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PAYING FOR HEALTH INSURANCE: THE TRADEOFF BETWEEN COMPETITION AND ADVERSE SELECTION

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ABSTRACT

This paper uses data on health insurance choices by employees of Harvard University to examine the effect of alternative pricing rules on market equilibrium. In the mid-1990s, Harvard moved from a system of subsidizing more expensive insurance to a system of contributing an equal amount to each plan. We estimate a substantial demand response to the policy change, with a short-run elasticity of about -2. The reform also induced substantial adverse selection. Because of this selection, the long-run demand response is three times the short-run response. Price variation induced by adverse selection is inefficient; we estimate the magnitude of the welfare loss from adverse selection at 2 percent of baseline health spending. Finally, as insurance choice was made more competitive, premiums to Harvard fell relative to premiums in the Boston area by nearly 10 percent. This savings was large enough to compensate for the inefficiency induced by adverse selection, so that reform overall was welfare enhancing.

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As the costs of health benefits have increased, employers and governments have become increasingly interested in reforms to limit medical spending. One strategy which has become popular is "managed competition" (Enthoven, 1993). Historically, employers offered their workers very few health insurance choices, and when they did offer choices they subsidized the most expensive plans quite generously. Under the managed competition strategy, employers offer workers a broad menu of insurance plans and contribute the same amount to each plan, regardless of which plan is chosen. By making individuals pay for the full cost of insurance at the margin, it is hoped that insurance choices will be more efficient. Further, plans facing a higher elasticity of demand may reduce their markups or strive to make their product more competitive. Reforms like this have been proposed for public programs as well as employment-based pools (Cutler, 1996).

But choice in health insurance is complicated by adverse selection. People sort themselves across insurance plans at least partly on the basis of risk -- the least healthy disproportionately prefer the most generous policies and healthier people are more willing to enroll in plans with restrictions. If adverse selection is important, it could reduce the benefits of more competitive policies and even lead to a "death spiral" where the most generous plans disappear from the market over time.

While the benefits and drawbacks of choice-based insurance have been noted theoretically (see Newhouse, 1996, for a review), there is little empirical evidence on the magnitude of these tradeoffs. In this paper, we analyze empirically the gains and losses from health insurance pricing reforms. We use data from a unique "natural experiment". In 1995, Harvard University moved from a system of subsidizing generous insurance to a system of paying a fixed contribution independent of plan choice. This policy change increased the price of the most generous policy by over $500 annually.

We estimate a substantial demand response to the policy change, with a short-run elasticity

of about -2. The policy change induced substantial adverse selection. Simulations suggest that because of this adverse selection, the long-run demand response is three times the short-run response, and the market for more generous insurance appears to have been eliminated entirely. Premium differences attributable to adverse selection are inefficient; we estimate the magnitude of the welfare loss from increased adverse selection at 2 percent of baseline insurance spending.

In addition to the demand response, we find evidence that increasing plan choice induced insurers to lower their premiums to Harvard. These cost savings amounted to about 10 percent of baseline health spending. The savings are large enough so that in principle the losers can be compensated with overall gains to the University and its employees.

We begin in the first section with a theoretical discussion of insurance market equilibrium under alternative pricing rules. In the second section, we discuss the experiment we analyze and the data we employ. The third and fourth sections consider demand-side responses to the policy reform. The fifth section looks at supply side changes. The last section concludes.

I. Pricing Rules and Insurance Market Equilibrium

To demonstrate the issues involved in insurance market equilibrium, consider a firm offering its employees a range of health insurance policies varying in cost sharing or the freedom to visit the providers of one's choice. The question for the firm is how much it should contribute for insurance and how much employees should pay.[1] We compare pricing rules primarily along efficiency lines. There are a number of redistributive issues involved in pricing -- from the young to the old, the sick to the healthy, the government to the firm (through the tax code). We have less to say about

[1] We ignore any issues of wages varying with pricing rules.

redistribution than about efficiency, however, so we stick to efficiency issues.

Employer contributions for insurance plan *k* can be expressed generally as

(1) $E_k = A_k + \beta P_k$,

where A_k is a fixed amount (potentially varying by plan) and P_k is the actual plan premium. β is the marginal subsidy to insurance. Traditionally, many large firms paid a percentage, generally 80 percent, of plan premiums (A_k=0, β=.8). An increasingly common alternative policy is for firms to make a fixed, equal contribution to all plans ($A_k = A^*$; β=0). The potential benefits of the equal contribution rule are two-fold. If employees pay more of the marginal cost of insurance, their insurance choices should be more efficient. In addition, if premium changes by insurers are translated dollar-for-dollar into prices faced by employees, demand responsiveness will increase, and the increased competition may induce insurers to cut premiums.

The benefits of competition are tempered by the possibility of adverse selection, however. More generous plans will disproportionately attract the sickest employees in any group, since the demand for comprehensive benefits is typically greater among the sick than among the healthy. Prices for more generous policies will thus be higher than the price based on benefit differences alone would suggest. Prices which reflect the health status of each pool are not efficient, however; they encourage people to leave more generous plans only because enrolling in a less generous plan avoids subsidizing the sick, not because the resources saved are more valuable than provider choice. Indeed, there is no guarantee that the most generous plans can survive if the degree of adverse selection is large. Thus, moving to an equal contribution rule is not guaranteed to increase welfare and may decrease it.

We illustrate these points with a simple model.[2] Suppose that the employees in the firm differ in health status, denoted h. For simplicity we take h to be expected health spending the individual would incur if he were enrolled in the most generous plan.

The firm offers two plans: a low cost plan that restricts choice of providers and provider income (such as a Health Maintenance Organization [HMO]) and a high cost plan with fewer restrictions on choice and more generous provider reimbursement (such as a fee-for-service [FFS] plan or a Preferred Provider Organization [PPO]).[3] We assume the more generous plan is a PPO, to match our later empirical work. Plans cannot differentially price individuals on the basis of their expected cost, and they must accept everyone who wants to enroll; in the firm we analyze (as in most firms), plans must agree to these conditions if they want to be on the menu of policy options. Together, these restrictions imply that adverse selection will be a concern.[4]

Demand for the PPO varies with health status. We express the value of provider choice as $g(h)$. The marginal value of provider choice, g_h, is positive if the less healthy value generosity in insurance more than the more healthy. This is a plausible assumption, and we shall invoke it. For any out-of-pocket cost of the PPO (termed the "out-of-pocket premium") P_{OOP}, there will be a

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[2] Feldman and Dowd (1991) develop a similar formulation.

[3] An HMO provides medical care for a pre-paid fee. The most restrictive form of HMO is the group/staff model; the physicians in this plan work exclusively for the HMO and are typically paid a salary or capitated amount (fixed amount per patient per year). A less restrictive form of HMO is an Independent Practice Association [IPA]. This plan contracts with specific providers but the providers do not work exclusively for the HMO. Providers are generally paid a capitated rate. A PPO is a plan where providers agree to discount fees in exchange for inclusion in the PPO "network". The generosity of managed care plans is largely determined by the size of the provider network and the cost to the patient for using services outside of the network.

[4] The term adverse selection is not the most appropriate since there need be no asymmetric information. Because insurers are not allowed to use health status information in pricing or enrollment, however, it is as if the information were asymmetric.

marginal person $h'=g^{-1}(P_{OOP})$ for whom all people who are healthier than h' ($h<h'$) enroll in the HMO while people who are less healthy than h' ($h>h'$) enroll in the PPO.[5] Figure 1 shows $g(h)$.

We denote the mean healthiness of the HMO enrollees (the conditional mean of h for $h<h'$) as $h_L(h')$ and mean healthiness of PPO enrollees as $h_U(h')$. Both of these means depend on the share of people in the two plans, summarized by the marginal person h'. Premiums will be proportional to average spending:[6] $P_{PPO} = h_U(h')$ and $P_{HMO} = \alpha h_L(h')$, where α reflects the cost savings in the HMO net of any higher profits or administrative expense.

The premium difference between the PPO and the HMO will vary with PPO enrollment, but the exact relation is indeterminate. As the marginal person moves from the PPO to the HMO, the average cost of the remaining PPO enrollees will rise, but so will the average cost of HMO enrollees. The net effect of changing enrollments on the relative premiums of the two plans depends on the distribution of health spending. For many distributions, it will be the case that as more people move from the PPO to the HMO, the relative premium for the PPO will rise.[7] We assume that the relative PPO premium is increasing as PPO enrollment falls.

The cost to the employee of enrolling in the PPO depends on the employer's contribution rule. Traditional rules were of the form: $P_{OOP} = .2 \cdot (P_{PPO} - P_{HMO})$. The equal contribution rule, in contrast, sets $P_{OOP} = P_{PPO} - P_{HMO}$. We assume that the out-of-pocket cost of the PPO rises with HMO

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[5] The strict delineation by health status is a result of the fact that g depends only on health status, not on other factors such as risk aversion. Adding such elements would be straightforward but would not yield any additional insights.

[6] This is true for plans that use experience rated prices -- varying the premium for each group with expected costs. In the firm we examine, the premiums are experience rated.

[7] This will be true, for example, for most of the distribution if health spending is distributed lognormally, as is typically found empirically.

enrollment; this is true in both types of policies noted above.

Figure 1 shows the relation between HMO enrollment and the out-of-pocket cost of the PPO, denoted PP. The equilibrium in the insurance market is at point E, where employees have optimally selected plans and premiums are consistent with those enrollments. This equilibrium may or may not be stable. As the marginal person moves from the PPO to the HMO, the PPO premium will increase. If this premium increase results in further people leaving the PPO for the HMO, there may be a cycle of increased PPO premiums and reduced PPO enrollment. This is the unstable equilibrium. In order for the equilibrium to be stable, it must be the case that the increase in PPO premiums as the healthiest person leaves the plan is smaller than the increase in the PPO reservation value for the new marginal enrollee.[8] This is the situation we show in Figure 1.

Now suppose the firm changes from subsidizing the PPO to making an equal contribution to all plans. For any level of HMO enrollment, the cost to the employee of enrolling in the PPO increases. We show this as a rotation of the PP line to PP′. One possible equilibrium is at point E′, with lower PPO enrollment and a greater price differential. Note that PPO enrollment may change by a large amount, even if the subsidy change is small. This is because the enrollment change reflects the extent of adverse selection as well as the static price elasticity of demand. Indeed, there need not be an equilibrium with positive PPO enrollment. If the value of choice were $g(h)$, for example, the new equilibrium would have everyone in the HMO (E″).

The transition from the old to the new equilibrium depends on insurer and individual behavior. If insurers know demand responses well and there are no plan switching costs, the market will jump from E to E′. If insurers set prices for each year on the basis of prior year enrollment and

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[8] This corresponds to the assumption that the $g(h)$ curve is more steeply sloped than the PP curve.

individuals choose plans on the basis of current year prices, however, there will be a longer transition process, shown in Figure 1. Initially, out-of-pocket premiums increase because of the pricing reform, and this induces some people leave the PPO, so that the equilibrium would be at D. Because the remaining PPO pool is less healthy than the original pool, the PPO premium rises in the second year and further people leave the plan. This process continues until equilibrium is reached at E′. The transition between D and E′ is the effect of adverse selection on plan enrollments.

The transition to equilibrium E″ is sometimes termed an adverse selection "death spiral". The relative price of the PPO increases and enrollment falls until the plan ultimately loses all its subscribers or the premium is high enough that the employer cancels the plan.

Using this framework, we can evaluate explicitly the efficiency consequences of reform. The efficient price for people to face is the resource savings in the HMO, or $P^*_{OOP} = (1-\alpha)h^*$, for the marginal employee h^*.[9]

An equal contribution rule, in general, will not result in this price difference. The difference in plan premiums will be:

$$(2) \qquad P_{PPO} - P_{HMO} = (1-\alpha)\, h_L(h') + [h_U(h') - h_L(h')]$$

The first term is the efficiency savings from the HMO. The second term is adverse selection. This price difference will be the optimal price only if people are randomly distributed across plans or if everyone is idential *ex ante*. In both of these cases, there is no adverse selection ($h_U = h_L = h^*$), so that premium differences reflect solely efficiency differences ($P_{PPO} - P_{HMO} = (1-\alpha)\, h^*$). When there is any

[9] h^* is defined implicitly from $(1-\alpha)h^* = g(h^*)$.

adverse selection, however, the PPO premium will likely be above the efficient level.[10]

Figure 2 shows an example of this. We assume that initially the employer is subsidizing the PPO more than is optimal ($P < (1-\alpha)\, h_\bullet$), so that there is a deadweight loss of area A. Moving to an equal contribution rule elinminates area A but creates deadweight loss of area B, if the price is greater than the efficient level ($P' < (1-\alpha)\, h_\bullet$). Whether reform on net increases welfare overall depends on the relative size of areas A and B. There is no theoretical presumption either way.

In addition to its efficiency implications, the move to an equal contribution rule also involves some redistribution. Area C in Figure 2 represents premium payments by PPO enrollees above the socially efficient level. The recipients of this transfer are HMO enrollees, who face a lower premium than the average health status of the group as a whole would suggest.[11]

When selection is a concern, optimal prices will be somewhere between no subsidy to the PPO and a complete subsidy to the PPO. Indeed, we can be more specific about the form of the optimal price. Suppose that the employer contributes different lump-sum amounts to each plan, to reflect the selection differences: $A_{PPO} = h_U(h^*)$ and $A_{HMO} = h_L(h^*)$. Then, the remaining difference in price between the PPO and the HMO will be the efficiency difference between the plans, $(1-\alpha)h_L(h^*)$. This is the efficient price for employees to face.[12]

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[10] There is some ambiguiuty about this. The first term in equation (2) is the savings for the *average* person in the HMO. Since the average person will be healthier than the marginal person, this will be below the optimal price difference for the marginal enrollee. If selection is large, however, the second term will dominate and the equal contribution rule will generate a PPO price that is too high.

[11] We term this a redistribution but it may also involve efficiency issues. *Ex ante*, people may want to purchase insurance against the risk of being sick and valuing the PPO highly. When the PPO premium is too high, that insurance is denied them *ex post*. Thus, all payments above the average cost might also be termed an efficiency loss.

[12] This is not quite correct because thisamount is the savings for the average employee in the HMO and the optimal price would be for the marginal employee in the HMO. An additional

In the optimal payment system, therefore, employer contributions should be fixed, but not equal across plans. Using variation in payments to reflect the risk of the average enrollee is termed "risk adjusting" payments. Our analysis suggest that risk adjustment is important in realizing the efficiency gains from pricing reform.[13]

The discussion so far has focused on the demand-side effects of reform. There may be supply-side effects of changing pricing rules as well. If employer payments are fixed across plans, employees will pay for all of the markup that insurers charge. Moving from a marginal subsidy to a fixed payment will therefore raise the demand response to a given price change and potentially lead insurers to cut costs or reduce profits. This would be an additional benefit to the employer and employees. In the remainder of the paper, we explore the demand- and supply-side effects of pricing reform.

II. The Harvard University Experience

We examine the dynamics of insurance markets using data on health insurance choices by employees of Harvard University. The Harvard experience is valuable because of a recent pricing change the University implemented.[14] Traditionally, Harvard subsidized expensive insurance quite generously. In response to increasing benefit costs, the University implemented a policy reform starting in 1995. Under the new policy, Harvard contributes the same amount to each plan,

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variation in A_{HMO} would be required to correct for this, but the intuition is the same.

[13] One could achieve the same price differential by choosing a β so that the employee faced the efficient price difference. Because subsidizing the premium at the margin subsidizes insurer markups, however, the fixed payment to account for selection is likely to be superior.

[14] For more discussion about the situation and changes, see Reber (1996).

regardless of which plan an employee chooses.[15] Harvard's contribution is 85 percent, 80 percent, and 75 percent of the least expensive policy for employees earning below $45,000, between $45,000 and $70,000, and more than $70,000 respectively.

The new policy applied to all Harvard employees -- about 10,000 of whom are full-time employees with health insurance.[16] Two of the unions (clerical and technical workers; and carpenters, electricians, plumbers, and operating engineers), representing about 3,000 full-time employees, did not agree to the new policy until 1996. This creates a natural "treatment/control" situation. We divide employees into those who experienced the policy change in 1995 (termed the "1995 Treatment Group") and those who experienced the policy change in 1996 (termed the "1996 Treatment Group"). In analyzing the 1995 data, we use the 1996 Treatment Group as a control. We reverse this situation in 1996.[17]

The policy change had a dramatic effect on the relative price of different health plans. Table 1 shows premiums for the different plans in 1995 and the out-of-pocket cost for insurance under the old and new rules. Harvard offers its employees a choice of 6 policies: a Blue Cross Preferred Provider Organization (PPO); three Independent Practice Organizations [IPAs]; and two group/staff model HMOs. The PPO offers the most extensive choice of providers; the group/staff model HMOs are the most restrictive; and the IPAs are in the middle.

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[15] The fixed payment was dependent on the level of coverage (family or individual) chosen; employees are not made to bear the full marginal burden of the decision to purchase family rather than individual coverage.

[16] Part-time workers can receive health benefits from the University but the contribution amounts are different. We focus our analysis on insurance choices for full-time workers.

[17] In addition to the price variation between the treatment and control groups, there was some variation in 1995 PPO out-of-pocket premiums among the 1995 Treatment Group resulting from the phase-in for lower-salaried employees.

As the upper panel shows, under the old system, individuals would have paid $555 for the PPO. Under the new system, this rises to $1,152, a $597 increase. The cost of the HMOs increased much less, however. The out-of-pocket premium for the most popular HMO, Harvard's internal plan [HUGHP, with 44 percent of individual subscribers], rose by only $161. The cost of the second most popular HMO, Harvard Community Health Plan [HCHP, with 25 percent of individual policies], increased by only $131. Compared to the average HMO, the policy change increased the relative price of the PPO by $453.

Similar changes are true for the family policy, with even larger magnitudes. The out-of-pocket cost of enrolling a family in the PPO rose by $960 as a result of the reform. In contrast, the low-cost HMOs increased in price by only $373 and $436. The relative cost of the PPO compared to the average HMO increased by $545.

III. Demand Responses to Policy Reform

The first question we examine is the demand response to this reform. Table 2 summarizes information on real plan costs and enrollment over time. As the first row of each block shows, in the 1992-94 period the out-of-pocket cost of the PPO was about $300 (individuals) to $500 (families). Enrollment in the PPO was stable at about 20 percent of enrollees.

With the policy reform in 1995, the out-of-pocket cost of the PPO increased for the 1995 Treatment Group. Consistent with this price increase, PPO enrollment fell for this group, by 3 to 4 percentage points. Out-of-pocket premiums and PPO enrollment among the 1996 Treatment Group, in contrast, were essentially unchanged for both individuals and families. The reverse situation is true in 1996. In that year, the out-of-pocket premium increased by more for the 1996 Treatment Group than for the 1995 Treatment group (although the out-of-pocket premium increased for both

groups), and PPO enrollment fell by a greater percentage for the 1996 Treatment Group as well. Thus, Table 2 suggests in simple form that there was a significant demand response to the price change.

Table 2 does not control for other factors that may influence plan enrollment. To account for these factors, we express the demand for the PPO as:

$$(3) \qquad PPO^* = \mathbf{X}\beta + \gamma \ln(P_{OOP}) + \delta_1 \, 1995 \, Treatment \, Group + \delta_2 \, Year + \epsilon,$$

where **X** is a set of additional variables that will influence plan choice. Controlling for year dummy variables and a treatment group dummy variable, the coefficient γ represents the difference-in-differences estimate of the effect of prices on insurance choice.

We estimate equation (3) using a logit model, to account for the discrete insurance decision. In principle, we could estimate a more detailed model of plan choice, separating out IPA enrollment, group/staff model HMO enrollment, and PPO enrollment, as well as the specific plan within each group (as in Feldman et al., 1989).[18] Because the change in out-of-pocket premiums was essentially the same for the two largest HMOs, however, our primary source of identification is the decision to enroll in the PPO or an HMO. We thus focus on this decision.

The most important variable in equation (3) is the out-of-pocket cost of the PPO. Both before and after the policy change, employee contributions to health insurance at Harvard were made on a pre-tax basis. Thus, the effective price to the employee of the PPO is only $P^e_{OOP} = (1-\tau) P_{OOP}$, where τ is the employee's combined marginal federal, state, and Social Security tax rate. We form

[18] Dowd and Feldman (1994) found that the effects of price changes of plans within the same nest had a greater impact on a plan's market share than price changes outside the nest.

the after-tax cost of the PPO using imputed marginal tax rates for each worker based on salary and family status.[19]

We include a variety of control variables in the model, the means of which are reported in the first column of Table 3: age, gender, employee type (faculty, staff, or hourly), job tenure, salary, single or family plan, and distance from the nearest group/staff model HMO clinic.[20] The most important omission from this list is health status. The theory predicts that the demand elasticity will be greater for people whose health status places them at the margin between PPO and HMO enrollment. Confidentiality restrictions prevent the linking of individual health status with demographics, however. Our demand elasticity is thus an average over all health states.

The second and third columns of Table 3 show estimates of PPO enrollment.[21] We estimate the model separately for 1994-95 and 1995-96 to allow the elasticity to differ over time. Most of the independent variables are consistent with expectations. Age is a consistent positive and significant predictor of PPO enrollment, as is being female and tenure at the University. Salary is positively related to PPO demand. Faculty members are more likely to choose the PPO. Surprisingly, distance to an HMO does not affect plan choice.

As the first row shows, plan choice responds significantly to price in both years. The

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[19] We assume people with a family policy file joint returns, and people with an individual policy file single returns. We adjust the salary of people with a family policy by the average ratio of family income to individual income in the CPS (separately for men and women) to form income for the family. We assume the average number of exemptions and deductions by income.

[20] We match employee zip codes to the zip code of the clinics and find the minimum distance between the employee's home and a clinic. We truncate the distance at 300 miles and include a dummy variable for people with distances beyond that amount.

[21] We estimated the models with individual fixed effects as well. In this specification, the coefficients on premiums are about -1.1 in both years. Since the standard errors are much larger in the fixed effects models, we report results without fixed effects.

coefficients are -.4 in the first year of the reform and -.8 in the second year; both values are statistically different from zero.

These estimates can be turned into price elasticities, but it is important to be clear about the elasticity definition. One definition of the price elasticity is the change in plan enrollment resulting from a change in the *out-of-pocket* premium. The estimates in Table 3 imply a demand elasticity of -0.3 in the first year of reform and -0.6 in the second year.

That price elasticity is not what an insurer would perceive, however. Consider a policy for which Harvard contributes a fixed amount equal to 75 percent of the premium and the employee pays the remainder. If the insurer raises the premium by 1 percent, the price to the employee will increase by 4 percent (.01/.25). Thus, the price elasticity with respect to the *total* premium is roughly four times the price elasticity with respect to the out-of-pocket premium. Our estimates of the price elasticity with respect to total premiums are therefore about -2.

Our demand elasticities are higher than traditional estimates of demand responsiveness but are in line with some other recent work. Estimates from the 1980s using cross-firm variation in the generosity of benefits typically suggested demand elasticities with respect to total premiums of about -.2 to -.5 (Taylor and Wilensky, 1983; Holmer, 1984; Farley and Wilensky, 1984, Feldman et al., 1989), although some studies (Phelps, 1986; Welch, 1986; Feldman and Dowd, 1993) generated substantially larger elasticities of between -2 and -8. More recently, data from individual choices within multiple option systems has suggested elasticities with respect to out-of-pocket premiums of about -.5 or larger (Feldman and Dowd, 1993; Wolfe and Hill, 1994; Buchmueller and Feldstein, 1996; Royalty and Solomon, 1995).[22]

[22]Some of these studies find very large changes in HMO enrollment -- up to 80 percent -- in response to price increases of $5 or $10 per month. It may be that the demand responsiveness varies

The coefficient on the Second Year variable is also of interest. That coefficient indicates whether there are trends in insurance choice that are not captured by the price change. For example, if some people in the 1995 Treatment Group waited until 1996 to switch plans -- perhaps because they wanted to hear about the care received in other plans from friends or colleagues -- the coefficient on Second Year would be negative in 1995 and particularly 1996.[23] For both time periods, however, the coefficient on this variable is small and statistically insignificant. We cannot reject the hypothesis that all of the effect of the policy change is occurring through the change in price.[24]

In addition to changing their insurance policy, individuals may decide to stop receiving coverage from Harvard entirely as the premium increases. If employees have access to insurance through another source (for example a spouse), or are willing to be uninsured, they may decide the price of insurance at Harvard is not worth the benefit. To test this, we estimated models for whether people who had insurance in one year dropped coverage in the next year.[25] We model this decision as a function of the price change for the plan the individual was enrolled in and the demographic characteristics noted above. Since our dependent variable is expressed as a change in coverage, we omit the controls for the Treatment Group and the Second Year dummy variable.[26]

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with initial PPO enrollment and thus a system with lower initial PPO enrollment (such as Harvard) will have a lower elasticity.

[23] Niepp and Zeckhauser (1986) document a great deal of stickiness in plan choice across years.

[24] We have experimented with separating the Second Year effect by Treatment Group, with similar results.

[25] Our data allows us to distinguish between people who decline coverage and those who leave the University entirely.

[26] We have also estimated models including the Treatment Group dummy variables. The price change is more important statistically and substantively than the Treatment Group dummy variable in explaining the decision to take up coverage.

The last two columns of Table 3 report estimates of the effect of price changes on the decision to drop insurance at Harvard. Few of the demographic factors explain this decision, although there is clear evidence that individuals are less likely to decline coverage than are families. This may be because individuals have fewer options for coverage outside of Harvard than do families.

As the first row shows, out-of-pocket premiums significantly affect the probability of dropping coverage. The elasticity of coverage with respect to the out-of-pocket premium is about -1. While this elasticity is large, it is important to note that the baseline rate of dropping coverage is low -- only 1 to 2 percent. Thus, even if the out-of-pocket premium doubled for everyone at Harvard, insurance coverage would fall by only 1 to 2 percent. The effect is present, but is quantitatively not that important.

The decision to turn down coverage at Harvard likely varies across individuals. People who are married with working spouses, for example, should be more responsive to price than people who are single or who have a non-working spouse. It is difficult to test this in our data, since we only observe whether an individual chooses individual or family coverage, not whether they are married or single. We estimated models interacting the price change with indicators for whether the employee had individual or family coverage, and whether the employee was male or female. We found the response was generally greater for women than for men, but was about equal for individuals and families. In the absence of better data on the labor market status of other members of the family, however, we do not pursue this further. It is clearly an important topic for future research.

Adverse Selection

In addition to knowing the average demand elasticity, we also want to know the characteristics of people who change plans. To the extent that high cost plans were adversely selected against, there will be additional implications for plan premiums in subsequent years and the overall efficiency of the reform.

Looking at adverse selection in response to premium changes does not indicate the full extent of adverse selection. Adverse selection is likely to be manifest in differential enrollment over a period of years. Much of this adverse selection will have already occurred by the beginning of our sample, and we cannot capture it with our estimates. But we can measure the degree to which adverse selection accompanies employer payment reforms. For some purposes, this will be more useful than the long-run differences in plan enrollment resulting from adverse selection over a number of years.

To examine the issue of adverse selection, Table 4 shows characteristics of people over two year intervals by whether they switch plans or remain in their former plan. The first row shows the share of people changing plans. Few people move from an HMO to the PPO, particularly in the second year of the reform.

The second row shows the average age of enrollees. Age is a natural indicator of selection since older people use more medical care than younger people. There is clear evidence of age-related differences in plan changers. For both the 1994-95 and 1995-96 transitions, the average age of people who move between the PPO and the HMOs is significantly below the average age of those who remained in the PPO both years. The differences in average age are large: switchers are 4 years younger than stayers in 1994-95 and 5 years younger than stayers in 1995-96. People changing plans are also older than those who enrolled in the HMO the entire time, by about 5 years. Thus,

along the age dimension, the data match well the predictions of the model: younger (healthier) people are disproportionately in the HMO, older (sicker) people are in the PPO, and middle-aged people are at the margin between the two.

To evaluate the magnitude of this age-related selection, we weight the enrollment differences by age-specific spending. We form spending from the 1987 National Medical Expenditure Survey (NMES).[27] We normalize spending so that the average employee has spending of 1.0. Table 4 shows this spending index for the different groups. Relative to the average PPO enrollee, those who left the PPO at the end of each year were 5 to 6 percent healthier than those who remained in the PPO the following year. They were about 14 percent less healthy than the average HMO enrollee.

There may also be adverse selection along non-demographic dimensions. In analyzing medical spending generally, only a small share is explainable by demographic factors, suggesting a large role for selection on unobservables. Blue Cross/Blue Shield, the sponsor of the PPO, was concerned about this as reform was implemented, and compiled data on average spending in 1995 separately for those who left the plan at the end of the year and those who remained in the plan the following year. Average spending for these two groups is presented in the last row of the Table.[28] There is a clear difference between the switchers and stayers. Among people enrolled in the PPO in 1995, those who left the plan at the end of the year spent 20 percent below average; those who remained in the plan in 1996 spent 11 percent above average. If this spending is persistent over time, the PPO premium would have had to increase by 11 percent just to avoid losses.

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[27] We sort individuals into "health insurance units" -- the group for which health insurance is typically sold. We form average spending for individuals and families separately. We assume the insurance is in the name of the head of household to assign spending for a family to a particular age.

[28] The spending estimates are adjusted for the mix of individuals and families.

Other evidence also suggests substantial adverse selection. In 1996, Baystate's premium increased by 16 percent as the plan could not match the premium reductions of the other insurers. In response to this price increase, Baystate lost two-thirds of its subscribers. Data similar to those in Table 4[29] indicate that the people who left Baystate after its price increased used 23 percent fewer services than the average Baystate enrollee that year. Thus adverse selection appears here as well, with roughly the same magnitude.

IV. Implications of Adverse Selection

This degree of adverse selection has important implications for the insurance market. We evaluate two issues: how adverse selection affects the long-run equilibrium; and the efficiency implications of reform.

Long-run equilibrium. The importance of adverse selection means that the long-run response to a policy reform will be greater than the short-run response. In response to the initial price increase, healthy people disproportionately leave the PPO and thus prices have to increase in subsequent years to make up for the less healthy average enrollees.

To get a sense for the magnitude of this feedback effect, we simulated market adjustment to a reform like the one Harvard imposed. We begin with a price difference between the PPO and HMO of about $1,000 and a PPO enrollment share of 20 percent (both about average for the family plan). We then increase out-of-pocket premiums the amount Harvard did and simulate dynamic enrollment and premiums. We assume that people who leave the PPO are always 20 percent

[29] Baystate is run by Blue Cross/Blue Shield, so they compiled spending for this plan as well.

healthier than the average PPO enrollee, as our empirical evidence suggested. We assume insurers adjust premiums as the mix of enrollees changes and that individuals make their insurance choices on the basis of current year premiums.

Figure 3 shows the resulting dynamics of premiums and enrollment. In the first year of the reform, the increase in out-of-pocket premiums reduces PPO enrollment to about 14 percent. Adverse selection then magnifies this effect. By 5 years after the reform, PPO enrollment has fallen to 5 percent of total enrollment. Adverse selection thus results in long-run demand changes that are three times the short-run demand changes.

Our simulations match up with actual data reasonably well. The simulations suggest that by 2 years after the reform, PPO enrollment will have fallen by about 60 percent and the relative price of the PPO will increase by about $800. In actuality, PPO enrollment fell by 40 to 50 percent between 1994 and 1996 and the premium increased in real terms by about $1,800 (see Table 2).[30]

Our simulations imply that the long-run cost differential between the two plans will be over $4,000. While our simulations always have some people in the PPO (because of the constant elasticity assumption), with a long-run premium differential of $4,000, it is conceivable that there would be no demand for the PPO in the new equilibrium, or that the firm would not allow premiums across plans to diverge by that amount. Our simulations thus suggest that, given these parameter values, the long-run viability of the most generous plans is very much in doubt. As we discuss in the conclusion, the most generous plan did not survive the pricing reform.

[30] Some of the increase in PPO premium is likely a result of competition inducing reductions in HMO premiums, discussed in the next section.

Efficiency. The importance of adverse selection also has implications for the overall efficiency effects of pricing reform. The welfare effects of the price change depend on the extent to which PPO costs under the old policy were below the efficient level and the extent to which adverse selection raises them above the efficient level. To estimate the size of these gains and losses, we need to know the efficient price for the HMO. This information cannot be distilled from our data. As a benchmark, we use estimates of HMO savings common in the literature (Miller and Luft, 1994) and assume that HMOs reduce costs by 10 percent. We take this to be the efficiency effects of HMOs. Since the average individual premium in 1995 was $2,106 and the average family premium was $5,581, this suggests an optimal PPO price of about $200 for individuals and $550 for families.[31]

As Table 1 shows, this is about the relative price for the PPO under the *old* payment policy ($277 for individuals and $472 for families). Thus, this estimate of HMO savings suggests the somewhat surprising result that the price of the PPO was essentially optimal *prior to* the policy reform. If this is correct, then the increase in PPO prices resulting from the reform is entirely an efficiency loss.

We can estimate the magnitude of the welfare loss using standard techniques. Approximating the demand curve as linear, the welfare loss is given by:

$$(3) \qquad \text{Welfare Loss} = .5 \cdot \Delta q \cdot \Delta p,$$

where Δq and Δp are the change in PPO enrollment and price resulting from the reform. The out-of-pocket premium increase for the PPO between 1994 and 1996 was about $1,000 for individuals and

[31] This ignores any difference between the cost of the average enrollee in the group and the cost of the marginal HMO enrollee under the optimal pricing rule.

about $1,600 for families (see Table 2). With roughly equal numbers of individual and family policies, this is an average increase of $1,300. The implied reduction in PPO enrollment is about 80 percent of the baseline amount, or 16 percent of the total population. Thus, the welfare loss from pricing reform is $104 per insured worker (.5 x .16 x $1,300). In 1994, average premiums per insured worker were about $4,300, so the loss is about 2 percent of baseline spending.

In addition to this welfare loss, adverse selection induces transfers from remaining PPO enrollees to HMO enrollees. In 1996, each person in the PPO pays on average $1,300 more than efficient rates for the plan. With a predicted PPO enrollment of 4 percent, the loss is $52 per insured worker, or about 1 percent of baseline insurance spending. This transfer is implicitly given to HMO enrollees, whose premiums are below what they would have been if premiums were based on the actuarial status of the group as a whole.

Some caution is required in interpreting this welfare loss for two reasons. First, we do not know the true efficiency savings of HMOs relative to PPOs. In that sense, our calculation is necessarily speculative. Second, this calculation assumes no changes in the overall premiums as a result of pricing reform. If pricing reform leads to premium reductions, those savings could be used to compensate people for the losses from incorrect relative prices. We turn to the issue of overall savings next.

V. Supply Side Responses to Pricing Reform

Pricing reforms clearly affect the demand side of the market. This is one rationale for this type of reform. A second rationale is to encourage competition among insurers. Standard theories suggest that as the elasticity of demand for insurance increases, the markup in insurance should fall or insurers should take actions to make their products more competitive. With a demand elasticity of

about -2, the incentives to reduce premiums can be quite large.

The pricing reform induced several types of competition. One dimension of competition, which we focused on above, is between the HMOs and the PPO. A second dimension is competition within the HMOs. Because the HMOs are more similar to each other than to the PPO, the elasticity of demand within the HMOs may be even greater than the elasticity of demand between the HMOs and the PPOs. As noted above, we have no way to test this formally. We are also unable to examine how each type of competition affects plan premiums. We can, however, examine the effect of the pricing reform as a whole on plan premiums. We address those issues in this section.

Measuring changes on the supply-side is more difficult than measuring changes on the demand side, since we have only 6 insurance plans to analyze. Still, these issues are important and so we present some tentative evidence on them.

Table 5 shows changes in real family premiums betweem 1990 and 1996. From 1990 to 1994, real premiums rose about 4 to 5 percent per year.[32] This was roughly uniform across plans. After 1994, however, the situation was very different. Premiums fell dramatically in 1995. The PPO premium fell by 2.4 percent in real terms, and the HMO premiums fell by 9 to 20 percent. In 1996, most of the HMO premiums continued to decline but by a smaller amount, and two of the plans (HealthFlex Blue [the PPO] and Baystate [an IPA]) had large premium increases. The increase in premiums for HealthFlex Blue is likely a result of adverse selection discussed above. Baystate's story, anecdotally, also fits our model well: in response to the new pricing system, Baystate initially lowered its premium substantially (13 percent in 1995), to match the other HMOs. Without

[32] The PPO premium was essentially constant between 1992 and 1994. This plan was new in 1992, however, so it is natural to think it was priced highly in the absence of reliable data on spending under the plan.

commensurate cost savings,[33] however, the plan experienced substantial losses in 1995, and had to raise premiums in 1996 (by 19 percent). When this happened, enrollment fell by two-thirds.

Of course, the change from premium increases to premium reductions may be a reflection of broader trends in the medical care marketplace more than the effect of the reforms. The mid-1990s have witnessed an unprecedented wave of provider mergers, affiliations, and discounts in the Boston area (and nationwide), which ought to affect premiums. To control for this, we gathered data on the premiums the insurers in our sample charged to other large firms in the Boston area. Massachusetts requires HMOs to file their premiums with the State, and we gathered these data from the State Insurance Department. Our comparison policy for each insurer was chosen to be as close as possible to the policy offered Harvard employees.[34]

The middle columns of Table 5 show changes in average premiums in the Boston area; the final columns show the difference between the change in premiums at Harvard and the change in premiums in the Boston area. To summarize the data, Figure 4 compares the growth of total health spending implied by the premium and enrollment changes at Harvard with a simulated change if premium growth at Harvard had been at the same rate as the Boston area as a whole.[35]

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[33] Baystate's situation is notable because the plan is a Blue Cross/Blue Shield product with the same network as HealthFlex Blue (although under the PPO, insured employees can get care outside the network if they pay higher copayments). BayState was losing money for several years and had high premiums relative to the other IPAs before the new policy. Baystate was run more like a PPO than an HMO. Thus, the inability of the plan to reduce costs under the reform is not particularly surprising. We are grateful to Sujata Sanghvi for discussing these issues with us.

[34] The rates are typically a composite family rate for the "standard" plan offered by the insurer. The State does not require PPO rates to be filed; we thus cannot compare HealthFlex Blue to the comparable product in the Boston area. Instead, we compare HealthFlex Blue to HMO Blue, Blue Cross/Blue Shield's HMO.

[35] In the absence of market data, we assume that HUGHP's premium would have increased with HCHP's premium. We also assume that enrollment rates would not have changed.

Between 1990 and 1994, the growth of average premiums at Harvard was roughly the same as in the Boston area, with differences on the order of 1 percentage point or less. In 1995, premiums declined in the Boston area, as they did at Harvard, but the decline at Harvard was much larger. Every plan at Harvard had a larger premium reduction than the corresponding plan in the Boston area. The overall effect, shown in Figure 4, is a 10 percent relatie decline in premiums at Harvard. The differential in premium growth then narrowed; in 1996, premium growth at Harvard and in the Boston area were about the same, roughly a 4 percent real reduction.

While results based on only 6 plans cannot be definitive, the data do suggest quite strongly that the pricing reform resulted in lower premiums to Harvard, with a one-time savings of about 10 percent. Thus, encouraging competition lowered total health spending substantially. Indeed, the magnitude of the cost savings is large enough to offset the welfare loss from raising the price of the PPO above efficient levels and to compensate people who remain in the PPO for the higher premiums they face. In Section IV, we estimated the size of these two effects at 2 percent and 1 percent of baseline spending respectively. With the 10 percent overall savings, the losers from reform could be compensated and each member of the group could be better off.

VI. Conclusions

Our results on insurance market dynamics suggest two conclusions. First, there is a significant demand response to the price of insurance. We estimate a short-run demand elasticity for more generous insurance of about -2. The demand response is concentrated among less costly employees. As a result, adverse selection is a serious issue. Because of adverse selection, the long-run demand response is 3 times the short-run response. Premium differences resulting from adverse selection are inefficient; we estimate the welfare loss from the additional adverse selection resulting

from pricing reform at 2 percent of baseline spending after two years. Pricing reform induced additional transfers from those remaining in the PPO equal to 1 percent of baseline spending.

On the positive side, we estimate that the policy reform reduced the premiums Harvard faced by 10 percent after two years. These savings are sufficiently large that the adverse effects of selection could be offset and still leave the University as a whole better off. Thus, pricing reform can be a Pareto improvement.

Our data suggest that the long-run viability of the most generous plans is jeopardized by an equal contribution rule. Indeed, when the first draft of this paper was written in the summer of 1996, our simulations suggested that the price of the PPO would increase beyond sustainable levels within a few years. Just recently, the University negotiated its premiums for 1997. Because of adverse selection and overall losses at Blue Cross/Blue Shield, the PPO will no longer be offered to Harvard employees, nor will the Baystate policy. Instead, Blue Cross/Blue Shield will offer its HMO to Harvard employees. Blue Cross/Blue Shield hopes to attract healthier people to the HMO than it could to the PPO. Our conclusion about the long-run sustainability of the equal contribution rule thus seems valid; if anything, we overestimated the time it would take for the PPO to become insolvent.

Because Harvard was worried about having no plans with a wide choice of providers, the University encouraged three of the HMOs [HCHP, Pilgrim, and Tufts] to offer a Point-of-Service [POS] option -- a feature that allows people to use out-of-network services and still receive some insurance coverage (although not as much coverage as for in-network services). Whether the POS options will experience unfavorable selection to the degree that the PPO did is uncertain, but our results suggest that this possibility is very important.

While an equal contribution rule does increase overall efficiency, it is not the most efficient

policy. The allure of the equal contribution rule neglects the importance of adverse selection. Our theoretical discussion suggests a natural response to adverse selection: employer payments should be risk adjusted to account for the differential selection of employees across plans. Risk adjusted payments are fixed, but not equal, across plans. By varying payments with health status, employers can offset known differences in the mix of enrollees in different plans while still maintaining the marginal incentives for efficiency. Our results suggest that in any type of system that is based on individual choice, contributions need to be risk adjusted across plans or an important part of the efficiency gains from reform will be sacrificed.

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Figure 1: Insurance Market Equilibrium

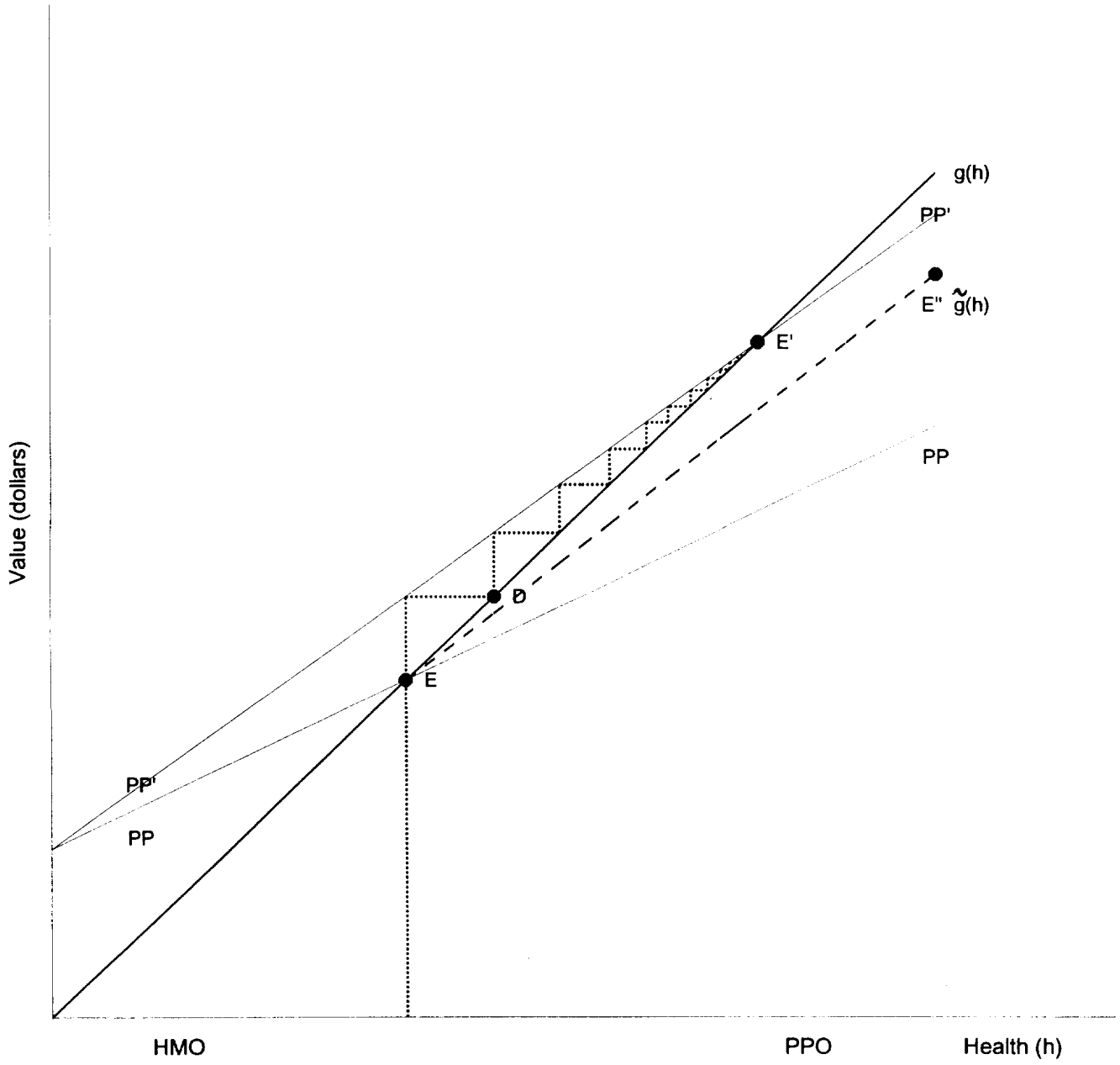


Figure 2: Welfare Implications of Pricing Reform

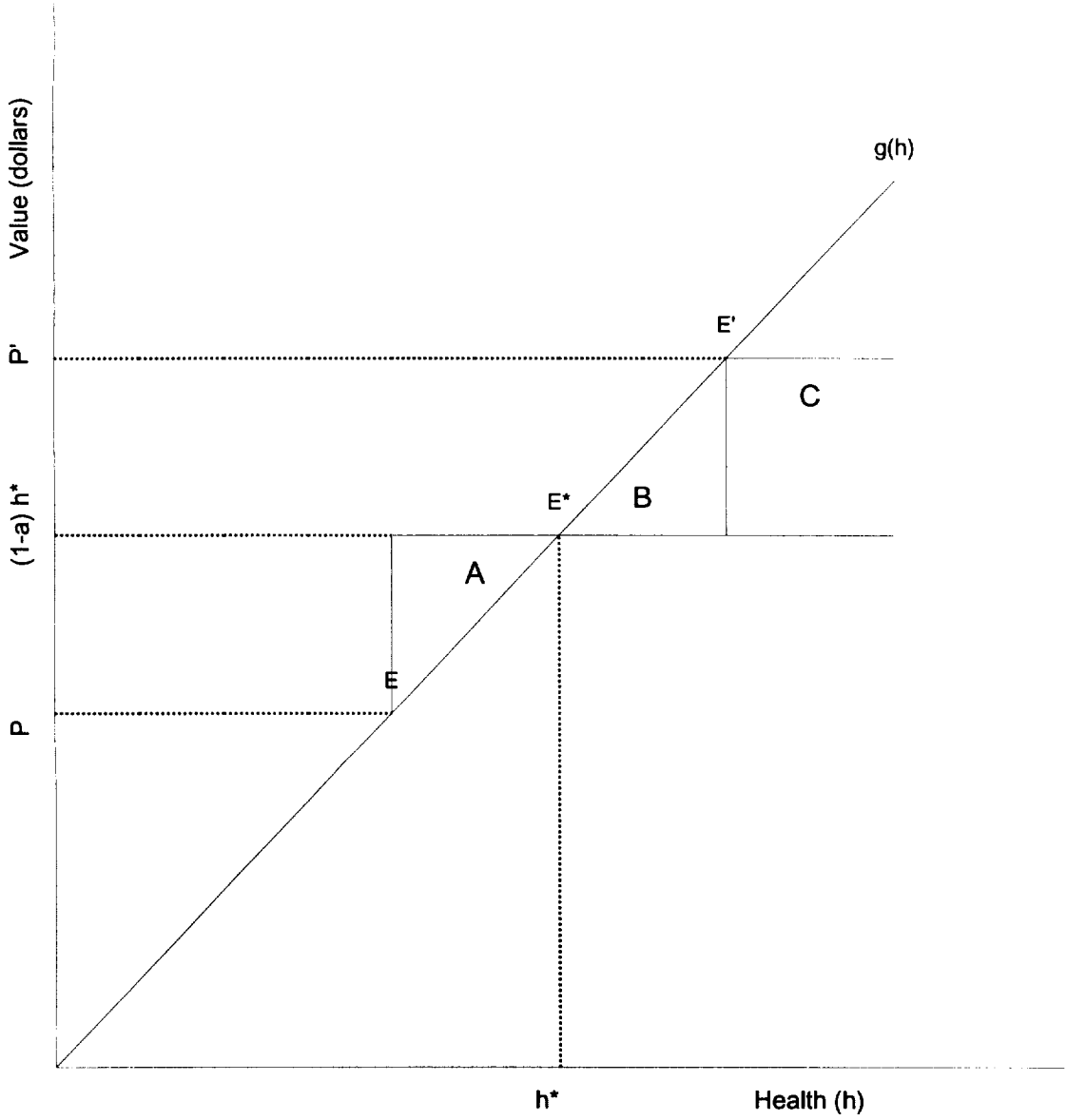
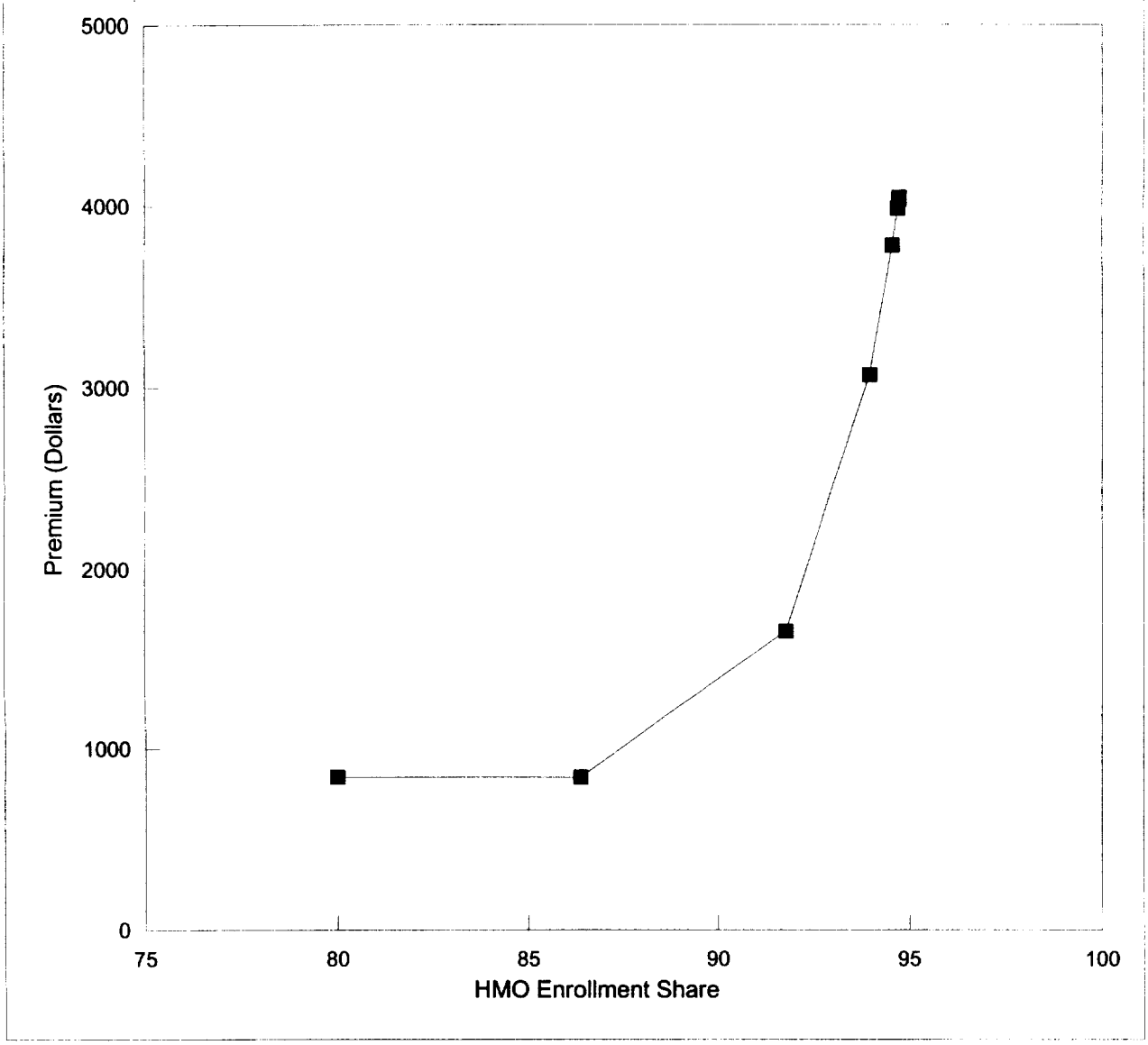


Figure 3: Simulation of Equilibrium with Adverse Selection



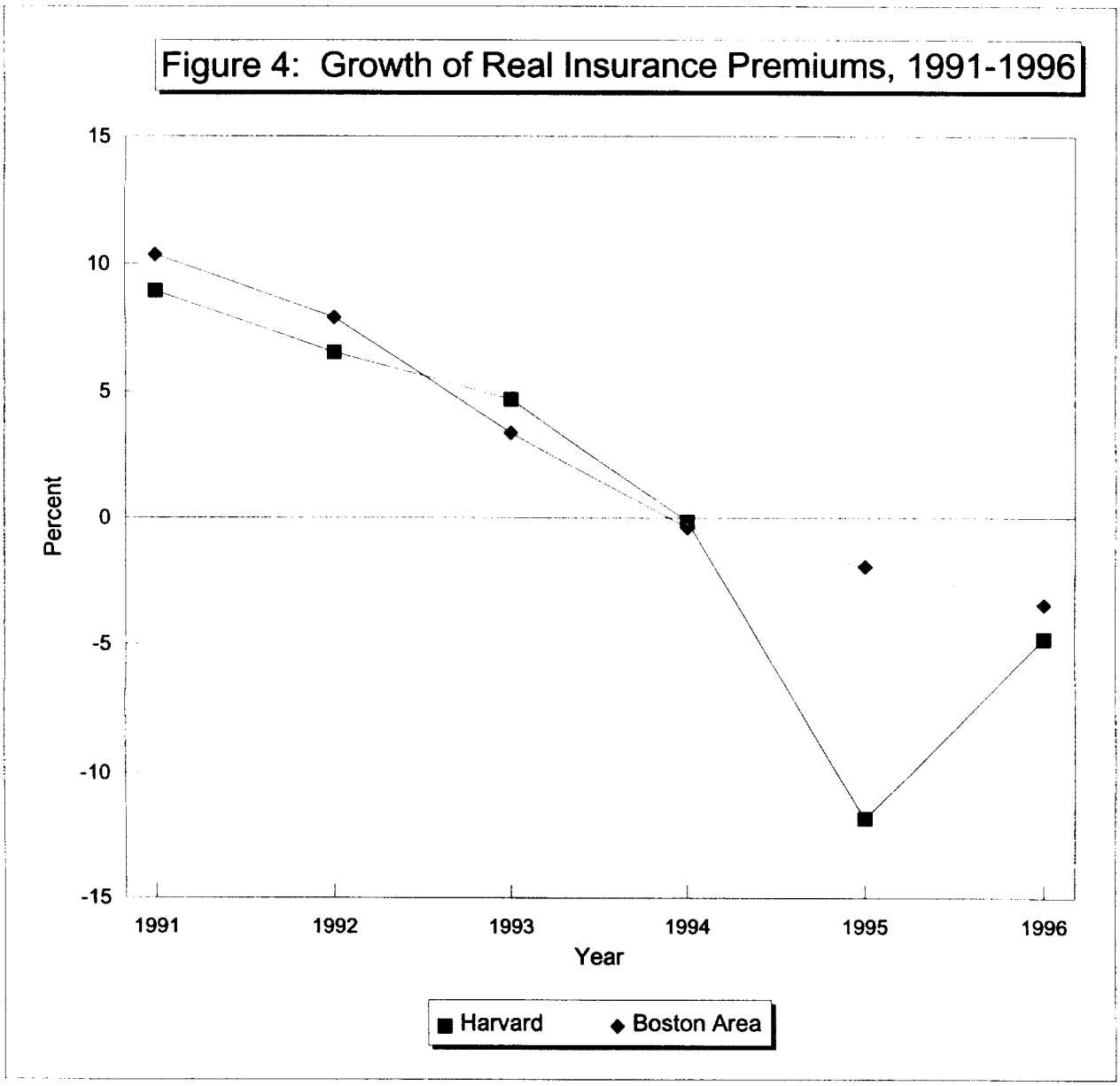


Figure 4: Growth of Real Insurance Premiums, 1991-1996
15
10
5
0
-5
-10
-15
Percent
1991
1992
1993
1994
1995
1996
Year
Harvard
Boston Area

Table 1: Changes in Employee Payments Resulting from Pricing Reform, 1995

Plan		Total Premium	Employee Payment			Share of Enrollment, 1994
			Old Policy	New Policy	Change	
Individual						
PPO	HealthFlex Blue	$2,773	$555	$1,152	$597	16%
IPA	BayState	2,127	489	576	87	5
	Pilgrim	2,123	382	564	182	2
	Tufts	2,119	381	564	183	8
G/S	HCHP	1,945	253	384	131	25
	HUGHP	1,957	235	396	161	44
HMO Average		$1,980	$277	$421	$144	84%
Family						
PPO	HealthFlex Blue	$6,238	$1,248	$2,208	$960	22%
IPA	BayState	5,772	1,154	1,572	418	9
	Pilgrim	5,734	1,032	1,488	456	3
	Tufts	5,721	1,030	1,488	458	10
G/S	HCHP	5,252	683	1,056	373	28
	HUGHP	5,264	632	1,068	436	29
HMO Average		$5,395	$776	$1,191	$415	78%

Note: G/S is a group/staff model HMO. HCHP is Harvard Community Health Plan. HUGHP is Harvard University Group Health Plan, the HMO run by the University. In 1994, there were 3627 individual policies and 3387 family policies. Out-of-pocket premiums are for an individual with salary between $45,000 and $70,000.

Table 2: Trends in Real Premiums and Enrollments

Measure	Year				
	1992	1993	1994	1995	1996
Individual					
Out-of-Pocket Cost of PPO	$290	$279	$361	---	---
1995 Treatment Group	$290	$279	$361	$731	$1,414
1996 Treatment Group	$290	$279	$361	346	1,414
Share of Enrollees in PPO*	20%	20%	20%	---	---
1995 Treatment Group	---	---	18	14%	9%
1996 Treatment Group	---	---	13	12	5
Real Premium					
PPO	$2,854	$2,794	$2,828	$2,773	$3,228
HMOs	2,066	2,239	2,240	1,980	1,910
Family					
Out-of-Pocket Cost of PPO	$439	$453	$519	---	---
1995 Treatment Group	439	453	519	$1,017	$2,167
1996 Treatment Group	439	453	519	522	2,167
Share of Enrollees in PPO*	20%	20%	20%	---	---
1995 Treatment Group	---	---	25	21%	14%
1996 Treatment Group	---	---	11	11	4
Real Premium					
PPO	$6,430	$6,267	$6,395	$6,238	$7,251
HMOs	5,860	6,274	6,227	5,395	5,281

Note: Premiums are in 1995 dollars. Out-of-pocket premiums under the new policy are for employees earning between $45,000 and $70,000.

* Summary data for 1992-94 include individuals and families together, and are for both part-time and full-time workers. The division into 1995 and 1996 Treatment Groups include only full-time workers and are reported separately for individuals and families.

Table 3: Logistic Regression Estimates of Insurance Choice

Independent Variable	Mean (Std Devn)	PPO Enrollment 1994-95	PPO Enrollment 1995-96	Drop Coverage 1994-95	Drop Coverage 1995-96
$\ln(P^e_{OOP})$	**3.64**	**-.430****	**-.784****	**1.618****	**.794****
	(.44)	**(.106)**	**(.150)**	**(.359)**	**(.367)**
Treatment Group	.67	.008	-.142	---	---
		(.073)	(.098)		
Second Year	---	.058	-.031	---	---
		(.069)	(.120)		
Individual Policy	.52	-.059	-.203**	-.487**	-.474**
		(.065)	(.083)	(.207)	(.245)
Age 30-39	.33	.568**	.775**	.443	-.337
		(.106)	(.127)	(.379)	(.340)
Age 40-49	.25	1.005**	1.259**	.139	-.881**
		(.107)	(.128)	(.409)	(.404)
Age 50-59	.16	1.340**	1.565**	.141	-.835*
		(.113)	(.134)	(.455)	(.485)
Age 60-69	.08	1.470**	1.653**	-.484	-1.652**
		(.127)	(.149)	(.603)	(.767)
Salary Between $45,000 and $70,000	.18	.491**	.531**	.278	1.054**
		(.068)	(.076)	(.268)	(.287)
Salary > $70,000	.15	.995**	1.176**	.156	.918**
		(.082)	(.096)	(.376)	(.402)
Female	.52	.240**	.269**	-.039	-.168
		(.051)	(.057)	(.199)	(.241)
Distance to HMO (miles)	15.0	.0011	-.0016	-.027	-.003
	(61.8)	(.0041)	(.0049)	(.038)	(.027)
Distance >= 300 miles	.04	.019	1.275	9.796	2.675
		(1.214)	(1.456)	(11.301)	(8.048)
Tenure at University	9.5	.023**	.027**	-.015	-.004
	(9.6)	(.003)	(.003)	(.013)	(.017)
Faculty	.17	.435**	.562**	-.060	-.131
		(.065)	(.071)	(.243)	(.322)
Hourly	.09	-.146	-.090	-.420	-.461
		(.096)	(.108)	(.485)	(.547)
Sample Size	9,073	16,727	17,741	7,654	8,601
ln(Likelihood)		-6,694.33	-5,692.25	-608.59	-449.67

Note: Summary statistics are for 1995.
* Statistically significant at the 10 percent level.
** Statistically significant at the 5 percent level.

Table 4: Characteristics of Plan Enrollment Changes

	1994-95 Sample				1995-96 Sample			
First Year Enrollment	HMO		PPO		HMO		PPO	
Second Year Enrollment	HMO	PPO	HMO	PPO	HMO	PPO	HMO	PPO
Share of Enrollees	99%	1%	15%	95%	100%	0%	39%	61%
Average Age	41**	46**	46**	50**	41	***	46**	51**
Percent <40	50%	26%	31%	21%	50%	***	30%	15%
Percent 40-60	44	68	56	61	45	***	60	66
Percent >60	6	6	13	18	5	***	10	19
Index of Spending	0.96	1.09	1.09	1.16	0.97	***	1.09	1.20
Average Spending	---	---	---	---	---	---	$1,893	$2,648

Note: Individual and family plans are grouped together. Average spending in the last row is adjusted for individual/ family policies.

** Difference between age of people switching and remaining in plan is statistically significant at the 5 percent level.

*** Too few people for reliable estimates.

Table 5: Changes in Real Family Premiums, 1990-96

Plan		Harvard			Boston Area			Difference		
		1990-94	1994-95	1995-96	1990-94	1994-95	1995-96	1990-94	1994-95	1994-96
PPO	HealthFlex Blue*	---	-2.4%	15.0%	---	3.2%	-7.5%	---	-5.6%	22.5%
IPA	Baystate	5.8	-12.5	19.2	6.2	-5.3	1.3	-0.4	-7.2	17.8
	Pilgrim	3.8	-14.1	2.3	5.2	-3.5	-3.6	-1.4	-10.6	5.9
	Tufts	5.6	-12.8	-4.1	4.5	-7.6	-3.5	1.1	-5.2	-0.6
G/S	HCHP	3.9	-8.6	-3.7	4.9	-2.4	-2.6	-1.0	-6.2	-1.1
	HUGHP	5.2	-20.7	-9.2	---	---	---	---	---	---

Note: Boston area premiums are for large employers (generally 26+ or 51+ employees). The premiums are a composite family rate for the insurer's "standard" plan.

* Plan begins in 1992. The Boston area premium is for HMO Blue, an HMO that is similar to the HealthFlex Blue PPO.