best outcome, are superior to pooling contracts under which an equilibrium would not exist (Rothschild and Stiglitz, 1976). Because employee premium contributions rarely differ by risk, employment-based group purchasing may create conditions that are analogous to the imperfect information in this model. In this case, offering a choice of plans may be a second best equilibrium that minimizes welfare loss due to adverse selection within a firm. While Feldman and Dowd (2000) propose that the introduction of managed care provided employers with a mechanism to achieve this type of efficiency-increasing self-selection, Chernew and Frick (1999) point out that while managed care may have this desirable property, in some situations it may also destabilize markets.

In firms offering choice, the employer's contribution policy may affect the extent of risk selection across plans. In a case study of the implementation of a fixed-dollar contribution in a firm offering choice, Cutler and Reber (1998) attribute the ultimate demise of the more generous plan to an adverse selection death spiral caused by the change in contribution policy.[4] Employers may be able to avoid this type of death spiral, however, by choosing employee contributions that create incentives for workers to self-select efficiently across plans (Cutler and Reber, 1998; Pauly and Herring, 2000; Cutler and Zeckhauser, 1998).[5] Miller (2005) demonstrates that under certain assumptions regarding worker risk and preferences, an employer minimizing total compensation costs across workers of heterogeneous risk will offer multiple plans and will choose a contribution policy to help control risk-based selection based across the plans.

STUDY HYPOTHESES

I refer to these two models of employer behavior as the "competitive" and the "employee preference" models. In the competitive model, employers offer a choice of plans to promote within-firm competition among insurers. In the employee preference model, employers offer choice in response to variation among employees in their preferences for health insurance.

In some cases, the two models generate different predictions of the effects of choice on premiums and rates of coverage within a firm. Under the competitive model,

[3] The positive correlation between health risk and plan generosity, particularly in the context of managed care, is well documented (e.g. Hellinger, 1995).

[4] Pauly, Mitchell, and Zeng (2007-2008), however, suggest that the decline of the more generous PPO in this situation could have been caused by changing tastes in response to newly available plans that were more efficient than the more traditional plans.

[5] The authors examine the situation when employees vary in their health risk and the incremental value of the more generous plan increases more quickly with risk than the incremental cost. This result is also based on the assumption that preferences for more generous coverage are perfectly, positively correlated with individual risk. This strategy is not feasible if individuals vary along additional dimensions that affect their preferences for more generous plans. See Encinosa and Selden (2001) for additional discussion of this issue.

choice should lead to lower plan premiums, primarily due to a reduction in insurer profit margins. If employers structure the contribution policy to create incentives for employees to choose lower cost plans, choice may also lead to lower premiums due to a shift by employees to less generous coverage in the competitive model.

Under the employee preference model, plan choice may be associated with either higher or lower average premiums. An employer will offer multiple plans if it reduces total compensation costs relative to offering a single plan. The reduction in total compensation, however, could be due to either lower cash wages or lower health insurance premiums, and either component of compensation could increase if the corresponding reduction in the other were larger. For example, if an employer adds a more generous plan, the average premium per covered worker may rise due to employees enrolling in more expensive coverage.[6] The employer's compensation costs would decline only if the employer could reduce the average wage of covered workers by more than the increase in the average premium. For this to occur, the value that employees place on the new coverage must exceed the cost of providing it and employers must be able to make the corresponding wage adjustment. During the study period, in contrast, much of the increase in the prevalence of plan choice was due to the increasing availability of managed care. In this case, the availability of choice is likely to be associated with lower average plan premiums, driven by a shift to less generous coverage, given this model of employer behavior.

Either model suggests that offering a choice of plans either will have no effect on or will increase enrollment in the plans offered by the employer. Under the employee preference model, employers offering choice would cover either the same number or more workers than when they offered a single plan, at a lower total cost of compensation. Under the competitive model of employer behavior, choice may lead to more efficient coverage options for workers that would either increase or have no effect on the proportion of covered workers. This is dependent, however, upon the contribution policy. If employers require employee premium contributions, particularly to all plans offered, the availability of choice may lead to lower rates of coverage among employees.

EMPIRICAL METHODS

Using data from a survey of employers, I estimate models of the relationship between the availability of choice within a firm and characteristics of the employer's health benefit.

Data and Study Sample

The primary data source is the 1993 Robert Wood Johnson Foundation Employer Health Insurance Survey (Long and Marquis, 1997), an establishment-level survey of 22,890 public and private employers in 10 states conducted during late 1993 and early 1994.[7] The survey included questions about the establishment, its workers, and its health benefits. Cantor, Long, and Marquis (1995) provide information on sampling methods and survey design.

[6] The loss of scale discounts due to fewer workers enrolled in each plan could also increase average premiums.

[7] An establishment refers to a physical location. A firm may comprise multiple establishments.

The analysis sample includes private establishments with more than 25 employees that offer health insurance. I exclude 543 public establishments because their geographic location, which is necessary to develop important control variables, is not available. I also exclude employers with 25 or fewer employees (16,606) because they are less likely to offer health insurance and rarely offer a choice of plans when they do provide benefits.[8] Finally, I exclude 417 establishments reporting they did not offer health insurance and 171 establishments with missing data for key control variables. The final analysis sample includes 5,153 observations.

Dependent Variables

The four dependent variables include three measures of the monthly health insurance premium per covered worker (average single premium, average plan generosity, and average "excess" premium, each of which is defined below), and the proportion of workers covered by the employer's plans. The premium measures are based on total premiums, including both employee and employer contributions. For each measure, I calculate the establishment-level average by weighting the plan-level data by the proportion of covered workers enrolled in the plan. By weighting in this manner, the analysis evaluates the coverage in which workers were actually enrolled, rather than what they were offered. This is appropriate given that the objective of the analysis is to identify the relationship between the availability of choice and the coverage that workers ultimately receive. In addition, the underlying theoretical framework is one in which employers choose health benefits with the intent of influencing worker decisions.

Average Single Premium. This variable is the average premium for single coverage for plans provided by the employer. When calculating the establishment-level average, I treat all workers as if they were enrolled in single coverage in order to control for differences across establishments in spending due to the number of dependents covered.

While premiums vary across plans for many reasons, the study hypotheses focus on differences due to plan generosity and insurer profit margins. To develop corresponding measures of these components, I estimate a hedonic premium model and use the model to separate the premium into the portion representing observable plan characteristics that affect the generosity of coverage, such as deductibles, coinsurance rates, and the breadth of provider networks, and unobservable characteristics of plans, such as administrative costs and profits. These two measures are developed from a premium model of the form:

$$P_{i,j} = \alpha + \beta' X_{i,j} + \Gamma' Y_i + \varepsilon_{i,j}, \tag{1}$$

where $P_{i,j}$ is the premium for plan j offered by employer i, $X_{i,j}$ represents plan characteristics that affect its generosity, and Y_i represents observable employer and market

[8] In the survey data, 54 percent of establishments with 25 or fewer employees offer health insurance and 9 percent of those offering coverage offer more than one plan. In contrast, 92 percent of establishments with over 25 employees over coverage and 39 percent of those offering coverage provide employees with a choice.

characteristics that affect plan premiums, such as employer size and the demographic characteristics of workers. Using data on 21,499 plans offered by surveyed employers, I estimate the model using ordinary least squares regression. Tables A1 and A2 in the Appendix present descriptive statistics for the dependent and independent variables and the results of the estimation. Modifying the approach used by Royalty (2008), I use the coefficients from this model to decompose the observed premium into two components as follows:

Average Plan Generosity. To measure plan generosity, I use the estimated coefficients from the premium model to predict the plan premium, conditioning only on plan characteristics that affect plan generosity (X) and holding firm and market characteristics constant at the mean in the sample. The premium model includes the indicator of choice and its interaction with plan type to control for the effect of selection of employees on the relative premiums of different types of plans (see Table A2). When calculating the predicted premium, I set the value of the variable indicating the availability of choice to zero.

Average "Excess" Premium. This variable, which is intended to capture the competitive effects of choice on premiums, is the residual from the hedonic premium regression. It measures variation among plans due to unobservable characteristics, such as administrative costs or insurer profits. As I seek to identify variation due to unobservable plan characteristics that are correlated with the availability of choice, I do not control for the availability of choice in the premium model. In addition, selection of employees across plans within establishments is less problematic for this measure since selection in the residuals will cancel out when averaging the values across plans within the establishment. I include establishment-level measures of the distribution of workers based on age and sex to control for the effect of workforce composition on plan premiums. The "excess" premium is the difference between the actual and predicted premium for single coverage.

Proportion Covered. This variable is the number of employees covered by the plans offered by the employer divided by the total number of employees, expressed as a percent.

Measuring the Benefit Structure

The independent variable of primary interest is whether the establishment offers more than one plan. Because the effect of choice may depend on the contribution policy, I also estimate models that include the interaction of the indicator of choice with indicators of the contribution policy. For employers offering a single plan, I create an indicator of whether the plan requires an employee contribution. For those offering multiple plans, I identify whether the employer requires an employee contribution to none, some but not all, or all of the plans.

The omitted category in these models is a single-plan establishment that requires an employee contribution, and the indicator of whether the establishment offers a single plan without an employee premium contribution measures the effect of not requiring an employee premium contribution in single-plan firms. The models also include

an indicator of offering a choice of plans and its interaction with two indicators of contribution policy. The indicator of choice tests whether, among establishments that require employee premium contributions for all plans, those that offer multiple plans differ from those that offer a single plan. The interaction terms test whether, among establishments that offer multiple plans, those that require an employee contribution to either none or only some of the plans differ from those that require an employee contribution to all plans.

Control Variables

The models also include exogenous firm and market characteristics to control for other factors that affect employee compensation. Establishment controls include the wage distribution of workers,[9] establishment size (categorical indicators 26–50 (omitted), 51–100, 101–250, and > 250 employees), an indicator of whether the establishment is part of a larger nationwide organization (to control for scale discounts in the purchase of health insurance), for-profit status, whether the health benefits are negotiated as part of a union contract, and the distribution of the workforce by age and sex. Market controls include the county population, the county per capita income, average establishment size in the county, and the adjusted average per capita cost (AAPCC), the Medicare payment to managed care organizations, which is included as a measure of local treatment intensity. All models also include state (10) and industry (nine) fixed effects. The means for control variables are presented in Table 1.

Model Estimation

I estimate all models using ordinary least squares applying the sample weights to obtain coefficient estimates that are representative of employers across the study states. To allow for heteroskedasticity due to sampling, I calculate standard errors that are robust to heteroskedasticity of any form (White, 1980).

An important concern is that the availability of choice is endogenous with respect to dependent variables. Indeed, both the competitive and employee preference models predict that employers offering multiple plans will be those for whom the net benefits of choice are greater. If the models do not include controls for characteristics of establishments that are correlated with both the dependent variable and the likelihood of offering choice, the estimates of the effects of choice will be biased. In this case, an exogenous source of variation in the propensity of employers to offer multiple plans is necessary to identify the causal effect of choice. Because such an instrument is not available for this analysis, I do not directly address this issue in the empirical work but discuss its implications in the conclusion.

RESULTS

Table 2 presents the distribution of establishments by the availability of choice and the employer contribution policy, both overall and by establishment size. Forty-three

[9] Because wages are likely to be endogenous with respect to health benefits, ideally, I would include the income, rather than the wage, distribution of workers to control for the effect of income on demand for health insurance. However, this information is not available in the survey data. The estimates of the relationship between benefit structure and the dependent variables are ultimately not sensitive to the exclusion of the wage distribution variables.

TABLE 1
Weighted Means for Control Variables

Study Sample: Private Establishments With > 25 Employees That Offer Health Insurance
$N = 5{,}153$

Variable	Mean
Size: 26–50 employees	0.494
Size: 51–100 employees	0.259
Size: 101–250 employees	0.171
Size: > 250 employees	0.077
Part of a larger firm	0.526
For-profit firm	0.849
Health benefits union negotiated	0.124
% wage < $10,000	10.335
% wage $10,000–$14,000	20.117
% wage $14,000–$20,000	21.890
% wage > $20,000	47.677
% male < 25 years	11.093
% male 25–54 years	38.334
% male > 55	5.022
% female < 25 years	10.417
% female 25–54	31.538
% female > 55	3.658
County population 1993 (000s)	0.008
Per capita county income 1993	0.025
Average firm size in county	14.304
AAPCC	381.846
Industy: Agri, forest, fisheries	0.010
Industry: Construction	0.046
Industry: Mining and manufacturing	0.164
Industry: Trans, comm, and other utilities	0.055
Industry: Wholesale trade	0.081
Industry: Retail trade	0.200
Industry: Finance/insurance/real estate	0.165
Industry: Professional services	0.230
Industry: Other services	0.048
Colorado	0.085
Vermont	0.224
New York	0.086
Oregon	0.023
Florida	0.363
New Mexico	0.011
North Dakota	0.051
Washington	0.054
Oklahoma	0.011
Minnesota	0.093

Note: Weighted to be representative of establishments in 10 states.

percent of employers offered more than one plan. This proportion increases with establishment size; 32 percent of establishments with 26–50 employees offered choice, compared with 71 percent of establishments with more than 250 employees. Among establishments offering a single plan, 59 percent required an employee contribution

TABLE 2
Prevalence of Benefit Design Overall and by Establishment Size

Study Sample: Private Establishments With > 25 Employees

			Contribution Policy Among Single-Plan Establishments[a]			Contribution Policy Among Establishments Offering Multiple Plans[b]		
Number of Employees	*N*	Proportion Offering a Single Plan[a]	No Employee Contribution	Employee Contribution	Proportion Offering Multiple Plans[a]	No Employee Contribution for Any Plan	Employee Contribution for Some Plans	Employee Contribution for All Plans
26–50	1,971	0.68	0.45	0.55	0.32	0.22	0.29	0.50
51–100	1,320	0.55	0.37	0.63	0.45	0.25	0.36	0.39
101–250	1,136	0.43	0.35	0.65	0.57	0.18	0.36	0.46
> 250	726	0.29	0.28	0.72	0.71	0.13	0.38	0.49
All	5,153	0.57	0.41	0.59	0.43	0.21	0.33	0.46

Note: Weighted to be representative of establishments in 10 states.
[a]Differences by establishment size are statistically significant at $p \leq 0.01$.
[b]Differences by establishment size are not statistically significant.

TABLE 3
Premiums and Proportion Covered by Benefit Design

	N	Average Premium	Average Generosity	Average Excess	Proportion Covered
No choice[a]	3,083	153	150***	0.66	63***
No employee contribution[b]	1,228	154	151	1.73	65*
Employee contribution	1,855	151	150	−0.10	61
Choice	2,070	149	147	−3.17	73
No employee contribution to any plan[b]	405	154	148***	1.38	81***
Employee contribution to some plans[b]	669	145	148***	−9.01*	74***
Employee contribution to all plans[c]	996	150	145	−0.98	69
All	5,153	151	149	−0.98	67

Note: Weighted to be representative of establishments in 10 states.
[a]Statistical significance refers to a comparison between choice and no-choice establishments.
[b]Statistical significance refers to a comparison between the indicated group and establishments requiring an employee contribution to all plans among those offering a given category of choice.
[c]Statistical significance refers to a comparison between each group and establishments requiring an employee contribution to all plans.
*Significant at 10%; **significant at 5%; ***significant at 1%.

to enroll and larger establishments were more likely than smaller establishments to require an employee contribution. Among establishments offering a choice of plans, 21 percent fully subsidized all plans (required no employee contribution for any plan offered), 33 percent required employee contributions for some but not all plans, and 46 percent required an employee contribution for each plan. The differences in the contribution policy by establishment size among establishments offering multiple plans are not statistically significant.

Table 3 presents unadjusted estimates of the relationship between benefit structure and average plan premium, average plan generosity, average plan excess, and rates of coverage. Establishments that offered choice were characterized by lower average premiums ($149 vs. $153); lower average generosity ($147 vs. $150); lower average excess, defined as the proportion of the plan premium attributable to unobserved plan characteristics (−$3.17 vs. $0.66); and a higher proportion of covered workers (0.73 vs. 0.63) than those offering a single plan, although only the differences in plan generosity and the proportion covered are statistically significant. In addition, the difference in average generosity is not economically significant.

Employer contribution policy is also correlated with these outcomes, primarily for establishments offering multiple plans. For establishments offering a single plan, only the four percentage point difference in the proportion of workers covered between those with and without an employee premium contribution is statistically significant ($p \leq 0.10$). Among establishments offering a choice, those requiring no employee premium contributions were characterized by greater average plan generosity ($p \leq 0.01$) and higher rates of coverage ($p \leq 0.01$) than establishments requiring an employee contribution to all plans.[10] This is consistent with employers setting

[10] To check the validity of these characterizations of the contribution policy, I examined the proportion of workers enrolled in the most expensive plan in establishments offering a

premium contributions to steer some employees to less generous plans and to encourage others to decline coverage. Establishments requiring employee contributions to some plans were characterized by greater average generosity ($p \leq 0.01$), lower average excess ($p \leq 0.10$), and a higher proportion of covered workers ($p \leq 0.01$) than establishments requiring an employee contribution to all plans.

After controlling for establishment and market characteristics, the availability of choice is associated with both lower average premiums and higher rates of coverage (Table 4, columns 1 and 4). The lower premiums, however, appear to be driven primarily by plan generosity. In particular, choice is strongly, negatively associated with average plan generosity (column 2) but does not have a statistically significant relationship with average excess (column 3). These results provide no evidence that choice lowers premiums by reducing insurer profit margins. Rather, the decline in average plan generosity, combined with the increase in the proportion of workers covered, is more consistent with the employee preference model of employer behavior.

The control variables in the models generate some notable findings. The results do not provide strong evidence of a negative relationship between establishment size and average premiums. However, the results from the plan-level premium models indicate that the negative relationship between group size and premiums dissipates at an establishment size of 26–50 workers (Table A2), providing an explanation for the lack of evidence of economies of scale at larger establishment sizes in the main analyses. The lower average premiums for establishments with 51–100 employees relative to smaller establishments (Table 4, model 1) appear to be driven primarily by factors affecting the excess or the residual from the premium model (Table 4, model 3). Because the hedonic model of plan premiums includes controls for establishment size (Table A2), the lower average excess for establishments with 51–100 workers relative to smaller establishments cannot be attributed to scale discounts at the plan level. Rather this effect appears to be driven by other unobserved characteristics, such as the mix of plans offered by the employer.

Establishments that were part of a larger firm, as well as those in which benefits were union negotiated, offered more generous plans and covered a higher proportion of workers. The demographic characteristics of workers are associated with average premiums, suggesting that they are controlling for the relationship between demographic characteristics and medical care costs for those enrolled in the plans offered by the employer. Because they are also correlated with the proportion of workers covered, they may also serve as proxies for demand for coverage. The omitted category for these variables is the proportion of workers who are male age 25–54, the most prevalent group within an establishment on average. Finally, county per capita income is strongly associated with premiums and coverage rates, suggesting that patterns of medical care and demand for insurance in the local area affect outcomes for individual firms.

choice of plans but requiring no employee contribution to any plan to the same proportion among establishments offering a choice but adopting the other contribution policies. As expected, this proportion is higher in firms that required no employee contribution (0.46) than in establishments that required a contribution to some (0.33) or all (0.41) plans offered.

TABLE 4
Relationship Between Choice and Premiums and Rates of Coverage

Study Sample: Private Establishments With > 25 Employees Offering Health Insurance				
	(1) Average Single Premium	(2) Average Generosity	(3) Average Excess	(4) Proportion Covered
Offers choice	−5.578*	−4.818***	−1.865	5.702***
	[3.085]	[0.505]	[3.088]	[1.302]
% wage < $10,000	−0.097	0.014	−0.062	−0.305***
	[0.076]	[0.014]	[0.075]	[0.035]
% wage $10,000–$14,000	−0.024	−0.008	0.105	−0.146***
	[0.079]	[0.012]	[0.078]	[0.029]
% wage $14,000–$20,000	−0.165**	−0.002	−0.104	0.017
	[0.068]	[0.015]	[0.067]	[0.027]
Size: 51–100 employees	−6.778**	0.201	−5.661*	0.921
	[3.326]	[0.614]	[3.330]	[1.484]
Size: 101–250 employees	−0.793	0.087	−1.839	−1.465
	[3.891]	[0.626]	[3.911]	[1.682]
Size: > 250 employees	−4.325	0.14	−5.197	0.06
	[5.609]	[0.707]	[5.552]	[1.719]
Part of a larger firm	1.68	3.572***	−0.058	6.187***
	[3.128]	[0.565]	[3.125]	[1.253]
For profit	0.552	−0.528	1.137	0.716
	[5.182]	[0.791]	[5.282]	[1.892]
Health benefits union negotiated	1.746	5.591***	−3.083	4.586**
	[4.353]	[0.858]	[4.356]	[2.294]
% male < 25 years	−0.346***	−0.018	−0.113	−0.187***
	[0.102]	[0.027]	[0.100]	[0.059]
% male > 55	0.222	0.047	−0.295	0.098
	[0.228]	[0.050]	[0.223]	[0.114]
% female < 25 years	−0.044	−0.032	−0.007	−0.306***
	[0.108]	[0.024]	[0.109]	[0.051]
% female 25–54	−0.011	−0.008	−0.119	0.001
	[0.085]	[0.020]	[0.084]	[0.038]
% female > 55	0.480*	−0.095**	0.134	−0.135
	[0.266]	[0.045]	[0.274]	[0.106]
County population 10,000s	−460.619	−46.626	−457.158	181.352
	[514.501]	[112.205]	[514.708]	[202.396]
County per capita income 1,000s	933.623***	191.316***	779.623**	418.561***
	[328.928]	[50.318]	[328.757]	[111.013]
Average firm size in county	−1.141**	−0.238**	−0.972*	0.112
	[0.516]	[0.099]	[0.518]	[0.214]
AAPCC	0.069	−0.007	0.075	−0.018
	[0.048]	[0.009]	[0.048]	[0.017]
Constant	138.467***	151.927***	−25.335*	58.454***
	[15.295]	[3.339]	[15.291]	[6.683]
Observations	5153	5153	5153	5153
R^2	0.09	0.11	0.04	0.33

Note: Robust standard errors in brackets. Models include state and year fixed effects and are estimated using ordinary least squares, applying the sample weights.
*Significant at 10%; **significant at 5%; ***significant at 1%.

TABLE 5
Relationship Between Benefit Design and Premiums and Rates of Coverage

Study Sample: Private Establishments With > 25 Employees Offering Health Insurance				
	(1) Average Single Premium	(2) Average Generosity	(3) Average Excess	(4) Proportion Covered
No choice – no employee contribution	1.71	0.53	1.229	1.753
	[4.632]	[0.752]	[4.603]	[1.676]
Offers choice	−3.64	−5.426***	0.497	3.343**
	[4.000]	[0.714]	[4.059]	[1.629]
Choice ∗ No employee contribution	3.406	2.328***	1.65	9.162***
	[5.320]	[0.835]	[5.207]	[2.171]
Choice ∗ Some employee contribution	−6.447	1.145	−7.311	3.938*
	[4.445]	[0.841]	[4.505]	[2.199]
Observations	5,153	5,153	5,153	5,153
R^2	0.09	0.11	0.04	0.34

Note: Robust standard errors in brackets. Estimates are presented for only a subset of the variables included in the models. All models include the full set of control variables presented in Table 4. Models are estimated using ordinary least squares, applying the sample weights.
*Significant at 10%; **significant at 5%; ***significant at 1%.

Table 5 presents results from models including the interaction between the availability of choice and employer contribution policy. Among establishments offering a single plan, employer contribution policy does not have a statistically significant effect on any of the dependent variables. The coefficients on the choice indicator in the models of average generosity (column 2) and the proportion covered (column 4) indicate that average plan generosity was lower and the proportion of workers covered was higher in multiple-plan establishments requiring employee premium contribution to all plans than in single-plan establishments requiring an employee contribution. These results indicate that even when employees are required to make a premium contribution to enroll in all the potential choices, rates of enrollment are higher when the employer offers a choice of plans than when the employer does not. Because rates of coverage increase while average generosity declines, these results are consistent with choice making coverage attractive to a wider range of workers within a firm.

Among establishments offering multiple plans, differences exist by the contribution policy in average plan generosity and the proportion of employees covered. Average plan generosity was lower in establishments that required employee premium contributions for all plans than in establishments that did not require them for any plans. In addition, the proportion of employees covered was higher both in establishments that did not require employee premium contributions and those that required an employee premium contribution for some but not all plans than in those that required employee contributions for all plans. These results suggest that, among employers offering choice, employee premium contributions steer workers toward less generous

coverage and induce some not to enroll. These results are consistent with employers using contribution policies as a mechanism to steer workers to particular plans.

The results in Table 6 examine differences between small (26–100 employees) and large (> 100 employees) establishments. The main results are similar between the two groups: choice is associated with lower average plan generosity and higher rates of coverage. However, among establishments offering choice, employee contributions are related to plan generosity in large, but not in small, establishments. In addition, only in small firms was the availability of choice associated with higher rates of coverage, even when all plans required an employee premium contribution. In large firms, choice was associated with higher rates of coverage only when the employer offers at least one plan requiring no employee premium contribution.

DISCUSSION

This article finds that the availability of choice is associated with greater enrollment by employees in employer-sponsored plans but less generous coverage on average among covered workers. These results suggest that employers offer a choice of plans to accommodate variation among employees in preferences for coverage. By accommodating diverse preferences, the employer extends coverage to more employees but shifts some into less generous plans.

Heterogeneity in preferences across employees may arise from variation in health risk as well as variation along other dimensions, such as preferences for a particular style of care or set of providers. If health risk is the primary factor, health plan choice can be viewed as a mechanism to establish a separating equilibrium among employees, with the resulting risk segmentation extending coverage to previously uninsured, low-risk workers. If selection of workers across plans relates primarily to preferences for plans or providers, then adverse selection is not at play.

It is not possible to distinguish between these two explanations with the data available for this analysis. Nevertheless, the results of a study by Ma and Browne (2005) strengthen the potential interpretation of the findings as evidence of welfare improving risk-based selection associated with choice. These authors find that the availability of choice is associated with a lower insurance unit price, defined as the expected benefits divided by the premium, an effect driven primarily by differences in expected benefits, rather than differences in premiums. They also provide direct evidence that reductions in the unit price of insurance associated with a choice of plans are greater for low-risk than for high-risk employees. Employers may offer choice to induce low risks to self-select into less generous levels of coverage; this separating equilibrium may represent an efficiency improvement over pooling workers of heterogeneous risk.

My results provide little evidence that the availability of choice within a firm stimulates competition that reduces insurer profit margins or other components of premiums that this analysis could not observe. Although choice is associated with lower average plan premiums, the effect appears to be driven primarily by a reduction in the average generosity of the coverage. Two caveats should be entered. First, the sample, while representative of the establishments in the 10 study states, comprised primarily smaller employers. Larger firms may indeed benefit in the form of lower premiums

TABLE 6
Relationship Between Benefit Design and Premiums and Rates of Coverage by Establishment Size

Study Sample: Private Establishments With > 25 Employees Offering Health Insurance

	Small Establishments (26–100 Employees)				Large Establishments (> 100 Employees)			
	(1) Average Single Premium	(2) Average Generosity	(3) Average Price	(4) Proportion Covered	(5) Average Single Premium	(6) Average Generosity	(7) Average Price	(8) Proportion Covered
No Choice – No emp cont	1.665	0.319	1.381	1.864	−1.26	1.742	−2.863	1.907
	[5.262]	[0.852]	[5.214]	[1.873]	[8.203]	[1.248]	[8.253]	[3.612]
Offers choice	−5.554	−4.781***	−1.954	4.073**	1.356	−7.183***	7.029	1.001
	[4.597]	[0.868]	[4.680]	[1.970]	[7.737]	[0.989]	[7.705]	[2.487]
Choice – No emp cont	7.111	1.636	5.874	8.338***	−2.661	3.737***	−5.413	9.609***
	[6.752]	[1.100]	[6.554]	[2.623]	[7.593]	[1.121]	[7.548]	[3.651]
Choice – Some emp cont	−5.066	0.206	−5.213	2.375	−8.202	2.724***	−10.3	6.163**
	[4.825]	[1.187]	[5.079]	[3.083]	[8.227]	[1.006]	[8.075]	[2.693]
Observations	3,291	3,291	3,291	3,291	1,862	1,862	1,862	1,862
R^2	0.11	0.1	0.05	0.36	0.09	0.19	0.05	0.3

Note: Robust standard errors in brackets. Estimates are presented for only a subset of the variables included in the models. All models include the full set of control variables presented in Table 4. Models are estimates using ordinary least squares, applying the sample weights.
*Significant at 10%; **significant at 5%; ***significant at 1%.

due to lower insurer profit margins from greater within-firm competition. This is consistent with the findings of Vistnes, Cooper, and Vistnes (2001) who examined employers for whom managed competition is most likely to be feasible by restricting the study sample to a relatively small set of large, fully insured firms. They found that choice was associated with lower premiums only for firms that offered three or more fully insured plans and adopted a fixed employer contribution—approximately 5 percent of firms in their selected sample. More generally, however, researchers have found that the managed competition approach to benefit design has not been widely adopted by employers (Levy, 1997; Long and Marquis, 1998; Vistnes, Cooper, and Vistnes, 2001).

Another important caveat, particularly with respect to the competitive effects of choice, is that the availability of choice may be endogenous in these models. For example, employers offering a choice of plans may be those for whom premiums were unusually high. In this case, the lack of a relationship between choice and the premium "excess," which includes insurer profit margins, may be due to the competition associated with choice bringing unusually high premiums in line with those of other firms. This may have been particularly important during the period of the survey, which was a time of rapid health care inflation. The general concern is that because choice is not randomly assigned to firms, those that choose to offer multiple plans may differ from those that do not in unobservable ways that are correlated with the outcomes I examined. For example, employers may offer more plans in response to low enrollment or to compensate for plan stinginess. A potential way to address this issue would be to identify an instrument that affects whether an employer offers choice but is not related to these unobservable firm characteristics.

The findings also indicate that it is important to consider employer contribution policy when evaluating the effects of offering multiple plans. Among employers offering choice, those fully contributing to all plans cover the highest proportion of workers and provide the most generous coverage. This strategy would be consistent with the employee preference model of employer behavior if employees in these firms have preferences for relatively generous coverage and their choices among the plans offered are relatively price inelastic. Adopting employee premium contributions appears to steer some workers to less generous coverage, and requiring employee contributions to all plans offered induces some workers to decline coverage from their employer.

The findings also indicate that choice is more strongly associated with rates of coverage for small than for large firms. While offering choice was associated with higher rates of coverage for large establishments only when the employer offered at least one plan not requiring an employee contribution, for small establishments, offering choice was associated with higher rates of coverage even when all plans required an employee premium contribution. A potential explanation for this is that because offering multiple plans is more costly for small than large employers due to the associated fixed costs, small employers who offer multiple plans are likely to be those for whom the benefits are particularly high. The estimates from the empirical model are based on the marginal firm, and the benefits of choice must be higher for the marginal small than for the marginal large firm in order to offset the higher costs.

The study data do not allow a complete evaluation of the welfare effects of choice, particularly considering the shift to either less generous or no coverage from the employer. The implications for consumer welfare depend upon how consumers valued the change in benefits associated with the availability of multiple plans as well as the extent to which they were compensated for these changes. For example, reductions in plan generosity, such as the switch from an FFS plan to an HMO or an increase in cost sharing, may represent either a reduction in highly valued benefits or a movement away from inefficiently high levels of coverage. Similarly, the welfare implications of reducing rates of coverage within a firm depend both on the value workers place on coverage and the extent to which those who decline coverage from their own employer access insurance through another source such as a public program or an alternative employer. Evidence suggests that employees take the availability of these alternative sources into account when making enrollment decisions (Polsky et al., 2005). The net effect for individual workers also depends upon whether they were compensated for reductions in the generosity of health benefits with corresponding increases in cash wages or other fringe benefits.

In summary, the results of the article are consistent with employers offering a choice of health plans in response to variation among employees in their preferences for health insurance. During the early 1990s, employers extended coverage to a greater proportion of workers but shifted some into less generous plans by accommodating employee preferences through plan choice.

APPENDIX

TABLE A1
Descriptive Statistics for Variables Used in Premium Models

Number of Observations: 21,499

Variable	Mean	Std. Dev.	Min.	Max.
Monthly Premium for Single Coverage	149.621	67.648	40	1,000
HMO Plan	0.204	0.403	0	1
PPO Plan	0.304	0.460	0	1
POS Plan	0.052	0.223	0	1
Choice	0.465	0.499	0	1
HMO * Choice	0.143	0.350	0	1
PPO * Choice	0.128	0.334	0	1
POS * Choice	0.025	0.155	0	1
Deductible	243.299	349.218	0	5,000
Coinsurance Rate	15.895	10.110	0	100
Stop Loss	0.770	0.421	0	1
Self-Insured	0.257	0.437	0	1
Prenatal Benefits	0.932	0.253	0	1
Maternity Benefits	0.939	0.239	0	1
Prescription Drug Benefits	0.889	0.314	0	1

(continued)

TABLE A1
(Continued)

Number of Observations: 21,499

Variable	Mean	Std. Dev.	Min.	Max.
Mental health benefits	0.930	0.255	0	1
Alcohol and substance abuse benefits	0.905	0.293	0	1
Dental benefits	0.300	0.458	0	1
% male < 25 years	9.552	13.846	0	100
% male 25–54 years	39.986	26.268	0	100
% male > 55	6.260	10.259	0	100
% female < 25 years	8.637	13.276	0	100
% female 25–54 years	31.525	24.326	0	100
% female > 55 years	4.082	8.355	0	100
% wage < $10,000	10.052	20.810	0	100
% wage $10,000–$14,000	19.045	23.706	0	100
% wage $14,000–$20,000	23.726	22.813	0	100
% wage > $20,000	47.211	34.272	0	100
Size: 1–10 employees	0.332	0.471	0	1
Size: 11–25 employees	0.243	0.429	0	1
Size: 26–50 employees	0.133	0.340	0	1
Size: 51–100 employees	0.102	0.303	0	1
Size : 101–250 employees	0.097	0.296	0	1
Size: > 250 employees	0.093	0.290	0	1
Part of a larger firm	0.499	0.500	0	1
Industy : Agri, forest, fisheries	0.018	0.133	0	1
Industry: Construction	0.053	0.224	0	1
Industry: Mining and manufacturing	0.155	0.362	0	1
Industry: Trans, command, other utilities	0.057	0.233	0	1
Industry: Wholesale trade	0.093	0.290	0	1
Industry: Retail trade	0.199	0.399	0	1
Industry: Finance/insurance/ real estate	0.182	0.386	0	1
Industry: Professional services	0.205	0.404	0	1
Industry: Other services	0.038	0.190	0	1
Colorado	0.084	0.278	0	1
Vermont	0.095	0.293	0	1
New York	0.095	0.294	0	1
Oregon	0.091	0.287	0	1
Florida	0.141	0.348	0	1
New Mexico	0.081	0.274	0	1
North Dakota	0.087	0.282	0	1
Washington	0.117	0.321	0	1
Oklahoma	0.090	0.286	0	1
Minnesota	0.119	0.323	0	1

TABLE A2
Models of Plan Premiums

Dependent Variable: Monthly Premium for Single Coverage		
	Plan Type Controls	Plan Type Controls Interacted With Indicator of Choice
HMO plan	−18.905***	−24.840***
	[1.548]	[2.180]
PPO plan	−6.933***	−9.495***
	[1.125]	[1.434]
POS plan	−14.472***	−14.144***
	[2.205]	[2.905]
Choice		−1.327
		[1.472]
HMO ∗ Choice		9.823***
		[2.618]
PPO ∗ Choice		6.337***
		[2.160]
POS ∗ Choice		−0.016
		[4.177]
Deductible	−0.013***	−0.013***
	[0.002]	[0.002]
Deductible^2	0.000***	0.000***
	[0.000]	[0.000]
Coinsurance rate	−0.212***	−0.203***
	[0.046]	[0.046]
Stop loss	2.702**	3.007**
	[1.321]	[1.325]
Self-insured	0.026	0.07
	[1.180]	[1.193]
Prenatal benefits	6.772**	6.796**
	[2.789]	[2.788]
Maternity benefits	−0.563	−0.469
	[2.986]	[2.986]
Prescription drug benefits	6.761***	6.629***
	[1.534]	[1.534]
Mental health benefits	2.345	2.38
	[2.059]	[2.059]
Alcohol and substance abuse benefits	3.868**	3.756**
	[1.769]	[1.769]
Dental benefits	9.658***	9.846***
	[1.011]	[1.012]
% male < 25 years	−0.223***	−0.222***
	[0.038]	[0.038]
% male > 55	0.463***	0.461***
	[0.048]	[0.048]
% female < 25 years	−0.013	−0.012
	[0.037]	[0.037]
% female 25–54	0.110***	0.108***
	[0.024]	[0.024]

(continued)

TABLE A2
(Continued)

Dependent Variable: Monthly Premium for Single Coverage		
	Plan Type Controls	Plan Type Controls Interacted With Indicator of Choice
% female > 55	0.427***	0.424***
	[0.056]	[0.056]
% wage < $10,000	−0.046*	−0.044*
	[0.025]	[0.025]
% wage $10,000–$14,000	−0.122***	−0.120***
	[0.020]	[0.020]
% wage $14,000–$20,000	−0.063***	−0.061***
	[0.021]	[0.021]
Size: 1–10 employees	9.247***	9.989***
	[1.673]	[1.695]
Size: 11–25 employees	6.399***	6.951***
	[1.690]	[1.700]
Size: 26–50 employees	1.355	1.646
	[1.866]	[1.868]
Size: 101–250 employees	2.204	1.893
	[2.016]	[2.016]
Size: > 250 employees	1.822	1.17
	[2.089]	[2.096]
Part of a larger firm	−1.426	−1.922*
	[1.009]	[1.026]
Constant	133.013***	133.035***
	[4.531]	[4.550]
Observations	21,499	21,499
R^2	0.06	0.07

Note: Standard errors in brackets. Models include industry and state fixed effects.
*Significant at 10%; **significant at 5%; ***;significant at 1%.

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