Consumer Driven Health Plans: Employer Take-Up & Average Contributions

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Abstract

In an era of rising health care costs, employers seek cost reduction strategies, many relying on consumer driven health plans (CDHP). Utilizing data from a nationally representative survey of firms, this paper explores employer experiences with CDHP in two areas. First, it describes those firms most likely to offer CDHP. Second, this paper estimates potential cost reductions from an emphasis on CDHP. Results indicate large, non-union employers offer CDHP most often. Further, an emphasis on CDHP plans is not associated with a reduction in average contributions to insurance policies.

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1 Introduction

Employer financing of health benefits creates a unique relationship between employers and employees. When employers guarantee defined benefits, rising health care costs impose an upward pressure on total employee compensation. Thus, the potential benefits of cost-sharing, coupled with preferential treatment by the tax code, bring consumer driven health plans (CDHP) sharply into focus for firms seeking relief from expensive insurance premiums. This paper analyzes employer experiences with CDHP, describing firms which offer CDHP and estimating whether offering CDHP influences expenditures on health benefits.

Health care expenditures in the U.S., measured as a proportion of GDP, rapidly increased throughout the previous decade. The pace of this growth, which peaked in 2002 at a rate of 9.1%, slowed through 2005 and 2006. However, projections indicate health care spending will increase at a rate faster than GDP growth for the foreseeable future, potentially accounting for 20% of GDP by 2015 (Borger et al., 2006).

Rising aggregate expenditures translate into higher insurance premiums, raising concerns over equity and access to care. High insurance premiums discourage employers from expanding coverage, increasing the proportion of Americans lacking health insurance (Gabel et al., 2004), and encouraging employers to seek alternative methods of financing health benefits (Gabel et al., 2003). In this context, consumer directed health plans could quickly become a central part of the American health finance system.

Understanding the implications CDHP expansion could exact on employers

merits attention. Initially, by influencing the mix of goods included in compensation packages, such expansion would alter the nature of the employer-employee relationship. Second, because many employers bemoan rising health care costs as an impediment to international competitiveness, CDHP expansion could potentially impact the strength of the US economy as a whole (Reinhardt et al., 2004). Finally, employers prioritize the health of their workforce because health status impacts productivity in the workplace. Short term absenteeism represents as much as 20% of all health related costs (Goetzel et al., 2003).

This paper focuses on employers who offer consumer driven health plans. Utilizing data from the Kaiser-HRET Employer Health Benefits Annual Survey, the present analysis describes the type of firm most likely to adopt CDHP as a cost containment mechanism. Results indicate small firms offer CDHP less often than medium and large firms. Further, this paper attempts to gauge the effectiveness of CDHP plans regarding controlling expenditures on health care relative to traditional insurance offerings. Results suggest CDHP failed to reign in expenditures on health benefits.

2 CDHP History & Experience

Advocates of cost sharing, beginning with Feldstein (1973), blame the presence of third party payers for increasing health care costs. By shielding consumers from the marginal cost of treatment, conventional insurance policies result in excess demand. Consumer driven health plans rectify this problem by increasing the marginal cost of service faced by consumers. Advocates of CDHP argue

thrifty consumers will impose discipline on the health care market by demanding information regarding price and quality. In this view, competition on price and quality holds the key to improving health outcomes and access to care while still reducing prices (see Cannon (2006), Buntin et al. (2005), and Hughes-Cromwick et al. (2007), among others).

The original incarnation of the consumer directed health ideology, the Archer Medical Savings Account (MSA), failed to attract significant enrollment (Davis et al., 2005). The Medicare Modernization Act of 2003 rolled existing MSAs into Health Savings Accounts (HSAs). The act, among other goals, put forth the HSA, coupled with a high deductible health plan (HDHP), as an alternative to traditional insurance models. Thus, the Medicare Modernization Act represents the boldest move, to date, toward integrating CDHP into the health finance system.

Proponents of HSAs isolated small businesses as fertile territory for the growth of CDHP. Members of the Bush administration, among others, suggested HSAs as a low cost alternative to conventional health care for small business owners, potentially extending health insurance to a class of previously neglected workers. Early evidence indicated strength in this area. As of 2004, among employers purchasing small group HSA coverage 16% covered previously uninsured individuals, a further 30% of HSA policies sold directly to individuals covered previously uninsured customers (Chovan and Yoo, 2004).

However, the critical barrier to widespread expansion of insurance coverage remains the decision to offer insurance on the part of small businesses. Small

businesses base insurance offering decisions on a number of factors beyond cost. Factors such as worker demand, labor market competition and labor force composition generally take precedence over price in such determinations (Hadley and Reschovsky, 2002). In fact, probability estimations by Gates et al. (2008), based on an earlier iteration of the Kaiser-HRET survey, confirm that small firms do not offer HSAs at higher rates than other firms. Further, Gates et al. (2008) report a non-linear relationship between firm size and CDHP offering behavior, whereby medium sized firms (200-499 employees) offer CDHP at lower rates than either smaller or larger firms.

Much of the literature to date focuses on the consumer-level enrollment decision (for example, Cardon and Showalter (2001)) and the potential system-wide impacts of a paradigmatic shift toward CDHP (for example, Davis (2004)). Thus, the marginal impact of CDHP adoption on employer health benefits spending remains an open question.

Many employers report favorable experience with CDHP (Prince, 2003). However, anecdotal reports fail to describe the broader firm-level experience with health savings accounts. Nor do they incorporate broader macroeconomic influences that impact costs and expenditures (Buntin et al., 2006).

Further, achieving a reduction in firm expenditures on health benefits requires that CDHPs significantly increase cost sharing, explicitly shifting the financial burden onto employees. Thus, CDHPs increase cost sharing only when they replace a more generous insurance type. Many conventional (non-CDHP) insurance plans already incorporate significant cost sharing mechanisms. In

fact, for most high-spending consumers enrollment in an HSA/HDHP combination would actually represent a *decrease* in cost sharing, rather than an increase (Remler and Glied, 2006).

This paper adds to the current literature in two areas. First, this paper seeks to replicate and verify the results presented in Gates et al. (2008) by estimating the relationship between firm size and CDHP offering. Second, this paper attempts to ascertain whether or not firms that emphasize CDHP experience cost reductions.

3 Data & Empirical Methodology

3.1 Data

The present analysis utilizes data from the 2007 Kaiser Health Research Education Trust Survey on Employee Benefits. The Kaiser-HRET survey, conducted from January to May 2007, describes the almost 2000 firms that completed the entire survey, representing an overall response rate of 49%(Claxton et al., 2007).

The survey describes health benefits in depth, including plans offered, plan design, cost and annual firm contributions. Regarding those firms which do not offer consumer directed plans, the survey measures employer attitudes toward offering these plans in the future.

Additionally, the survey includes descriptive data on the firm and its employees, including firm size, union presence, et cetera. The Kaiser-HRET survey provides a significant amount of depth on each of these areas, making it uniquely suited to provide insight into the questions at hand.

3.2 Firm Offering Behavior

The present analysis first examines the influence firm characteristics and workforce demographics exert on CDHP offering behavior. The analysis considers two estimations based on the equation;

$$y_f = c_f + \beta_1 \text{size}'_f + \beta_2 \text{industry}'_f + \beta_3 \text{region}'_f + \beta_4 \text{workforce}'_f + \varepsilon_f. \quad (1)$$

The first of these estimations isolates firms that already offer an HSA and/or an HRA. Further, the Kaiser-HRET survey asks employers about their plans to offer CDHP. The second equation estimates the probability of a firm responding it was "very likely" or "somewhat likely" to offer CDHP.

Model specifications loosely follow those used by Gates et al. (2008). By utilizing the 2007 iteration of the Kaiser-HRET survey, the results presented below should compliment and update Gates et al. (2008), who only had access to the 2003-2006 versions of the survey. Controls include firm size[1], region and workforce demographics.

However, Gates et al. (2008) include continuous measurements of percentage of low income and part time workers, assuming a linear relationship between workforce demographics and offering behavior. The estimations above utilize a set of dichotomous indicators, isolating workforces with at least 35% low income workers, at least 35% high income workers and at least 35% full time workers[2]. These binary controls focus the estimations on differences between categories of

[1]The probability estimates measure firm size using six dichotomous categories, while the Tobit estimations later divide firm size into three categories.

[2]Marginal effects associated with a one-percent change in continuous measurements of income and hours worked were qualitatively similar, but the scale of the effect hinders interpretation.

firms, rather than the marginal effect associated with small changes in workforce composition.

The calculation of marginal effects simplifies the interpretation of probit coefficients. Marginal effect estimations generally consider each variable separately, holding all other variables at their means. However, similar to the methodology employed by Boonen et al. (2008), the marginal effects presented in table 2 result from averaging observation level marginal effects. Marginal effects are calculated as derivatives for continuous variables, and as discrete changes for binary variables. Standard errors are calculated a via Monte-Carlo simulation with 500 replications.

3.3 CDHP & Average Contributions

Second, this paper estimates the influence CDHP offering exerts on firm contributions to health benefits. These equations estimate average firm contributions, per policy, separately for family and individual policies. The presence of missing and zero values for average contributions requires censoring dependent variables at 0, using Tobit estimations.

Firm-specific controls (represented by X'_f, below) include firm size, industry, and region. Further, these estimations include the percentage of employees covered by insurance and the percentage by which cost increased over last year, attempting to control for influences on price exogenous to benefit design.

Two separate model designs estimate the influence of CDHP offering on

average contributions. First, the equation

$$y_f = c_f + \beta_1 \mathrm{X}'_f + \beta_2 \mathrm{plan}'_{pf} + \varepsilon_f \tag{2}$$

utilizes a series of binary variables, represented by the vector plan'_f, indicating whether firm f offers a given plan type, including HMO, PPO, HRA, and HSA plans. The reference group is conventional insurance policies (POS). Among the variables represented by the vector X'_f, these estimations control for the number of insurance varieties, purging from the insurance variables any effect associated with a diverse portfolio of options.

Second, The Kaiser-HRET survey includes data for overall average contributions, but also includes average contributions to each type of policy. Contributions to each type of plan p are included continuously, as proportions of total spending[3] in the equation

$$y_f = c_f + \beta_1 \mathrm{X}'_f + \beta_2 \frac{\mathrm{contribution}_{pf}}{\mathrm{total}_f} + \varepsilon_f. \tag{3}$$

These proportional variables measure the emphasis firms place on each type of plan, distinguishing firms who simply experiment with CDHP from those who heavily rely on it.

If, as suggested by Gabel et al. (2002), firms utilize CDHP introduction to decrease health care expenditures, firm specific heterogeneity could bias estimates. Fully disambiguating the relationship between benefit design and average contributions requires purging this heterogeneity. A variety of estimation techniques, including an instrumental variable estimation, failed to produce significant re-

[3]For ease of interpretation, these variables are also multiplied by 100, such that these variables are measured in whole units instead of hundredths.

sults. The specifications above correct for this problem via the inclusion of a host of controls. Controlling for firm size, labor force characteristics (especially income), and percent cost increases should capture variation associated only with high spending.

4 Results

Overall, results challenge the expectations that many have for CDHP financing vehicles. HRAs and HSAs remain unpopular, especially among small firms. Additionally, although firms introduce CDHP as a cost containment mechanism, such behavior lacks an association with lower average spending. Tables below present sample means and results from the estimations described in the preceding section.

4.1 Firm Offering Behavior

Results of CDHP firm offering behavior estimations appear in table 2. Control variables return unsurprising results. Firms with low income workforces, at least 35% of employees earning less than $21,000, are 5.6 percentage points less likely to offer either an HSA or an HRA, and 5.2 percentage points less likely to indicate a willingness to offer CDHP in the future. Some industries display an affection for CDHP. For example, financial firms are 15 percentage points more likely to offer CDHP, and 16 percentage points more likely to indicate a willingness to offer CDHP in the future.

The most striking result from the probability estimations regard the relationship between firm size and CDHP offering. HRAs and HSAs remain rare,

offered by only 10% and 5% of firms[4], but these policies become more rare as firm size decreases.

Firms with 50 to 199 employees have the lowest statistically significant probability of offering CDHP relative to the reference group (firms with 3 to 24 employees)[5]. The probability steadily increases, to 12 percentage points for firms with 1000 to 4999 employees. The largest category of firms, those with more than 5000 employees, offers CDHP at a significantly higher rate than any other group. Despite these differences in actual offering behavior, the rate at which benefit managers report a willingness to offer CDHP in the future seems unrelated to firm size.

4.2 CDHP & Average Contributions

Estimations of average contributions to family and single insurance policies provide robust results, presented in table 3. However, the two specifications of these models produce parameter estimates of differing magnitudes. As indicated by their corresponding σ (sigma) statistics, the second specification returns slightly higher standard errors than the first. Also, Tobit estimations occur in two steps, limiting the interpretation of the coefficients presented and discussed below to the uncensored portion of the dependent variable (Roncek, 1992) [6]. Meaning, results apply only to firms with nonzero average contributions to insurance policies.

As suggested by Hadley and Reschovsky (2002), workforce characteristics

[4]For sample means, see table 1.

[5]The smallest category of firms, 25 to 49 employees, differs insignificantly from the reference

[6]However, in this case the Tobit estimator censors a small portion of the overall data set. OLS results, not presented, based on the same specifications return similar estimations.

exert a strong influence on health care expenditures. Union presence increases average contributions by at least $1600 for family plans and at least $150 for single plans. Results also quantify the differential between health benefits for high income and low income workers. Firms with high concentrations of low income workers contribute as much as $963 less on average to family plans. Firms with similarly high concentrations of high income workers contribute an average of $1400 more according to the first specification, and $2300 according to the second. Finally, firms in the Northeast spend significantly more than firms in other regions. The two specifications return parameters of similar magnitude, indicating firms located in the Northeast contribute $3100 more per family policy and at least $350 more per single policy.

The variables of interest in these models measure the influence insurance offerings exert on average contributions. Traditional point of service plans serve as the reference group in each of these estimations. The first specification reports an association between CDHP offering and an increased average contributions to both family and single plans, $10,000 and $4,000 respectively. Similarly, firms which offer an HRA contribute $8,400 more to family plans and $3,500 more to single plans.

The second specification tells a similar story. The coefficients associated with the proportional variables indicate firms which dedicate 1% of total spending on HSAs contribute $422 more per family plan and $165 more per single plan. This estimation implies that a firm which dedicates 10% of total spending to an HSA plan would spend, on average, $4,220 more.

5 Discussion

The results presented above give pause, especially in light of the assertions made by CDHP advocates. Employer experiences with CDHP indicate expansion of coverage associated with CDHP may be limited. Small firms offer CDHP programs significantly less often than other firms. The estimations also indicate firm attitudes regarding CDHP are unrelated to firm size. These findings question the ability of CDHP plans to extend coverage to traditionally underserved populations.

Advocates argue HSAs, due to their low cost, could expand coverage among low income workers (Baicker et al., 2007). However, the lack of CDHP offering on the part of employers hinders the effectiveness of HSAs in this regard. Each of the probability estimates describe firms with low income workforces as substantially less likely to engage in CDHP offering behavior, echoing the finding reported by Parente et al. (2004) that HSAs primarily serve wealthy individuals.

The probability estimates also sketch the potential for CDHP growth. The third probability estimation isolates firms in financial, wholesale and transportation industries as most likely to offer CDHP in the future. Despite the variety of controls included in the probability estimations, industry-wide preferences for CDHP adoption remain unexplained. Taken together, however, the estimations suggest stability within CDHP offering trends. Expected growth will occur in the same sectors, among firms similar to those who currently offer CDHP.

Given the firm specific heterogeneity discussed above, interpreting the average contribution estimation results requires a degree of agnosticism regarding

causality. Results clearly indicate an association between CDHP offering and average contributions by which firms offering CDHP contribute inordinately more per policy than other firms. Results support at least two interpretations of this association. First, the association could simply imply an association between high firm contributions and a desire for cost containment.

Second, CDHP policies could operate in a way that advocates did not foresee, serving as a compliment to traditional insurance policies, rather than a substitute. Tax-preferential treatment of contributions to medical savings vehicles could make them an efficient way for employers to increase total compensation. CDHP policies offered strictly as an addition to traditional insurance options must increase average contributions. The results associated with workforce characteristics buttress this hypothesis.

Although informative, the results above highlight the need for a more thorough understanding of the relationship between benefit package design and average contributions. The method by which consumers finance health care purchases heavily exerts system wide effects on competitive and strategic interactions between providers. In this context, the role employers play as a de facto financial intermediary between insurance providers and employees makes firms a key component of systematic reform.

By investigating the employer experience, this paper attempts to gauge the success of the consumer driven health plan movement. In sum, results suggest skepticism. The lack of CDHP adoption by small firms, coupled with an association between high spending and CDHP offering does not seem to function as

an effective cost control mechanism. Consumer directed health plans may hold unrealized potential. However, as currently implemented HSAs and HRAs do not represent revolutionary approaches to cost containment.

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Table 1: Sample Means
N = 1839

		Min	Max	Mean	Std. Dev
Firm Size	3 to 24	0	1	0.116	0.320
(6 Categories)	25 to 49	0	1	0.074	0.263
	50 to 199	0	1	0.144	0.351
	200 to 999	0	1	0.245	0.430
	1000 to 4999	0	1	0.247	0.431
	5000 and above	0	1	0.175	0.380
Industry	Service	0	1	0.368	0.482
	Mining	0	1	0.009	0.096
	Construction	0	1	0.038	0.190
	Transportation / Utility	0	1	0.049	0.216
	Wholesale	0	1	0.055	0.229
	Financial	0	1	0.074	0.263
	Government	0	1	0.368	0.482
	Health Care	0	1	0.091	0.287
	Retail	0	1	0.063	0.242
	Manufacturing	0	1	0.139	0.346
Region	South	0	1	0.322	0.468
	Northeast	0	1	0.211	0.408
	Midwest	0	1	0.290	0.454
	West	0	1	0.177	0.382
Workforce Description	Urban	0	1	0.817	0.387
	Union	0	1	0.326	0.469
	Full Time	0	1	0.056	0.230
	Low Income	0	1	0.151	0.358
	High Income	0	1	0.382	0.486
	% Covered	0.04	100	0.667	0.240
Cost Increases	Conventional	0	50	0.485	2.908
	HMO	0	81	2.793	6.036
	PPO	0	58	4.934	6.962
	POS	0	48	1.719	4.752
Plans Offered	Number of Choices	1	5	1.522	0.711
	HSA	0	1	0.049	0.217
	HRA	0	1	0.096	0.295
	HMO	0	1	0.325	0.468
	PPO	0	1	0.744	0.437
Proportion of Spending by Type (Family)	HMO	0	100	16.518	27.538
	PPO	0	100	55.119	41.080
	HRA	0	50	1.678	7.969
	HSA	0	50	2.944	9.688
Proportion of Spending by Type (Single)	HMO	0	100	16.787	27.726
	PPO	0	100	55.622	40.915
	HRA	0	50	1.804	8.306
	HSA	0	50	3.002	9.798

Table 2: Probability Estimates (Marginal Effects):
Firm CDHP Offering Behavior

		Offers HRA and/or HSA		Likely to Adopt CDHP	
	Variable	Marginal Effect	Std Err	Marginal Effect	Std Err
Firm Size (No. of Employees)	25 to 49	0.0778	0.0498	−0.0196	0.0435
	50 to 199	0.1056	0.0435**	0.0322	0.0396
	200 to 999	0.0847	0.0382**	0.0439	0.0363
	1000 to 4999	0.1215	0.0424**	0.0554	0.0398
	5000 and above	0.1916	0.0470**	0.0620	0.0410
Industry	Mining	0.1651	0.1313	0.0689	0.1193
	Construction	0.0851	0.0611	0.0382	0.0605
	Transportation / Utility	0.0902	0.0594	0.1320	0.0627**
	Wholesale	0.1225	0.0584**	0.1338	0.0592**
	Financial	0.1587	0.0593**	0.1609	0.0591**
	Government	0.0570	0.0349	0.0118	0.0369
	Health Care	0.0430	0.0458	0.0554	0.0493
	Retail	0.0717	0.0518	0.1332	0.0547**
	Manufacturing	0.0880	0.0446**	0.0706	0.0448
Region	Northeast	−0.0208	0.0232	−0.0048	0.0284
	Midwest	0.0373	0.0220*	0.0326	0.0261
	West	0.0022	0.0233	−0.0245	0.0268
Workforce Description	Urban	−0.0150	0.0236	−0.0222	0.0279
	Union Presence	−0.0322	0.0179*	−0.0570	0.0222**
	Full Time	−0.0567	0.0303*	0.0004	0.0429
	Low Income	−0.0560	0.0197**	−0.0526	0.0262**
	High Income	0.0083	0.0175	0.0263	0.0220

Significance levels, (*) = 10% (**) = 5%

Table 3: Tobit Estimations (Censored at Zero):
Contributions to Insurance Policies

		Family Plan		Single Plan		Family Plan		Single Plan	
	Variable	Estimate	Std Err	Estimate	Std Err	Estimate	Std Err	Estimate	Std Err
	Intercept	-4855.365	822.936 **	-758.524	298.102 **	2206.835	394.750 **	2354.110	397.665 **
Firm Size	Small Firm (3 to 199)	-1806.600	393.692 **	520.554	142.748 **	-5376.417	450.246 **	-1022.556	178.154 **
	Medium Firm (200 to 999)	464.90	377.798	694.11	137.197 **	−1359.17	451.067 **	−72.13	177.210
Industry	Industrial	−588.60	382.741	−1172.90	138.731 **	−715.73	474.945	−1234.75	181.285 **
	Sales	−758.22	407.677	−934.48	147.753 **	−761.98	505.311	−975.99	193.091 **
	Health & Government	1480.00	405.025 **	332.39	146.860 *	830.80	500.152	76.35	191.795
Region	Northeast	3136.62	411.823 **	349.40	149.303 *	3196.90	507.039 **	398.86	195.563 *
	Midwest	1358.25	376.323 **	146.73	136.371	424.09	459.436	−198.66	177.773
	West	637.36	432.598	286.58	156.807	22.85	530.625	42.38	204.952
Workforce Description	Urban	389.19	397.164	−100.83	143.722	1215.35	467.017 **	239.79	187.517
	Union presence	1681.62	342.982 **	779.81	124.447 **	2031.16	424.345 **	922.32	162.464 **
	Low Income	−963.83	422.752 *	−313.94	153.095 *	−1677.28	501.853 **	−620.43	200.373 **
	High Income	1474.70	317.155 **	310.06	115.016 **	2319.74	392.521 **	667.64	149.854 **
	Percent Full Time	1110.69	675.706	151.25	244.871	910.72	724.591	119.38	320.292
	Percent Employees Covered	3670.26	683.497 **	1159.52	247.537 **	5594.99	551.027 **	1974.63	322.550 **
Cost Increases	Conventional	−275.64	55.006 **	−148.69	19.917 **	−56.65	62.771	−54.02	23.961 *
	HMO	−14.22	33.042	−13.25	11.990	202.09	39.162 **	78.78	14.880 **
	PPO	34.90	23.576	15.44	8.555	150.06	28.339 **	62.28	10.855 **
	POS	271.29	37.274 **	89.75	13.507 **	482.39	43.068 **	176.77	17.100 **
Insurance Offerings	Number of Plan Choices	5534.74	418.603 **	2401.98	151.658 **				
	HSA	10760.62	741.254 **	3999.82	268.355 **				
	HRA	8427.96	625.925 **	3484.08	226.847 **				
	HMO	3548.30	593.208 **	1314.37	214.820 **				
	PPO	3394.65	491.954 **	1111.32	177.787 **				
Proportion of	HMO					77.163	9.611 **		
Spending Dedicated to	PPO					26.681	6.414 **		
Each Type of Policy	HRA					351.987	24.254 **		
(Family)	HSA					422.337	20.526 **		
Proportion of	HMO							27.828	3.732 **
Spending Dedicated to	PPO							7.290	2.634 **
Each Type of Policy	HRA							122.975	9.131 **
(Single)	HSA							165.689	8.042 **
	σ	6072.420	102.423 **	2205.849	36.877 **	7539.920	126.977 **	2884.811	48.225 **

Significance levels, (*) = 10% (**) = 5%