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How Informational Imperfections Lead to Sub-Optimal Solutions in Health Savings Plan and Potential Remedies in a Competitive Marketplace

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In the growing trend of consumer-driven health insurance, more consumers than ever have access to a high-deductible health plan paired with a health savings account, where consumers can save pre-tax income for healthcare but also face higher out-of-pocket prices, in hopes that consumers will become smarter shoppers. The Health Savings Plan is successful at lowering costs, but at the expense of consumers lowering their adherence to healthcare, raising health risk. Even in a competitive market, HSP plan designs require smart shoppers and more active healthcare self-management, but without dealing with the informational imperfections that need to be overcome to encourage this intelligent consumerism. In order for HSPs to succeed, they need to be aligned with policy and innovations that mend these informational deficits, but even then, policy makers need to be aware that HSPs do not tackle the main problem in the US healthcare marketplace.

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I. Introduction

The United State healthcare market is in crisis, with costs growing year-over-year and more consumers having to pay out-of-pocket, or worse, neglect care all together. There have been a myriad of proposed actions to help ease these ailments, with one particular idea gaining ground: the idea that increased consumerism will help the insurance market by slowing down growing costs. In effect, it is an argument for the decentralization of the insurance market, that by taking some of the power insurers have in the form of subsidies for healthcare and giving it to consumers to choose what healthcare goods and services they want to subsidize, that demand for unproductive goods and services will fall as more conscious consumers will be more cognizant of the marginal effect of each said good and service. Out of that idea, the Health Savings Plan was created.

The Health Savings Plan (HSP) makes consumers face higher out-of-pocket spending for healthcare good and services, but also gives them a savings account in the form of a Health Savings Account (HSA) that employer contributions and pre-tax income can be put into. In effect, that savings account, which can only be used for healthcare or withdrawn for any good at the age of 65, becomes either an insurance against the higher prices consumers face or a tool of retirement savings, allowing consumers to fund more expensive healthcare goods while also becoming more aware of the true price of

healthcare. The results for HSPs are clear: while there is an initial substantial drop in costs, those savings are not sustainable but do lead to less-substantial lowered costs in the long-run. By creating incentives for consumers to be active economic agents in their healthcare decision making process, the insurance plan can also curb over-utilization in certain high-cost areas that supply-side healthcare plans could not. Moral hazard of over-consumption is also reduced as insured consumers, more aware of the costs of the service and facing a higher copay, choose to consume less of it. That said, they are far from perfect; various productive forms of preventative services, such as cancer screenings have decreased, and significant drops in medical adherence also show a drop in active care of ongoing ailments. Creating a situation where unhealthy people are forced to under-consume productive healthcare services is far from a societal improvement and long-term costs might grow as even healthy people cut preventive care for short-term savings.

Due to the complex system of information in the healthcare market, advocating for higher "consumerism" might not necessarily be a good thing even in a sufficiently competitive marketplace. Results show consumers are not able to efficiently utilize information on both their economic experience, such as marginal price structures, as well as the payoff of healthcare decisions. Even if they could fully utilize it, the information they receive might be incomplete, asymmetric, or too complex, creating an incentive or decision that can lead to both a personal and societal sub-optimal return. Compounding this is the stricter budget and higher prices at time-of-service inherent to the HSP plan design, which can make services too expensive for those most at risk, and can lead to

negative health outcomes as consumers lower quantity demanded for both low and high return services alike.

Without properly addressing the information failings in a competitive insurance market, and examining how some of those issues might be compounded by the HSP plan design, insurers cannot hope to slow healthcare costs growth without creating a more unhealthy populous, especially in a highly uncompetitive market. In this paper, the information imperfections will be examined under the assumption of a competitive insurance and medical provider markets in order to control for and focus on the information problems in the marketplace and how they interact with the growing focus on consumerism in healthcare. Then, that assumption will be relaxed to examine how effective those information remedies might be in a marketplace as concentrated in the US healthcare system. Under the assumption of a competitive marketplace, to ensure HSPs work both insurers and policy makers must introduce a more robust information infrastructure that facilitates consumerism, a system of incentives that encourages socially optimal behavior in the marketplace, and other plan options that benefit low-income higher risk consumers. When facing the reality of the US healthcare and insurance marketplace, while these information remedies will help consumers and might facilitate better functionality under a HSP, they do not tackle the root problem in the US marketplace and cannot be expected to fix the overall existing problems.

II. HSP Adoption and Statistics

With the failure to control cost growth of supply-side plans such as the Preferred Provider Organization (PPO) insurance model, which subsidizes price of the commodity from in-network healthcare providers, insurers have tried a more demand-sided approach in plan design with the high-deductible health plans (HDHP). HDHPs force consumers to pay more out-of-pocket before they reach their deductible given some health budget, thus encouraging "consumerism" by creating a situation where utility maximizing consumers are more conscious shoppers over their demanded healthcare. In this regard, consumerism is the act of making healthcare consumers more conscientious shoppers, where instead of over-utilizing unproductive services due to the low cost offered by their previous insurance, they will more thoughtfully weigh the marginal benefit of each procedure and service against the marginal costs and their liquidity constraints. The hope with these plans is that by introducing a higher copay and deductible, that moral hazard will be reduced and over-consumption of low-return goods will be diminished. This idea is not new or unique to HSPs, rather policymakers have tried to encourage this consumerism through a variety of health insurance plans.

An earlier form of a HDHP, the Health Reimbursement Account (HRA) which was created in 2001, created a fund that allowed employer contributions that could be paid for healthcare only. HRAs did not allow consumers to contribute their income into

the fund and the account did not increase year-over-year, with any leftover money going back to the employer. While the goal was to create a situation where, by giving an account to the consumer, they would shop the marketplace to find the best value given the cost of the unit of healthcare, the HRA creates a "use-it-or-lose-it" situation. Without giving employees the option to invest their own funds, or save those funds in the long-term, a situation was created similar to a classic supply side plan, where there will be an over-demand of units of healthcare as consumers. Both HRAs and classic supply-sided plans create excess demand of healthcare goods and a moral hazard where the consumer is incentivized to consume more than what is societally beneficial, driving up costs and increasing inflation in the market. While both plans are still in effect today, it was decided that a new system to encourage even more proactive shoppers was needed.

At its creation in 2003 with the Medicare Prescription Drug, Improvement, and Modernization Act, the HSA in its current form was created. The HSA allows for both consumers and those offering insurance (usually employers) to contribute pre-taxable income into the account and allowed contributions to be withdrawn at any time, tax free, so long as the funds go to an approved healthcare good or service. The insurance company will set up a HSA account with a bank, where the HSA funds can be invested and earn tax-free interest for the consumer and revenue for the bank. Further, the fund rolls over each year and can be used as a retirement fund; if funds are withdrawn before the age of 65 for non-healthcare consumption, a 10% withdrawal penalty and taxes are applied, but if the owner of the fund is 65 or over, the withdrawal is only subject to income tax for non-healthcare consumption (United States Congress 2003). At

implementation, the HSA, combined with a high-deductible insurance plan to become a High Savings Plan (HSP), had an annual deductible of $1,000 with a max out-of-pocket of $5,000 for a single individual, much higher that existing plans, while also increasing allowable employer contributions compared to the HRA. With the limits tied to inflation, as well as other internal IRS calculations on markets, the max contribution for 2020, including both employee and employer contributions, was set at $3,550 a year, with max deductible and out-of-pocket maxes set at $1,400 and $6,900 respectively, all for single-coverage (Miller 2019).

HDHPs, as a whole, were not popular at creation with either consumers or companies providing insurance. Adoptions were initially non-existent, and only reached 4% employee adoption in 2006. Since then, HDHP adoption has dramatically increased, with 29% of covered workers participating in some consumer-driven health plan (Kaiser Family Foundation 2018). Employer offerings of HDHP is at an all-time high now as well, with 29% of companies offering some sort of HDHP, representing 58% of covered workers being able to invest in said plan (Kaiser Family Foundation 2018).

As HSP adoption has grown, more studies come forward each year to show that the plan is successful in reducing costs in the short-term. In one case study, the state of Indiana, concurrent with offering a PPO plan, allowed state employees to switch at any point during a four-year period into one HSP with both relatively lower deductible and state contributions or a second HSP with higher a deductible and contributions. Results after the four-year period found, on average, that net spending per year on both medical and prescription claims fell 38% for the group with the lower deductible and 72% for

employees with the higher deductible and contributions (Gusland 2010). While perhaps

not as drastic of findings, Kaiser found for 2018 medical claims data that annual average

premium for a single covered employee was $6,896 for all plans, $7,149 for PPO, and

$6,459 for an employee with a HDHP (Kaiser Family Foundation 2018). HDHPs, and

HSPs in particular, have shown that companies, and the healthcare industry as a whole,

can curb costs by incentivizing health consumers to be more active in their decision-

making process.

While results show that switching to a HDHP does lead to a good amount of

savings, the most drastic savings have not been continuous over time. Studies have also

shown that while HSPs do lead to lower spending compared to other health plans, their

drastic results are not sustainable. After switching entirely from a PPO at the beginning

of 2006 to a HSP, a large company found that the following year, spending on healthcare

had fallen by 25%. However, compared to PPO spending in the year prior to switch,

years after 2007 only averaged 4-8% lower healthcare spending in the HSP. In fact,

results found that the only services that stayed significantly lower for the entire time

period were laboratory (36% fall in initial year, settling between a 19-21% reduction) and

pharmacy spending (a 32% decrease in the initial year, then ranging between a 20-26%

reduction in the following years) (Roebuck 2013).

Premium costs of HSPs are much lower than that of HMOs and PPOs as well, but

since the popularity of HSPs has continued to grow, the premium costs are beginning to

catch up to other plan designs. From 2007 to 2018, annual HDHP family premiums grew

from $10,693 to 18,602, an increase of 74%, while non-HDHP have risen from $12,183

to $20,035, an increase of 64% (Kaiser Family Foundation 2018). Non-HDHPs are still more expensive, but as the HDHP and HSP offerings continue to grow, HDHP costs will also continue to grow as less healthy individuals who were in richer plans transition to these HDPs. Even though insurers might see cost-savings in the first year of HSP adoption, those savings usually shrink by year two, and with current trends, HSP premiums might not stay below those plans with richer coverage.

These health plans were created not only to cut cost growth however, but also stop over-utilization of unnecessary healthcare goods and services to slow inflation, without cutting utilization of productive healthcare services. Various reports have shown that HSPs have succeeded in cutting certain types of utilization. Emergency room utilization is always a potential cost-saving opportunity; many times, consumers will use the emergency room when not medically necessary, not realizing the extreme expense for these services for both themselves and the insurer. The same case study for Indiana found that emergency room visits per 1,000 in 2009 fell from 308.1 to 210.4 for the lower-cost sharing HSP and to 163.0 for the higher cost-sharing HSP. Similarly, they found that physician office visits fell from 5,012 per 1,000 in the PPO to 3,612 and 2,701 for the lower cost-sharing and higher cost-sharing HSPs respectively (Gusland 2010). This continues to be consistent across multiple studies; another case study shows that outpatient visits dropped .48 per person, a fall of .12 per person in primary care visits, and a fall of .36 per person in specialist visits (Fronstin 2016). Not only were policy makers successful at cutting costs in healthcare spending, they were also successful in

cutting healthcare over-utilization, but the results might not be as clear-cut as some HSP proponents might hope.

Cutting healthcare cost and over-utilization, while keeping the populous healthcare at the same level, is a clear efficiency improvement and may lead to a societal gain where healthcare cost growth is slowed while consumers do not have to sacrifice their health. However, HSPs might, given their current form, create the wrong type of incentives that only lead to a short-term drop in healthcare costs. With a higher cost-share and an account that builds year-over-year, consumers have a clear incentive to utilize less healthcare units than under a supply-driven plan design. One of the problems arise when these incentives are too strong and they actively create a situation where a consumer might under-utilize goods where the net societal benefit is above the market price. For instance, policy makers have found a statistically significant drop in cervical cancer screenings in females 21 and older by 0.016 per person (Fronstin 2016). While these lead to clear cost-savings in the short-run, should preventive screening and prescription adherence rates fall, then serious medical conditions that might have been more easily prevented can arise, leading to dramatically high-cost claims and a loss in worker productivity. This can be a dangerous result, especially considering that now both cancer and circulatory diseases are now the two most costly conditions driving global healthcare cost growth (Mercer 2017).

Various studies also show that HSPs can lead significant drops in pharmaceutical adherence as well, leading to under-utilization below societally beneficial levels. It has been shown that, while not all costs stay dramatically low as they do after the first year of

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implementation, that drug spending does stay significantly lower over time. That begs

the question, are consumers switching from more costly specialty drugs to generics that

can provide the same health benefits or are they simply not refilling their prescriptions

when necessary? Studying those with at least one chronic disease and in either a new

HSP or existing PPO over three years, researchers found that percentage of those staying

adherent to their medication in the HSP was significantly lower than those in a PPO; only

54% of those with elevated blood pressure stayed adherent in the HSP while 64% stayed

adherent in the PPO, and 68% in the HSP stayed adherent to their diabetes medication in

the HSP versus 73% in the PPO (Fronstein 2013). In a similar study, Fronstein (2016)

also finds that drug fill rates fall 0.757 per person. While less prescription fills in the

short-run might lead to some cost savings, in the long-run this can lead to dramatically

high cost claims that otherwise might have been easily prevented.

Clearly, results have been ambiguous for the Health Savings Plans and work is

already underway to make sure services stay affordable under this plan design.

Following a dramatic decrease of costs in year one, costs do settle to a cheaper, albeit not

as significant, level compared to other insurance designs. In this case at least, HSPs have

succeeded in lowering costs. The question becomes then, with preventive services

utilization, as well as medical and pharmaceutical adherence falling, are insurers creating

a situation where HSPs are only cutting costs as they induce consumers to not utilize

socially-optimal goods and services? If that is the case, will HSPs in the long-run lead to

higher costs as consumers do not receive treatment and their healthcare conditions

worsen, leading to high cost claims and loss in economic productivity? Insurers and

policy-makers need to examine why these costs and adherence levels fall below the norm and why these consumers, even when facing a very high marginal benefit to a healthcare service, choose to not utilize it. At least one part of this problem lies with information. Information imperfections have long been a study in healthcare economics and by examining how these imperfections and asymmetries relate specifically to the HSP design, then insurers might be able to alleviate some of these issues and create a clear welfare improvement.

III. Information Imperfections in HSP Plan Design

3a. The Agents

When examining the information problems, it becomes important to lay out who the agents are and why they are even in this market to begin with. One problem hindering these plan designs from reaching a more optimal outcome are the multiple types of agents involved in them, sometimes with clashing goals and various types of information available to only them that help them achieve said goals. There is no reason to assume the information held by each agent is either complete or symmetric. Incomplete information is just that: an incomplete set of information will be used efficiently in the decision-making process by a rational agent, but due to it being an incomplete set the agent will incorrectly value the marginal benefit or cost from its true value. This information failure can arise from information being too opaque or very high search costs to retrieve it. Asymmetric information is an informational imperfection that arises when at least one agent has private information that the others do not have. This information allows the agent owning said information to receive some informational rent on it, aka extra profits at the expense of the other agents. This paper will focus on three different types of agents with diverging goals and how their privately-maximizing actions might lead to a welfare loss in the presence of Health Savings Plan and an incomplete market for healthcare information.

The first type of agent is the patient and consumer of healthcare. This agent will want to maximize their utility based on the marginal preference of healthcare goods and some price-normalized non-healthcare goods. As a perfect micro-economic consumer, their consumption will be based on their marginal rate of substitution for healthcare and non-healthcare goods and their liquidity constraints, i.e. their HSA money plus some initial endowment of wealth. Further, following Grossman's (1999) human capital model for health, consumers will be consumers and producers of their own health, but health will also be both a commodity and investment. As time spent sick is not only a disutility, but also takes away time that could be used to earn a wage, consumers will "invest" in their health by consuming health services and using time to partake in healthy activities. In that way, consumers will produce healthy actions as an investment to receive an increased number of healthy days, but will also will consume these healthy days to earn either more wages or increasing their free time, increasing their utility. The two most important pieces of asymmetric information these agents will hold is the current level of their health and their unobservable behavior in regard to these healthy actions.

The second type of agent is the provider of the healthcare goods and services, or any doctor, nurse, or technician that provides some healthcare service. As in the standard economic model, a provider of any goods or services will try to maximize revenues and minimize costs in order to receive the highest level of profits possible. The model, however, becomes infinitely more complicated when examining the human aspect of the provider. Surely, not all providers care only for profits and at least some take joy in their work and helping others or adhere strongly to the Hippocratic Oath. Then, there must be

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some account for marginal return on "honesty" or altruism, where instead of providing a procedure to the consumer that would maximize profitability, the provider gets some return from providing a potentially less-profitable service that would maximize return for the consumer despite the opportunity cost of not being able to bill them higher. Various studies of microeconomic games show in reality that altruism is exceedingly high, with agents showing a high preference for not only altruism, but also a high preference for punishing those that do not follow the "rules" of altruism, even if that punishment comes at a cost to them (Gintis 2003). In effect, each provider has a marginal preference for helping consumers, which will be especially strong if they believe they will see the consumer on multiple occasions, and will suggest a service that aligns with their profit-honesty preferences. The asymmetric information the provider holds is the productivity of a healthcare good or service and their heterogeneous preference for "honesty". The provider will also share some asymmetric information with the insurer, the marginal profitability of a healthcare good or service.

The third type of agent in this situation is the insurer. Their job is to create a contract for a health plan that will meet, at minimum, the consumer's reservation utility to accept the contract, while also maximizing their profits. Their contract must also satisfy the condition that providing protection to the consumer at least to the consumer's reservation utility (the minimum amount of return the consumer expects from the insurance plan before investing) and create a sufficient risk pool of consumers so that costs stay at a reasonable level. They must also create a contract that creates a payment schedule for providers, historically in the form of a fee-for-service schedule that pays out

a provider after a service is performed. For simplification purposes in this paper, it will be assumed that insurers can act as their own policy makers so long as the problem does not require any legal fixings or government intervention; for example, should an incentive payment or change in the existing HSP structure be needed, they can take it so long as it meets the minimum level of legal requirements and improves upon their maximization problem. Likewise, although most consumers' employers act as an insurance intermediary, setting up a plan that will meet their own budgetary needs and offering it to its employees, it will be assumed that consumers receive their HSP directly from insurers.

3b. Moral Hazard

3bi. Behavioral Hazard

By giving the consumer a higher deductible, but also an account to be spent on only healthcare, the HSP plan design can be seen as an attempt to decentralize the healthcare industry. Instead of insurers making a wide variety of decisions on which producers and products should be subsidized, and by how much, they can offer less subsidies and let consumers shop for themselves. This is in effect a very neoclassical argument; the market price will provide private and societally optimal welfare and any distortion from the market price, whether warranted or not, will lead to sub-optimal results. Although very few would argue the demand for insurance protection against uncertainty is a bad or irrational thought, there has been numerous arguments against the

supply-side method of subsidizing healthcare with broad discounts and subsidies, leading to moral hazard on the part of consumers.

Moral hazard in the insurance industry has been described as the phenomenon where "widespread medical insurance increases the demand for medical care" (Arrow 1963). The problem arises as consumers view the insurance similar to a subsidy on the price of a healthcare good or service. According to neoclassical theory, the market price internalizes both the private and societal benefit so long as the market is perfectly competitive and any subsidy that puts the price below the market price will, according to that school of economic thought, remove this equality and will cause the private return at that price above the societal return. Hence, the incentive of moral hazard occurs, causing excess demand for healthcare by consumers, the excess spending causing price inflation in the marketplace, and a loss for insurers.

One of the main arguments for coinsurance is to reduce this moral hazard. Under full insurance, consumers would have a very low marginal cost on healthcare consumption, to the point where a consumer can utilize unnecessary goods and services and drive up marketplace costs. By introducing some cost-sharing to the consumer, there is less incentive to over-consume as marginal costs increase and come closer to unity with the market's marginal cost. The RAND Health Insurance Experiment, one of the most ambitious socio-economic research projects of all time, found about -0.2 price elasticity of demand for healthcare demanded based on a change in out-of-pocket costs (Aron-Dine 2013). While the change is relatively price inelastic, the RAND experiment

rejects any idea that cost-sharing and medical utilization were completely unrelated, thus some overconsumption due to moral hazard could be reduced by increasing coinsurance.

In this regard, HSPs are at least slightly successful in reducing moral hazard. By introducing a higher deductible and prices at the time of service, these plans are able to bring the private costs of healthcare closer to the societal cost of healthcare than supply-sided plans such as PPOs. While the most striking utilization decreases for most services diminishes as time goes on, most services stay at slightly lower quantities demanded than other plan designs, while some see drastically diminished quantities demanded year-over-year. However these results, and using the RAND price elasticity of demand on these results, can be problematic for at least two reasons. The first is that this price elasticity of demand is a linear function juxtaposed on a non-linear cost structure (covered more in a later section). The second is that reducing quantity demanded is a net welfare loss if it encourages consumers to utilize less than socially optimal of a healthcare good.

Results have unfortunately shown that when consumers switch to a HSP they not only lower utilization of less-productive services, that they will also lower utilization in productive services such as medical adherence to pharmaceuticals. Consistent with the RAND study's results, when faced with higher out-of-pocket cost sharing consumers lower medical utilization. One explanation in the theory framework that might explain this is that consumers are unaware of the strong positive return as they lack the proper information on how to value healthcare goods and services, and given the imperfect information, categorically undervalue these returns. Studies show a strong positive correlation between "certainty" and medical adherence; when a consumer has the proper

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information on their health state and has the best up-to-date information on how to treat it, they are much more likely to remain medically adherent (Frain 2009).

Given the growing number and accessibility of medical transparency tools, it might be hard to understand why consumers continue to undervalue these goods and services. Some have argued that even with this new information technology that certain information regarding the present and future returns are hard to understand, or even notice, at best and might undervalue future expected risk. Suppose a producer informs a consumer that they have some sort of disease and gives them best practices to treat it. The consumer though might be unaware of how comorbidity affects their disease, not keep up to date with changes in technology that affect best practices, might not use all the information networks at their disposal, etc. Worse yet, given this surplus of information, consumers must use all of it to create some optimal valuing of their future and discount future returns against today's costs. Then it might not only be that consumer's lack perfect information on their health status, but they also are not able to properly value and process it.

Substantial work has been done to try explain why consumers might not be "perfectly rational" insofar as utilizing all information and work continues as behavioral economics grows as a field. DellaVigna, one such researcher, shows evidence for a "limited attention" model, where the value of an item (inclusive of price) to a consumer is a function of both a visible component and an opaque component. The consumer will set a preferential marginal value based upon all of the visible, easy to understand information as well as some amount of the opaque, harder to understand, information. Should they

fully understand the more opaque information they will fully utilize said information in their valuation process. Much more likely though, is that they will either have not fully understood said information or received an incomplete form of it, leading them to incorrectly value at least some return on the good or service (DellaVigna 2009).

Baicker (2012) expands DellaVigna's inattention model to capture what she calls "behavioral hazard" in healthcare, the phenomenon of people underutilizing productive, high value healthcare goods and services. This behavioral hazard happens for two reasons: the severity of certain symptoms versus others, as well as biases and false beliefs due to faulty information on the benefit of a service. If a sick agent faces multiple symptoms of varying degrees of pain, the rational agent will get treatment for all those symptoms so long as the marginal benefit of treatment is greater than or equal to the marginal cost. However, the "inattentive agent" will put a higher weight on painful symptoms, while discounting or even ignoring less painful symptoms, then get treatment so long as the benefit of getting treatment on these subjectively rated symptoms is greater than the cost. The behavioral hazard is then measured in the difference between the true marginal benefit of the procedure against the perceived marginal benefit.

One striking example of this behavioral hazard is medicine for those with high blood sugar and diabetes. High blood sugar can be fairly asymptomatic on its own, causing irritability or headaches, but paired with diabetes can have drastic results, such as amputation, heart disease, and stroke. From an economic perspective, this can also lead to a higher disease burden with increasing insurance premiums as well as years lost in productive life. Given the potential outcomes, adherence to medicine to control high

blood sugar is shockingly low. One study finds that, when prescribed a glucose-lowering

prescription, only 39.4% remained adherent to the drug after 24 months and a striking

4.0% never even filled their initial prescription (Garcia-Perez 2013). Given that this

inadherence can lead to death, it is unrealistic to say that the consumer is simply

indifferent to the worst-case scenarios versus the cost of adherence, but much more likely

that it is some combination of the consumer not fully understanding the marginal benefit

and their liquidity constraints.

Put into Baicker's model, the effect that a high out-of-pocket cost that is inherent

in a high-deductible health plan can lead to very negative outcomes. Consumers should

be at least somewhat aware of the return on medical adherence given their provider's

suggestion and the information networks available to them, but due to this lack of

certainty and knowledge on opaque information, consumers can drastically undervalue

services and severely shorten their productive years. Worse yet, given the RAND's out-

of-pocket price elasticity of demand findings paired with higher deductibles, insurers

might be creating a situation where consumers reduce non-productive and productive

utilization uniformly. Studying the RAND experiment results, Lohr (1986) found that

when comparing those in a free insurance plan to those in a plan with high cost-sharing

that, when given the choice of a medically-considered highly effective service for an

acute condition, 28.4% of free plan holders compared to 19% of cost-sharing enrollees

sought care, while 25% of free plan holders sought care that was deemed medically

ineffective and 18.6% of those in cost-share plans used the same medically ineffective

service. Interestingly enough, when separating low and high income individuals, both

groups had similar outcomes where low and highly effective care was reduced, and the only service utilization not significantly reduced by cost sharing was highly-effective medical care for chronic conditions (Lohr 1986).

While the moral hazard of overconsumption might be slightly reduced, the gains from that can be lost to the long-run costs and loss of productive workforce due to behavioral hazard leading to negative health outcomes. Given the vast amount of information needed in order to accurately value the marginal benefit of some medical service, consumers will most likely undervalue to marginal benefit while simultaneously facing a higher marginal cost. In effect, insurers and policy makers might have reduced the overconsumption of non-productive services, but they have inversed the problem, creating a situation where a consumer is more likely to under-consume healthcare that they need.

3bii. – Provider Moral Hazard

Providers hold more information and training, which will allow them to hold private information on service productivity and profitability. This gives the profit-maximizing provider the incentive to suggest the most profitable services to them, not necessarily the most productive for the consumers. This sets up a principle-agent problem with the consumers and providers. Suppose there is a completely uninformed consumer and only two medical services that the provider can offer: service A which is less productive but offers a higher profit, and service B, which would return less profit

for the provider but a better outcome to the consumer. The provider will then chose whatever service is a higher return for them, based on their marginal preference for "honesty" and profit and the consumer can only either accept or reject the service, based on their expected marginal benefit. Should the producer's preference for honesty and altruism sufficiently outweigh their preference for pure profit, then they will offer service B. However, there is the chance of a dishonest healthcare professional, leading to an offering of service A. Should service A be accepted by the consumer, who is unaware to the profit schedule for each service, the marginal productivity of each service, or being completely unaware of alternative services (service B), then they could receive long-term costs as the consumer develops an illness that was preventable with the proper consumption of healthcare.

It has been assumed that all agents in this situation are rational in that they will maximize their utility based on their preferences and all relevant information that they hold. However, when second-order rationality is assumed, the case of "honesty" in the healthcare profession can lead to further problems. Second-order rationality is the case where an agent knows they are rational and maximize their utility based on preferences and available choices, but they also know other agents are rational and will maximize their utility. Then, an agent must not only consider their best choice, but also the choice they expect the other agent to play.

When second order rationality is assumed, consumers of healthcare will choose a provider and be offered service A or B by said provider. The consumer, again, can only accept the provider's suggestion or deny it, since due to the asymmetric information on

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service productivity, the consumer will most likely be unaware of the non-offered service. The consumer will know in this case that the provider is rational and suggesting services that will maximize their utility based on their marginal preferences for profit and honesty. The problem arises from the fact that the consumer knows that the provider offers services based on their preference for profit and honesty, but does not know how strong either preference is. In other words, the consumer does not whether or not the provider has sufficient incentives to be honest and suggest the best service available to the consumer. A distrust then forms in the consumer, drastically effecting their choice to either accept or reject the service.

Surveying shows that distrust in healthcare providers is significant and can range drastically based on demographics. In one survey showing racial disparities in healthcare trust, 51.4% of black consumers believed they had been deceived in the past by a healthcare provider, while 42.4% of white consumers believed the same (LaVeist 2000). Should this distrust exist in the consumer, they will be more likely to reject the provider's service offering, even if the provider is offering the most productive service. This distrust can be made all the worse due to the fact that HSPs can incentivize a consumer to not utilize productive services in order to save their seed money. If a consumer is already distrustful that the provider does not have their best intentions at heart, and now must also face a higher out-of-pocket cost, they are much more likely to reject services that could improve their long-term health.

3biii. Consumer Moral Hazard

Insurers also face the problem of moral hazard from the consumer potentially driving up costs. Insurers, when creating a contract, should create a risk factor for the pool of consumers based on the consumers' average health, then create a cost sharing structure based on some amenable cost that is equal to or below what the consumer is willing to pay. The problem then becomes that the insurer does not have available information on the consumer's action after they have accepted the contract and before the contract expires. For instance, after accepting the insurance contract, a consumer might take up is smoking. While the "smoking high" might bring net utility to the consumer, it will raise the costs of the risk pool and insurers do not have a method or system of surveillance to make sure the consumer to receive information if a consumer takes up smoking. It also raises the risk that the consumer will need to, due to their unhealthy lifestyle, consume more medical services in the long-run; moral hazard again leads to increased demand in the healthcare marketplace. As consumers consume more due to their unhealthy lifestyle and hit their deductible sooner, the insurer must pay a higher percentage of healthcare costs in the current contract period, as cost sharing rates are usually set at a fixed rate over a contract's life time.

This moral hazard is not unique to the HSP plan structure and is a very common incentive compatibility problem present in most contracts. Take the classic principle-agent contract problem. In the case of the insurance market, the insurer must make an insurance plan that maximizes their expected revenue, which is the summation of all payments received to them less the probability of having to pay out to consumers based

on the riskiness of each pool of consumers (Macho-Stadler 2001). In order to get the consumer to accept the insurance plan they are offering, then the coverage offered (utility to the consumer) less the copay the consumer must pay (a disutility) must be greater than or equal to the consumer's reservation utility, which is the minimum net utility of coverage the consumer must receive in order to even consider taking the insurance plan (Macho-Stadler 2001).

Suppose the consumer has two mutually exclusive options in a time period after agreeing to the insurer's contract, an unhealthy option and a healthy option. The unhealthy option, such as going out drinking with friends, provides net utility to the consumer, while the healthy option, such as going on a run then eating a healthy meal, provides disutility. Further, these two options are linked to an unhealthy outcome and a healthy outcome at the end of said time period, where the probability of their health deteriorating increases with the unhealthy option, while they are more likely to stay healthy with the healthy option. There is now diverging incentives between the insurer and consumer; the insurer would like the consumer to take the healthy option, lowering the probability the consumer will become sick and raise insurer's cost, but that action would bring disutility to the consumer.

The information problem becomes that the insurer does not have the necessary information to know what action the consumer has taken. The consumer is more likely to have a healthy outcome when they take a healthy action, but the probability still exists that the consumer will take every healthy action and still receive an unhealthy outcome. Due to this probability, the insurer cannot simply penalize the consumer with higher cost

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sharing when they see an unhealthy result. One example of this is smoking; companies are beginning to charge consumers a higher cost share if they identify as a smoker (Wechsler 2011). However, this is ineffective in that it requires the consumer to be truthful and an insurer cannot charge the higher cost share to a consumer if they develop a smoking-like illness, as they cannot be sure if the consumer ever actually smoked. The fact that, when given the option of multiple plan designs, consumers that choose HSPs will be on average healthier, might mean that some of these consumers might receive less disutility, or even net utility, from taking a healthy action leading to a better result than previous plan structures, but without explicitly tackling the diverging incentives problem in the healthcare design, HSPs might lead to a net improvement but will still not completely eliminate the welfare loss in profitability to insurers by the consumer's actions.

3.c. – Adverse Selection

The private information that the consumer holds with regards to their current healthcare status can lead to adverse selection in plan adoption choices. Adverse selection occurs in the insurance market when one agent, given the options between multiple insurance plans, has relevant knowledge that the insurers either do not share or cannot directly observe. Some agents can then extract informational rents by choosing an insurance plan that is not designed for them. One important example of this informational rent is that a consumer is more likely to know of their healthcare status than any insurer is to know the risk of insuring the consumer. This creates a situation

where the consumer of insurance plans is more likely to put a higher weight of importance on cost-sharing over benefits offered if they are healthy, and vice versa if they are in particularly poor health, should the insurer offer the option between two or more plans.

The effects of adverse selection can be drastic, potentially leading to a complete collapse of a market. This is formalized by Akerlof's (1970) famous paradox of the market for used cars in which the entire market collapses, despite that both buyers and sellers are willing to participate in the sale. In the case of insurance, Akerlof expanded this to the healthcare insurance market for senior citizens. The insurer, who knows the average health of a senior consumer, but does not know each individual consumer's health, will offer a plan to all senior consumers with prices based off the average health of those they believe will accept the price. The very healthy senior consumers, who do not want to pay the high price, will leave the market for insurance, leaving only the medium and very unhealthy consumers. This will drive up claims cost and then insurance cost, forcing the medium health consumers to leave, leaving only unhealthy consumers, and causes a negative feedback loop that leaves consumers and insurers wanting to engage in the insurance market, but at a price where no insurance is bought and the market collapses.

It is beneficial to look at what would the optimal solution be, so that policy makers can examine where the failure happens and find a next best solution. Insurers might first look at providing only one plan and pooling all their risk together. The problem the same as Akerlof's (1970) where if all consumers are pooled together, then

the least costly consumers will simply leave the plan. For that reason, in a sufficiently competitive insurance market, then the equilibrium will only exist in a set of contracts that offers the correct incentives for consumers of different health level to join the insurance plan that would suit their needs best (Rothschild 1976).

In a situation where pooling is not available, an insurer would offer two plans both with the same coverage, an unhealthy plan and a healthy plan (Macho-Stadler 2001). While both plans offer the same benefits and level of protection, the unhealthy plan would have higher cost sharing due to a higher risk pool. This would lead to a profit-maximizing solution for the insurer as unhealthy consumers must pay more to cover their own costs. The problem then becomes, given the option to freely switch between the two insurance plans at the beginning of the year and the fact that screening each consumers' health is improbable, both consumers will elect the cheaper plan due to the lower cost-sharing. This will eventually lead to the collapse of the risk pool; as claims cost rise year over year, while insurers pay a greater portion of the cost due to all consumers entering the low cost share plan, insurers will have no choice but to raise cost sharing. This will continue until healthy consumers leave the plan to find a cheaper plan on the marketplace, causing a negative feedback loop where costs continuously rise and healthy consumers leave the plan, until the insurance plan collapses.

This adverse selection argument is one of the main argument for varying types of deductibles and out-of-pocket maximums in different insurance plans. The optimal, and only, solution then is to change the plan structures that leads the consumer to reveal the asymmetric information they hold on their health by choosing the plan that will best suit

their healthcare needs. In this case, the only equilibrium solution will be offering a more fully insured plan with a higher cost-share and lower deductible that incentivizes sufficiently unhealthy consumers to choose it while also offering a plan that has a high deductible, but has a low enough cost-share that healthy consumers who do not expect to consume much healthcare will choose it. It is then the insurers' job to find an optimal level of cost sharing and deductibles that will incentivize the consumer to enter the plan that will best suit their needs without leading to collapse of the insurance market. If the insurer is successful at creating these plans, the asymmetric information on the consumer's health will be revealed when they chose a plan; by creating strong enough incentives for consumers to only chose the plan that best fits their health status, then the private information on consumer health will be signaled to the insurer at the time the plan is chosen (Macho-Stadler 2001).

What insurers must realize is that these HSPs are synonymous with lower cost-share, high deductible plans from this classic insurance problem and are made to most benefit healthy consumers, and that part of the reason they have been so successful at saving costs is that the plan design causes healthier consumers to join (Fronstin 2016). As their popularity has grown and rumors of cost-savings have grown, less healthy consumers have been pushed into them, so that the cost differences between HDHPS and other plans are shrinking (Kaiser Family Foundation 2018). Not only that, but now 39% of employers have removed their offerings of other plan types and only offer HDHPs (Kaiser Family Foundation 2018). Insurers and consumers need to realize that not all

plan designs are created for each type of consumer, and by encouraging consumers to join a plan that might not be best for their health needs, costs will continue to rise.

Further, beyond these plans attracting healthier consumers, they also draw in high-income consumers who are able to use their HSA as a tax shelter. Fronstin (2016), in his case study for PPO vs HSP enrollees found that on average, not only were HSP enrollees healthier, but they also had a 13.8% higher income than the average PPO enrollee. This also caused a statistically significant difference in healthcare utilization, where only 28% of those with an income under $50,000 and a HSP received a physical exam from the doctor while 44% of those making over $125,000 received an exam and emergency room visits even increased for the lowest income level (Fronstin 2016). Insurers must realize that HSPs, given their higher deductibles, low cost-shares, and incentives to save, are most beneficial to those consumers that are either high-income or healthy and must make sure there is some type of insurance plan available that protects their most vulnerable consumers.

3d. Spot prices and Non-continuous costs

Given the consumers' increased utilization after the first year of HSP adoption, it can be presumed that after building up their HSA savings, they will find that after the first year that utilization has dropped to a sub-optimal level and will adjust accordingly. Some have suggested that there are still key components of cost structures that consumers do not learn over time and can help explain the observation why some important

utilization, such as medical and pharmaceutical adherence, continue to stay low over-time. An important reason that utilization will stay low in the second period, even with HSA seed build-up, is consumers' reactions to prices at the time of service and inability to process information over certain price schedules.

Tied to the most basic maximization theory, any rational economic agent will consume to the point where the marginal revenue is equal to the marginal cost of some item or service; only at this point will welfare be maximized. The same is true of prices in healthcare, a consumer will consume some good or service till the marginal benefit of the service to their overall health is equal to the marginal cost, either out-of-pocket or from their HSA funds. The problem becomes that these health services have a non-differentiable cost schedule, leaving an ambiguous marginal cost to the consumer at best.

Economists have theorized various ways in how consumers might react to non-linear marginal costs, including spot prices, average prices, and expected year-end marginal prices. Spot prices are simply the price of a healthcare good at the time of service (Brot-Goldberg 2015). The average price of a good or service will look at, over time, how much has the same good or service cost. As the price of a good or service will change once consumers hits their deductible and out-of-pocket max, the consumer will take all of the various prices for the same good and average them at their different levels, then treat that average price the same as the marginal price. It is, in effect, an effort by the consumer to smooth out the marginal cost function. It has been suggested that the final method for maximization is for the consumer to calculate their expected year end marginal cost, or what they expect to pay for a good at the end of the year if they reach

their deductible or out-of-pocket max (Ito 2013). The consumer's expected marginal price will then be dependent on their previous year-end marginal price, their current health status, any new plan design changes, changes to their liquidity constraints, and their subjective probability that a random health shock will occur.

Under perfect information, it should be noted that the more optimal outcome from these three will be derived from expected year-end marginal costs. Given perfect information, consumers will realize the marginal benefit of each healthcare good to their health and will be able to use available information on their health and risks to calculate the most accurate probability of each random health shock, then saving HSA seed money according to their personal level of risk aversion to those shocks. At the time of healthcare consumption, instead of looking at the spot price at all, the consumer will instead act as if they consumed the year-end price and continue to consume accordingly, till they eventually reach that year-end price as they pass their deductible or out-of-pocket max. If this was the case, and consumers reacted fully to this expected marginal price, then the dip in utilization in the first year of HSP adoption can simply be explained as consumer putting off healthcare goods for later dates as their seed money builds up.

Reality shows though that, after the first year, instead of learning from the first year and adjusting their expected year-end marginal prices based on previous year-end marginal prices, consumers continue to react most strongly to spot prices in both periods and underutilize certain services (Brot-Goldberg 2015). Similarly, Ito (2013) finds that consumers in the presence of a non-linear cost structure are not only terrible at calculating marginal costs, they are rather indifferent to it, showing that "consumers may

respond to marginal price with a near zero elasticity" while instead putting some small weight in their decision making on average price of service. Aron-Dine (2015) also shows that while consumers do not solely base their decisions on expected year-end marginal prices, they do put some sort of subjective weight on both spot prices and expected year-end prices, based in part by their liquidity constraints, an extremely high discount rate, or simply lack of knowledge.

Figure 1 illustrates the problem of non-differentiable marginal cost structures, spot prices, and average prices in the decision making-process. The consumer is a regular, risk-averse agent with a demand dependent on their level of health, HSA seed money, and income. To maximize welfare, a consumer must consume to where their marginal benefit/ demand curve meets marginal cost, in this case eight units. Given the difficulties consumers have comprehending non-continuous cost structures, they might attempt to smooth out prices by considering average total cost instead, resulting in them consuming five units. However, if they only take into account spot prices in their valuation, they will consume four units, drastically underutilizing marginally productive goods.
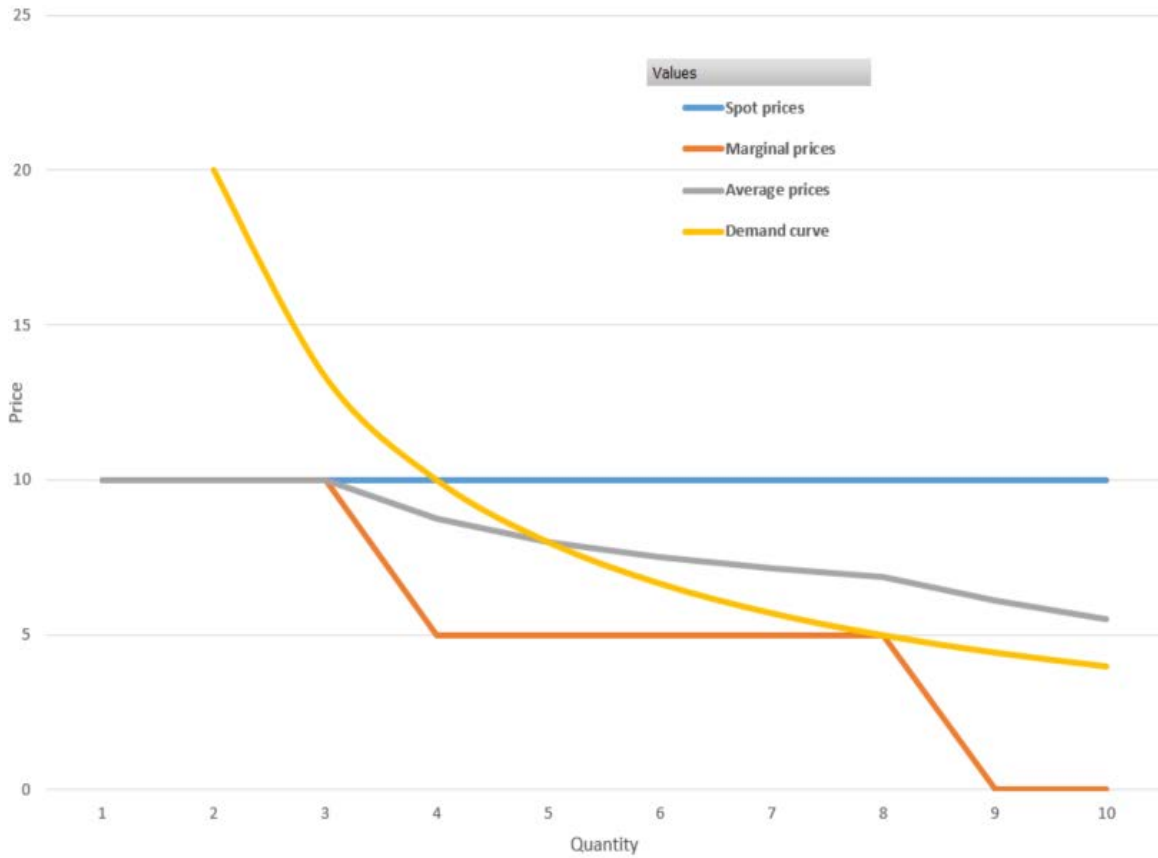
Figure 1: Consumer's demand against different price schedules

Exacerbating this problem is that, in line with the idea that HSPs will create more conscious consumers given a budget with higher out-of-pocket costs, HSPs and other HDHPs will have much higher spot prices than other plan designs. For the specialist visit, the average copay for a HDHP is $47, while the other plans average a copay of $40 (Kaiser Family Foundation 2018). Should consumers be solely dependent on spot prices, using RANDs price elasticity of demand we can estimate 1.4 fewer specialist visits used. Since Aron-Dine (2015)'s results do show at least some small elasticity of demand due to marginal prices, resulting changes in quantity demanded will be that less is demanded, but the actual resulting number will be ambiguous at best.

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When basing most of their decisions on spot prices, consumer decisions show that they have a hard time finding what other spot prices are available in their network. When faced with a high price, consumers have three options: price shop among different providers for sufficiently homogenous services, substitute one service for another with a similar expected benefit with lower costs, or reduce quantity demanded. Studies show that price shopping and service substitution are an insignificant factor in the cost reduction from switching to HDHPs; consumers reducing their utilization accounted for most of the cost savings. Even if a consumer wishes to price shop, it might be near impossible to actually do so, as some fee schedules, such as those used by hospitals, can contain up to 15,000 differently priced services, all with technical names most consumers would be unaware of (Reinhardt 2014).

Consumers reacting more strongly to spot prices might not be all bad however, and could, consistent with having a higher deductible, even help reduce some moral hazard. Instead of consuming at the socially optimal level where the marginal benefit of the good is equal to the marginal price (the market price), the consumer will utilize the good or service to the point that the marginal benefit is equal to the marginal copay, which is less than the marginal price. Now, consumers on a HSP are forced to deal with the price at the time of service with a much lower copay. Given that consumers are more likely to react to spot prices than marginal, there will still be some inefficiencies compared to if they properly reacted to marginal cost, but so long as the spot price is still less than the copay of a supply-side plan, then some consumption above the societally

optimal level of consumption will be diminished, but at an inefficient level where the

marginal benefit and cost do not meet.

IV. Potential Areas of Improvement

4a. What Needs to be Done

The idea that an insurance plan, fully focused on "consumerism" through higher out-of-pocket spending can bring a net welfare improvement to the healthcare market by lowering cost growth without sacrificing health is contingent on the idea that the consumer has the ability to be a "smart shopper" in a sufficiently competitive market. It has been shown that Health Savings Accounts, while leading to some cost savings over time, might cause consumers to sacrifice their health in the long-run. This is, at least in part, due to the problem of incomplete and asymmetric information preventing consumers from properly valuing both marginal benefits and marginal costs of healthcare. Compounding this, the plan design of a HSP is more likely to attract healthier, high-income consumers, leading to at least initial lower costs, which might cause insurers to improperly incentivize the wrong-type of consumers to join these plans.

If consumerism is the growing trend in US healthcare, and the onus of optimal healthcare consumption is to be put more in the hands of the consumers, then both insurers and policy-makers need to get involved to make sure that these consumers can be socially-optimal shoppers. This includes investment in an information infrastructure, creating a set of incentives that encourages best behavior from all actors and provides some sort of signal so that other parties know an effort was made, and not only realizing,

but also taking steps to ensure that other insurance plan types are available to more at-risk consumers. HSPs show promise at reducing moral hazard of unproductive goods and when combined with the correct changes to reduce these information problems might create some slowing of cost growth without sacrificing health, but until the information problems inherent to the healthcare market are more thoroughly addressed, without yet relaxing the assumption of a competitive market, then these plans can risk consumer health and productivity.

4b. Increasing Information Available

In the presence of non-linear cost structures, an elasticity of demand to spot prices, and some non-zero elasticity of demand to expected year-end marginal prices, insurers have a few problems. The first thing insurers must do is increase consumers awareness that spot prices are not always synonymous with their true marginal prices and encourage consumers to keep in mind their deductible and out-of-pocket max. Given this elasticity of demand with spot prices, they must also set up some way to encourage price shopping or substitution of services, instead of allowing consumers to just not utilize productive goods.

Work must also be done to cut search costs and increase dissemination of information in the marketplace for consumers to act optimally and encourage price shopping and service substitution. Transparency tools containing information such as in-network providers, cost differentials between homogenous goods, and ratings on specific

producers of healthcare goods/services, have grown in market share as companies aim to find new avenues of cutting costs, but utilization remains low. These tools could lead to high cost savings and enable consumers to be more active shoppers in their healthcare decisions. West Health Policy Center states that a potential $100 billion could be saved over ten years by making prices more transparent to consumers (Zamosky 2014). The cost savings from this increased transparency comes from not only making more consumers aware of what they can expect at the time of service and encourage this "consumerism", while also encouraging price competition from providers to help keep costs down.

Private companies have already started to invest in transparency tools to allow consumers to see more information about providers in their area and prices at time of service. Private companies such as Castlight have begun this effort, providing cost and charge information to its corporate customer base, and insurance groups themselves have started the process of increasing transparency, with groups like United providing online cost estimates to its covered consumers (Meisel 2016). These tools not only give consumers more information about in-network providers near them, cutting search costs, but they also show consumers how close they are to their deductible and out-of-pocket max, which may lead consumers to put less emphasis on their spot prices. These price shopping tools appear to be initially effective at encourage price shopping, with price searchers paying 13.95% less for laboratory tests, 13.15% less for advanced imaging, and 1.02% less for clinician office visits than non-searchers (Whaley 2014).

While this is a good start to encourage the price-conscious shoppers that high-deductible health plans require, similar services must also be made available to the public for those protected under the Affordable Care Act and Medicare. Some efforts have been in the works, with the House introducing the Transparent Health Care Pricing Act of 2018, requiring providers to post prices related to healthcare products online, including but not limited to spot, retail, and discounted prices as paid by different consumers (United States 2018). While both the private and public sector are taking the right steps, insurers and policy makers must move forward making a more personalized experience for consumers who face drastically cost variability based on insurance status, and providers must also make sure to stress the high marginal benefit of a price conscious shopper who will eventually see the high spot price under these plans.

While these are good steps that providers, insurers, and even the government can take, consumers can also do some work themselves to increase healthcare cost transparency. Online communities for consumers who suffer similar disease states exist for consumers to share data such as experiences with providers, different treatments, and general experiences; such services have shown an increase in medical adherence in participating consumers as well an increase in reported well-being (Wicks 2010). By facilitating the communication between consumers with similar disease states regarding what services and procedures worked for them, information on the relative marginal benefit is spread to all those participating, encouraging stricter adherence and diminishing potential behavioral hazard.

The next step then would be to begin working cost data into said communities. Meisel (2016) suggests consumers in these communities share their final bill containing both allowed amounts and paid amounts, as well as additional information such as insurance status, start and end dates, and such figures as deductibles, copays, and out-of-pocket maximums. Preliminary attempts to crowdsource this information is already being attempted by both private and public organizations, finding that initial testing leads to better results when looking at services with some controlled level of price variability, such as colonoscopies and non-emergent surgeries (Meisel 2016). Whether deciding to share this data through goodwill alone or some cash incentive, with enough data points, crowdsourcing does show an interesting alternative to traditional insurer-funded transparency tools, but it remains a rather untested and new area of increasing healthcare cost transparency.

While these are all promising steps consumers, insurers, and policy-makers alike can take, as Reinhardt (2014) points out, encouraging consumerism might be good in most markets, but due to high level of secrecy regarding negotiated prices between insurers and providers, as well as the vast pricing schedule and high variability a consumer can be charged, it might be impossible for a consumer to make a socially-optimal decision given the information available. This has become a rallying cry for bipartisanship, with both political parties arguing for increased consumer transparency. As recently as June 2019, the "Improving Price and Quality Transparency in American Healthcare To Put Patients First" Executive Order (2019) was signed and put into order. The main focus of the order is to require providers to post price information in a

"consumer-friendly" format while also requiring increased availability of de-identified information for price aggregation purposes. Interestingly enough, the Executive Order also issues that further work be done to increase the availability of HDHPs paired with HSAs to consumers, as well as covering more low-cost preventive care before the deductible in these plans. While all of these are promising steps to increase price transparency, most of these ideas lack concrete plans, and policy-makers need to keep in mind that while increasing availability of these high-deductible plans is not a bad plan, these plans are not suited for every type of consumer.

Whatever the details from the Executive Order might entail, it is promising that both insurers and policy-makers realize the importance of price information in the decision-making process. If the growing trend in minimizing healthcare cost growth is to encourage consumerism in the form of HSPs, then it is imperative that information be made as costless as possible so that consumers will be able to efficiently utilize it. The only problem then is that most market-based and legislative solutions have been focused on facilitating cost information of a service and less exist that focuses on the benefit of a service beyond targeted advertisements that might stress the importance of such things as medical adherence. This is no doubt partly due to the wide variability each consumer faces in regards to a service's marginal benefit, but as consumers' health care claims become more accessible through their computers and transparency tools, insurers and policy-makers should focus on giving as much information as possible so that consumers can efficiently evaluate their marginal benefit and costs, facilitating the personal and socially optimal level of consumption.

4c. Creating Incentives for Optimal Behavior

Due to the various asymmetric information that both consumers and producers hold, there is a clear deadweight loss from the optimal solution that can hurt every player in the game. Using this asymmetric information, the agents try to earn a higher net gain at the expense of the other players, creating moral hazard problems that bring the market from its pareto-optimal solution. Due to the presence of this information, no policy-maker or insurer can hope to bring the market to the best solution in the presence of symmetric information; the next best solution is creating a system of incentives that create a situation that makes it beneficial for both consumers and producers to either reveal their information or not act upon it. These incentives show up as a clear cost to insurers, however with the hope that these short-term costs can lead to long-term savings by encouraging healthy living in consumers.

The insurers' first problem is creating a system of incentives that make it beneficial for producers to provide the most productive services to consumers, even if it does not initially yield a higher return to the producer. This idea has showed up in recent literature as an argument for switching from a fee-for-service method of payments to producers to a value based, or fee-for-results, method of reimbursement. Unlike a traditional fee-for-service payments system where the provider receives payment based on which service they provide, a value based model provides reimbursement to the provider of the service from the insurer if the service shows a positive improvement in the consumer's health. Some initial case studies do hint at the possibility of success; tests of implementing a value based model had increased costs in the first year, but settled into

a 1.1% reduction in healthcare spending. Adherence for consumers participating in the study did have higher adherence compared to those consumers not participating as well (Lemak 2015). While more case studies need to be done, initial results for incentivizing optimal behavior do seem promising.

In practice, this requires the insurer to become a price-setter in the next period for what the producer has provided this period. The insurer needs to set this price to not only create an incentive for the provider to give the more productive service, but also a high enough incentive for the provider to give any service at all and some sort of interest payment to make up for the time period between when the service was rendered and when the producer was paid via insurer. This requires some premium on the most productive service be added to the profitability of said productive service that at least makes the provider indifferent to the less productive, more profitable service with no premium.

There must also be some risk pooling between the insurer and the provider in the case that the optimal service is given. In the case some outside effect results in a net loss of welfare for the consumer, independent of the service provided, the provider still needs to be reimbursed for giving the more productive service, even if some random event lowers the consumer's health. Finally, there must be some sort of information infrastructure in place that allows for insurers to see what service was provided, how the consumer's health has changed, while also controlling for noise that might have effected consumer health independent of the service. So far, most of the case studies for a value based reimbursement schedule have taken place in large insurance networks with many

plans, employing a vast number of providers, and this type of fee schedule, at least for the near future, might only work in these large groups. While this does not bode well for smaller health insurance groups or private providers, the value based schedule does show initially promise.

The next information problem that must be worked on, that HSP's plan structure alone cannot fix, is the consumer's moral hazard over the insurer. It has been shown that, given the unobservable nature of the consumer's actions, the consumer may have a perverse incentive to lead to actions that are not pareto-optimal. The insurer cannot fix this, but what they can do is create a series of incentives in the contract that allows for payments on observable good behavior, leading to a societal outcome that is second only to the contract with perfect information.

The first thing the insurer must do is create a valuation on these incentives. In effect, for each consumer, they must find the difference in disutility between the more healthy option, which provides a consumer disutility, and the more-liked unhealthy option. The incentive payment will then be equal to some amount that at least makes the average consumer indifferent to the healthy and unhealthy action, all else held constant. The problem is there must be some sort of informational cue that lets the insurer know that the healthier action was taken.

This is where the importance of signaling in contracts and health insurance comes into play. Signaling is any bit of information that becomes freely available to all agents, with the information revealing something about the consumer's chosen action. This signaled information will "regardless of how noisy it is, will have a positive value (if

costlessly obtained and administered in contract)" (Hölmstrom 1979). In other words, any information readily made available resulting from a consumer's actions will efficiently be utilized by the insurer; for example, in regards to an incentive payment, as soon as an insurer receives some information signal on a consumer's healthy action, they can reward it with the incentive payment. In healthcare though, information is rarely free and might even become costly to multiple parties involved.

If there is a cost to receiving an informative signal, then the signal becomes a conditional information system to the insurer. This states that the insurer will only invest in receiving an information signal so long as the benefit of knowing and acting on the information is above the cost to achieve it. It is not very likely in that the consumers will send signals that are somehow loud enough that the insurer will not have to invest some amount of money to receive them. In this case, the insurer in effect enters the market for observable signals from consumers, where they will invest in information tools that helps increase the visibility of what action the consumer has chosen. Then, following standard maximization theory, the invest money into transparency tools until the marginal benefit of the newly observed signal is equal to the marginal cost the insurer must pay to receive one more signal or unit of information.

One example where this kind of incentives based on signals received is smoking cessation programs. Under normal conditions an insurer cannot know whether a consumer smokes or does not; the consumer must self-identify as a smoker. However, should consumers be willing to join smoker cessation programs provided by the insurer, then they will be tested for whether or not they are a smoker, in effect sending a signal to

the insurer about their health status based on a value dependent on the consumer's choice.

What's more, these programs subsidizing good choices in consumers can be much more

successful than those in the absence of subsidies; one study found among two low-

income smoking groups, one group offered a subsidy and the other not, that 50% of those

offered the subsidy remained abstinent from smoking for the length of the study, while

only 19% of those not subsidized remained abstinent (Businelle 2014).

The success of these smoking cessation and similar programs to encourage

healthy consumer actions has largely contributed to the growing trend of employer-

sponsored wellness programs. Currently, half of all employers offer some kind of

wellness program, accounting for 79% of all employees having access to some program

(Mattke 2013). The goal of these programs is cut expected claims in the future by

encouraging healthy consumer choices; further utilization and involvement in said

program might create a sufficiently large signal to ensure a consumer is taking a healthy

action. When creating these wellness programs, insurers need to avoid creating a "cheap-

talk" game, where the consumer sends a signal that has no associated cost to them, said

signal is not binding, and the signal is not verifiable (Macho-Stadler 2001). For instance,

a wellness program should reward those that must put in some identifiable effort ex-post

to proving that a concentrated effort was put into improving their health and not just

reward the consumer for joining the wellness platform. Some examples might include

on-site immunizations as well as setting up rewards to using offered fitness programs.

Wellness programs are, of course, not without their own costs, so the potential

problem arises when the benefits of signaling information is too costly for either the

consumer, insurer, or both. The consumer must create effort to prove they are increasing their stock of health, while the insurer must pay administrative costs to the wellness program. A conditional information market is once again created, where the expected benefit of the signal must not only outweigh the administrative costs of the program for the insurer, but the benefit of signaling must also outweigh the effort of signaling for the consumer. Only after the cost/benefit analysis (which itself might create extra costs for the insurers) should the insurer consider one of these types of programs. Insurers must also take into effect the risk that these programs might not have a strong influence on consumer health; studies show that while wellness programs do usually cause consumers to self-report better health, studies suggest that most wellness programs do not show a significant increase in clinical measures of health (Song 2019).

If insurers are willing to take this risk, and have also created an incentive payment equal to the cost of consumer effort, then they must next consider how to distribute the payment. As most insurance contracts have a fixed cost-sharing rate for some time-period, an insurer or administer of a wellness program who receives a signal in the middle of the contract might face the question of how to distribute their incentive payment. Insurers might have some reservation on a pure monetary payout, as consumers might use those funds to pay for other unhealthy actions. Unlike cost sharing structures such as deductibles, HSP contributions are not as rigidly bound in a contract period, except by some upper limit set by some legal regulations. That means that as soon as the insurer gets some signal that the consumer is performing some healthy action, they can reward the consumer with some incentive payment directly into their HSP

account. Then, the insurer also has more reassurance that the consumer is not using their incentive payments on some unhealthy action that will raise costs for them, but instead the consumer might be further insuring themselves against some random healthcare crisis not dependent on their actions. As of 2013, only 5% of employers offered this kind of incentive through their HSPs and HRAs; as time goes on, more empirical testing should be done to ensure that this creates strong enough incentives to encourage optimal behavior (Mattke 2013). While HSP plan structure, much like previous insurance plan structures does not fix the inherent moral hazard information problem intrinsic to unobservable consumer choice, it does offer a better solution to rewarding consumers when a sufficiently informative signal is received by an insurer.

4d. Funding Other Plan Types and Increasing HSP Affordability

Health savings accounts are more likely to draw in healthier and higher-income consumers, causing its costs to be lower and potentially either less healthy consumers to adopt it. Then one of the insurers' main job is to correctly set cost-sharing, deductibles, and out-of-pocket maximums for not only the HSP, but also some other plan for less healthy consumers so that it encourages consumers to choose the plan that best fits their healthcare needs. Assuming insurers do set these figures correctly, there is the fear that these less-healthy plans will face such high cost sharing that they will not be accessible enough for the average consumer it is available to, and consumers will either join a plan that does not best satisfy their health needs or just not enter the insurance market at all. Policy-makers have long recognized the importance of increasing healthcare

accessibility, and should not only focus on making sure consumers can join the higher cost-sharing plan, but also make sure if an unhealthy consumer is forced into a HSP, that they can afford medically necessary services.

One recent attempt at incentivizing more consumers to join the insurance market was the Affordable Care Act's Individual Mandate (or Shared Responsibility fee). The Mandate created a fee for those that were eligible but chose to remain uninsured. The idea of the mandate was to create an incentive for those healthy consumers that would otherwise stay uninsured to enter the public insurance market, causing the average risk of plans to fall, while also creating new revenue from the Mandate fee and new copays to fund the less healthy consumers. In its most perfect form, the fee would create a situation where the consumer who would prefer remaining uninsured would now have to weigh the disutility of this new fee versus the utility of being insured, with the fee being high enough to make the average consumer at least indifferent to remaining insured versus uninsured. The goal of this fee was to induce healthy people to join, keeping average risk in the insurance pool lower and using the added revenue to help fund less healthy consumer claims. The goal was at least partially met, with analysts suggesting without the Individual Mandate, ACA premiums would increase about 6% and millions would, either by insurance collapse or existing the market, become uninsured (Kamal 2018).

If the Individual Mandate was successful at incentivizing consumers to join the market and keep costs down while helping fund these plans for unhealthier consumers, why then, do more insurers not examine the idea of creating some fee for eligible consumers opting out? One of the key reasons might not only be that these Mandates

might be harder to enforce in a competitive insurance market, but also due to their unpopularity. Despite its effectiveness, surveying suggests that the Individual Mandate was very unpopular; across all political parties, 43% viewed the Individual Mandate very unfavorably and an additional 20% viewed it somewhat unfavorably, eventually leading to the mandates repeal (Kitzinger 2017). Clearly, some of the unpopularity stemmed from the highly politicized nature of the ACA, but some of it might have to do with the framing of the mandate as a punishment for those that chose to remain uninsured. The growing field of behavioral economics looks at how loss aversion might affect consumer decision and shows that framing a situation as a potential loss instead of a potential gain will evoke a much stronger reaction from a person (Levin 1998). In that regard, playing on loss averse nature of humans might have been its greatest blessing and curse: it made the Individual Mandate successful in incentivizing healthy consumers to join the market but it also made it widely unpopular as those same consumers feared the loss it created, in part leading to its repeal.

Now that it has been repealed, policy makers might look into alternatives to the Individual Mandate, such as a tax credit to encourage healthy consumers to join the insurance market. The goal would be similar to the Mandate, where healthy consumers are incentivized to join and lower the average risk pool, but instead of a fee for not joining, consumers are given a refundable tax credit based on income level that can be used solely to subsidize health insurance. The policy would be similar to the Premium Tax Credit, which subsidizes health premiums for those with incomes 100 to 400% of the

federal poverty line, but would increase access for those outside of the poverty limits and allow more freedom to choosing a plan (*The Premium Tax Credit - The Basics* 2019).

The RAND Corporation, running initial tests on what said tax incentive might look like, estimates that such a tax incentive could cause anywhere from 2.3 to 10 million previously uninsured to join the market without significantly increasing healthcare costs (0-2% increase), but potentially increasing government spending (anywhere from 0.5-6.4%) (McGlynn 2010). If successfully implemented, such a tax credit lower the liquidity constraints of lower income consumers and allow more consumers to join either a high-deductible or low-deductible plan. As these consumers enter the market, should plan structures be set in a way that correctly incentivizes those to join based on their health level and risk aversion, then as a percentage of these newly entering consumers join the low-deductible plan, then more risk will be spread out along with a higher revenue from the increase in cost-sharing, leading to higher plan profitability The next steps policy-makers should do is begin looking into how such a tax credit might be created, how to lower potential administrative burden, and a cost-benefit analysis, but such a credit could lead encourage higher accessibility, saving these alternative plans to HSAs and HDHPs.

Work also must be done to make sure those less healthy consumers who are forced into these HDHPs be able to afford high return services. Legislation is already in progress to lower the spot prices of these high-value goods and services so that HSA enrollees will demand them to a level consistent with their positive externalities and marginal health returns. The Chronic Disease Management Act introduced by Congress

would, if passed, provide care with no deductible to HSP members with medically complex chronic diseases should they be disabling, life threatening, or have a high risk of hospitalization (United States Congress 2018). Perhaps a bit more ambitious, in the House of Representatives the Bipartisan HSA Improvement Act would provide a vast variety of changes to HSAs that would improve access to care while still maintaining some level of costs savings. These are including, but not limited to increasing contribution limits, allowing more goods and services to be used at specified clinics at lower costs even before the deductible is met, and expanding access to lower cost services such as telemedicine (United States Congress 2018).

Both of these bills are at least part of an attempt to lower the spot prices of medically necessary goods and services. The Chronic Disease Management Act focuses more on the micro-economics of the plan design, requiring calculation of the marginal benefit of a procedure for a chronically ill patient and adjusting the marginal cost so that there is sufficient reason to use said service. Meanwhile, at least somewhat tied to micro-economics allowing for an increase in HSA contributions, the Bipartisan HSA Improvement Act is more focused in macro-economics, expanding market choices for HSA enrollees as well as encouraging market growth for cheaper alternatives with the focus of keeping the spot prices of these newly expanded market choices low. Proponents, besides seeing these acts as a means to decrease underutilization, see these act as a remedy to help the underlying problem inherent in income inequality, where lower-income patients with chronic conditions might not actively care for conditions, leading to short-term savings with an increased risk on catastrophic future costs.

Detractors of this act seem to fear that as more goods and services are covered before the deductible is met, the HSP becomes less and less of a consumer-driven health plan, and savings once realized by HSPs will be chipped away. Despite the potential for both cost-savings and health gains in the population, both bills have been discussed multiple times, each time ending with more questions and analysis than before, and do not seem to be gaining any speed.

Given the explosive growth of HSPs in the recent past, and the newness of these changes in plan designs, not much empirical research exists to test what might actually happen with these changes in policy. Others have suggested linking employer HSA contributions inversely to employee incomes, so that lower-income employees will receive a less stringent budget constraint, although that would almost certainly never receive bipartisan support. Either through encouraging participation in the marketplace to help fund insurance plans that best protect the less healthy, or by subsidizing high return goods for more at-risk HSP consumers, policy-makers and insurers alike need to work together to make sure this shift of "consumerism" in healthcare does not leave behind its most vulnerable population.

V. HSPs in Non-Competitive Markets

This paper has examined the information problems that might inhibit a consumer from reaching an optimal quantity demanded of productive health services when asked to be the driver of their healthcare decisions. Likewise, it has examined how incentives could be structured to allow for consumers, providers, and insurers to reach more optimal solutions in the face of asymmetric information. It has also examined, under the framework that HSP offerings are growing and will continue to grow, that steps need to be taken to lower information rents providers and consumers can receive, while insurers need to make sure these HSAs paired with a HDHP remain affordable to those who need care. The focus has been on all of the information imperfections that might hinder HSPs from slowing cost growth.

In order to more closely examine these information imperfections, and to control for noise that would result from other market failures, most of the focus of this paper has been under the loose assumption that aside from information problems, the market is highly competitive, with providers providing (near) homogenous goods and services and a multitude of insurers offering various plans so that consumers could find some plan on the well-developed insurance market that best fit their risk preferences. If those assumptions held true, then with investment into some type of information infrastructure that made both marginal cost and benefit valuation available, consumers could be more

optimal decision-makers and both insurers and providers could have incentives to make the socially optimal decision. This, however, is a simplification in order to examine one problem in the insurance/ healthcare market and how it relates to the growing trend of HSAs tied to HDHPs, and is not an accurate depiction of the market, especially in the United States.

Both the healthcare and insurance market are highly concentrated, resulting in economic rents extracted from the consumer. In the insurance industry, the average largest state insurer owns about 60% of the state market share, ranging anywhere from 24% in Wisconsin to 100% in Alaska and Delaware (*Individual Insurance Market Competition* 2019). Concentration in the insurance marketplace only continues to grow as well; the Herfindahl-Hirschman Index (HHI), a measurement of how competitive a market is, has grown from 3,916 in 2011 to 4,997 in 2018, with anything above 2,500 representing a highly uncompetitive market (*Individual Insurance Market Competition* 2019). Likewise, provider concentration continues to grow, with hospital concentration growing from a HHI of 2,340 in 1987 and reaching 3,161 in 2006 (Gaynor 2012).

While the United States is not alone in having concentrated selling power in the healthcare and insurance marketplace, the country is an anomaly for how much its services cost. The US spends a comparable percentage of its Gross Domestic Product (GDP) in healthcare as other countries in the Organization for Economic Cooperation and Development (OECD), ranging from 5.8-6.5% of total GDP spent on healthcare, but utilization of health services is lower than average while prices are extremely higher. For instance, in 2000 while hospital admissions per 1,000 averaged 154 for all countries, the

United states stayed low at 118 admissions per 1,000; meanwhile, the average per capita

total health spending averaged about $1,983 for all participating countries, the US

averaged $4,631 per capita spend for healthcare, translating to US citizens paying

roughly 13% of their per capita GDP on healthcare compared to the average 8%

(Anderson 2003). The high prices seem to originate from, in part, a highly fragmented

insurance system that drives up administrative and operating costs, as well as weak

buying power from consumers against a monopolistic competition, or full monopoly,

seller.

These market conditions do not bode well for the high deductible health plan

paired with a HSA in regards to meeting its goal of lowering cost growth. In contracting

a bank to create and manage a health savings account, insurers are adding one more

fragmentation to an already overly-complex healthcare system and further increasing

administrative costs, or even running the risk of another concentrated entity extracting

more rent. If administrative and maintenance fees are pushed onto the consumer, the

consumer with the average savings in a HSA can expect to see fees that range from 1.5 to

2.7%, and depending on the fund administrator, there can be a variety of additional non-

transparent fees, such as an excess contribution or insufficient funds fee (Acheson 2018).

This becomes troubling when looking at interest rate earned on HSA funds; the average

HSA holder keeps an account of about $2,000, meaning the maintenance fees are above

the interest earned for almost all major HSA plan administrators, with the very best plan

administrators earning an interest above fees in the account range of $2,500 to $3,000

(Acheson 2018). Compounding all this, there is a large lack of transparency in regard to

if these calculations encompass all relevant fees, interest rates, and investment portfolios, so it does make a true cost-benefit analysis difficult.

It is also important in a study of information to examine how prices, in a competitive market, become conduits of all relevant information. Consumers, with their own unique set of human capital stock, derived from their time, place, and studies, will efficiently use information as it becomes available to them. Using this new information in a market setting will lead to a price change as consumers and/or producers alter their market choice, so that any price change is due to a relevant information change and prices, then, reflect all relevant information available (Hayek 1945). This is the basis for the Efficient Market Hypothesis and a main argument against central planning; no one person or institution has enough information to do better than the market, as the decentralized and private economic information each person holds become publically available in the price system with little to no cost. This is also a major argument for the importance of price transparency tools in high-deductible health plans; should the price of a service increase, then to quote Hayek (1945), the consumer will know it is more "profitability employed elsewhere", and should the price change be too much given their elasticity of demand, will shop for substitutes, changing their price and causing a ripple effect. In this situation, price transparency tools allow the flow of information to be as costless as possible.

However, in a system without a sufficiently competitive market, this system breaks down. Instead, as both the medical and insurance marketplaces have a highly concentrated group of suppliers, their market power will allow them to set the marginal

price about marginal cost, extracting some rent at the cost of the consumer. The price system loses its ability to be a functioning tool of information as it is impossible for a consumer to discern if a change in price is due to market conditions, some price-markup change, or a mixture of both. Following that logic, the philosophy of creating an insurance plan that encourages consumerism by facing higher out-of-pocket prices is problematic then for at least two reasons. One is that requiring consumerism in a marketplace devoid of the information signals necessary to facilitate smart decision making is going to lead to people cutting quantity demand below what is socially optimal as they must face higher prices that do not give them any clue on the state of the market. Two is that by decentralizing the purchasing power of consumers while they continue to face a highly-concentrated sellers will only create a situation where sellers can extract a higher rent from consumers if no governing agency steps in.

If the reality of a highly-priced and concentrated marketplace is now faced, it is important to look at how the information remedies under a non-competitive marketplace might fair for HSP users. Investing in price transparency tools will most likely be a still fruitful endeavor; by cutting search costs on in-network providers and consumers will be able to save more of their out-of-pocket money. Beyond the private savings these tools provide consumers, further evidence indicates that increased consumer price-shopping from these transparency tools encouraged price competition between providers in monopolistic competition. Using regression analysis, Whaley (2015) found a statistically significant drop of 1% in lab test prices due to an average penetration of about 6.2% consumers using a price transparency tool, and while a 6.2% penetration rate did not

cause a statistically significant physician price decrease, a significant price decrease of 7.4% for physician prices was found at a full penetration rate of the tool. While results were strongest at a full penetration rate, prices still fell for both price-searchers and non-searchers alike after the transparency tool was introduced, indicating that as the prevalence of these tools increase for privately-insured consumers, consumers under the ACA and Medicare might be able to benefit from lower costs for certain services. The problem, of course, is ensuring that the marginal benefit of the new price information outweighs the cost of increasing fragmentation and administrative costs of the existing system.

Further, it would still be useful for both insurers to not only provide multiple plan types, with some governing agency stepping in should multiple plans not be available to insurers, but also encourage ease of access into the insurance market for consumers to avoid a pool collapse in a high-deductible plan. This would include, but not be limited to, providing some sort of government-funded, or at least subsidized, insurance, should a high-deductible plan or no plan at all be available to poor or unhealthy consumers. That said, a signaling tool, such as a wellness program, must be more closely scrutinized: with wellness program results being ambiguous at best, and combined with an already highly fragmented system in the US, it is entirely possible that these programs can just add to the already high administrative costs without having any real positive effect (Song 2019).

This paper has been an examination of information deficits in the healthcare industry and why the growing trend of consumer focused insurance plans will not be effective if consumers do not have the best information available or if any agent has an

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opportunity to receive some informational rent from another. The problem is, even should perfect information be available, Health Savings Plans will not have some sort of drastic effect that fixes the broken US healthcare system. While the costs are undoubtedly lower, and will at least cause some short-term savings, the costs of these high-deductible plans are already closing the gap between themselves and the existing plan structures (Kaiser Family Foundation 2018). Some of these short-term savings too derive from consumers simply not staying adherent to their medication to save money, increasing the risk of high cost claims (Fronstein 2013). While the HSP is a good plan design for those that are healthy and/or high income, it will put those most at risk of catastrophic healthcare costs in danger. Further, the philosophy that incentivizing smarter shopping will reduce costs ignores the facts that high cost claimants, which in private insurance make up 1.2% of members but 31% of total spend, cannot afford to shop for prices in a highly-fragmented healthcare system (Wilson 2016). Until policy makers focus on the problem of fragmentation of care and high prices in the United States healthcare system, these consumer-driven health plans will have marginal effects on savings at best but can substantially increase risk as consumer care and adherence fall.

VI. Conclusion

Health Savings Plans were created in an attempt to increase consumerism in the insurance market. The general posit of HSP proponents is that the previous structures and designs of existing insurance plan encouraged an overconsumption of healthcare goods, and that by giving the option to save or spend healthcare funds while facing a higher cost, the average consumer will reduce their overconsumption, leading to moral hazard in the healthcare market falling and the cost growth of healthcare slowing. Not only that, but by making a more conscious consumer, the HSP adoptee will decrease overconsumption of unproductive healthcare goods and services, without under-utilizing healthcare goods that have a high expected marginal return. In the end, the hope is that by decentralizing the insurance market, costs will not only fall but everyone will become a healthy and marginally efficient consumer.

The results, however, are ambiguous at best. There is a significant decrease in the cost of insurance in the first year, but the cost savings seem to die down by the second year. Whether that is due to consumers adjusting their expected year-end marginal prices, building up a HSP savings, or both is up to debate. However, even after costs rise again in the second year, HSP costs still do stay lower than comparable plans, showing that at least in that regard HSPs do meet their goal of slowing cost growth. The problem becomes utilization; utilization in healthcare goods and services with a high marginal

benefit drop and stay below utilization in other plans. This can lead to disastrous effects

for both the consumer and insurer. Take for example pharmaceutical adherence: if a

consumer does not adhere to the plan the provider lays out for them, then they can

mistakenly believe that their healthcare problems are under control, leading to high cost

claims and lowered utilization in the long-run, much to the detriment of everyone

involved.

Part of the problem is that HSPs alone cannot deal with the intrinsic imperfect

information in the healthcare and insurance market, and in some cases, can exacerbate the

situation. For example, HSPs attract healthier consumers, making their cost-sharing

lower and perhaps enticing some less healthy consumers into the plan or creating a

situation where insurers believe it is most profitable to push consumers into said plan.

Consumers also, while lowering consumption of less beneficial healthcare goods, also

lower utilization of very beneficial healthcare goods, in part because they do not

understand either the marginal benefit of the good to their health or the real marginal cost

of the good due to high spot prices. Beyond that, due to higher deductibles, HSAs leave

consumers open to more risks in the face of dishonest producers.

While HSPs surely cannot be blamed for information problems that have existed

in these markets forever, insurers and producers must be aware of how these existing

information problems can be made better or worse by the introduction of HSPs. Thanks

to its high deductibles and incentives which are more likely to pull healthier people,

moral hazard should be reduced as consumers react to higher prices and healthier

consumers, who are more likely to be drawn to the plan, might take healthier actions.

However, insurers might think twice before assuming a broad introduction of HSPs is the best strategy; consumers, whether unsure of the true marginal benefit or reacting solely to spot prices instead of expected year-end marginal costs, also decrease socially optimal consumption that can lead to long-term higher cost claims. Not only that, but the plans are more likely to attract and benefit healthier, high-income consumers, and as the plan popularity grows and more vulnerable consumers are forced into them, not only will these vulnerable consumers be unable to meet their medical needs, but as plan cost rise, healthy consumers will leave the plan, causing further growth of costs.

HSPs cannot handle these information problems solely by its plan design, and to work their best, insurers and policy-maker need to make sure these plans are not introduced in a vacuum. The most important thing insurers and policy-makers need to do is to make sure that, if consumerism is the approach that they believe will lead to a net improvement in healthcare, make sure information is available and understandable to the average consumer so they can make the best choice. Insurers also need to make sure the correct incentives are in place to encourage socially optimal behavior, especially now that consumers face higher out-of-pocket costs. Multiple plans offering various levels of risk protection must be available as well, and if necessary, policy makers should step in to help make sure the most vulnerable consumers can find protection.   Health Savings Plans have already proven successful in reducing costs; by creating systems that reduce these information imperfections concurrently with the plan, Health Savings Plans might be able to slow some cost growth, but policy makers need to realize they do not tackle the

fundamental flaw with the US healthcare market that is a weak consumer purchasing

power and high administrative and service costs.

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