Why Do Employers Self-insure? New Explanations for the Choice of Self-insurance vs. Purchased Health Insurance

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This paper proposes that an employer's choice of self-insurance vs. purchased health insurance can be explained by a trade-off between administrator moral hazard, the incentive for third-party administrators to be inefficient managers of self-insured employers' medical claims and employer moral hazard, the insured employer's failure to invest in reducing health risks among its workers. These explanations have not been analysed in the literature but they are broadly consistent with data and they can explain the increasing popularity of self-insurance over the past 10 years.
The Geneva Papers (2012) **37,** 696–711. doi:10.1057/gpp.2012.23

Introduction

Employer-sponsored health insurance (ESI) is the dominant form of health insurance in the United States, covering 169.7 million employees and dependents (55.8 per cent of the U.S. population) in 2009.[1] Most of those covered by ESI are under age 65, so ESI is especially important for the working-age population.

Most of this coverage is provided by self-insured health plans under the auspices of the Employee Retirement Income Security Act (ERISA).[2] Sponsors of self-insured health plans (also called self-funded plans) bear the risk of their employees' health-care claims, although they may hire a third-party administrator (TPA) to manage the plan. Employers that offer multiple health plans may self-insure some plans and purchase insurance for the others. Self-insured employers may purchase reinsurance for high-cost events or high total costs. Sixty per cent of all workers covered by ESI were in self-insured plans in 2011, up from 44 per cent in 1999.[3]

Despite the importance of self-insurance and its increasing use, few studies have explored the reasons why employers self-insure rather than purchasing health

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[1] DeNavas-Walt *et al.* (2010).
[2] Public Law 93-406, 88 Stat. 829, enacted 2 September 1974.
[3] Kaiser Family Foundation (2011).

insurance.[4] This paper reviews the traditional arguments for the employer's choice of self-insurance vs. purchased insurance and offers two new ones that focus on moral hazard. This term usually refers to policy-holders' incentives to take less care to prevent an illness or to use more covered services to treat an illness, compared with uninsured consumers. This paper focuses instead on *administrator* and *employer moral hazard*. Administrator moral hazard refers to the incentive for TPAs to be inefficient managers of self-insured employers' medical claims, while employer moral hazard refers to the insured employer's failure to invest in reducing health risks among its workforce. These explanations for self-insurance have not been analysed in the literature.

Several empirical predictions from these new explanations are derived and it is shown that the predictions are broadly consistent with data. Finally, the paper argues that the new explanations can explain the increasing popularity of self-insurance over the past 10 years while the traditional explanations cannot.

The traditional explanations

Risk managers have debated the merits of self-insurance vs. purchased health insurance for many years.[5]

The argument that employers will find it advantageous to purchase health insurance usually relies on the superiority of insurance companies in pooling health risks. By pooling the claims from many policy-holders, an insurance company can rely on the law of large numbers to manage the risk that premiums will fall short of covered expenses. In fact, the insurance company can "kill off" this risk completely by pooling enough policy-holders. Most employers are not large enough to achieve this scale of risk pooling without purchasing insurance.

The traditional arguments for self-insurance are (1) avoidance of state-mandated benefits and state premium taxes, and (2) the ability to keep the "float" (interest earnings on reserves) from not having to pay premiums to an insurer. The first advantage derives from the ERISA law, which pre-empts self-insured health plans from state insurance regulation. Hence, self-insured plans do not have to offer mandated benefits (e.g. coverage of *in vitro* fertilisation therapy) that are required of insured health plans[6] and they do not have to pay state premium taxes, including taxes to support high-risk pools for the medically uninsurable. The Self-insurance Institute of America, a trade association for self-insured health plans, mentions the exemptions from state-mandated benefits and state premium taxes as reasons why employers choose the self-insurance option.[7]

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[4] The terms "purchased insurance" and "insurance" are used interchangeably and both as distinct from self-insurance.

[5] See, for example, Schmit and Roth (1990).

[6] Parente *et al.* (2011) review the effect of state-mandated benefit laws on premiums in the individual (non-group) health insurance market.

[7] Self-insurance Institute of America, *www.siia.org/i4a/pages/Index.cfm?pageID=4546.*

Jensen *et al.*[8] conducted the most thorough empirical test of the first standard explanation for self-insurance. Analysing two samples of medium to large-size businesses observed from 1981 to 1984/85 and from 1984 to 1987, they found that the total number of mandated benefits imposed by a state was positively related to the decision to self-insure in the earlier period but not in the later period. Of three measures of premium taxes, only a state tax to fund a high-risk pool for the medically uninsurable was significant, and it had the "wrong" sign in the earlier period.[9] Overall, Jensen *et al.*[8] found that state insurance regulations spurred the adoption of self-insurance in the earlier period, but not in the later period. They attributed this difference to a spurt of insurance regulation during the early 1980s, which was a peak period for imposing mandated benefits on insured health plans.

The ERISA pre-emption from state insurance regulation also favours large employers, which often have establishments in several states. By self-insuring, such employers can offer a standard plan throughout the country without interference from conflicting state regulations, mandates and fees.[10] Although self-insurance is strongly correlated with firm size[11] and large employers are more likely to have multiple establishments, employment growth in large firms cannot explain the increasing popularity of self-insurance over the past 10 years. In fact, most new jobs in the United States are created in small firms; between 2000 and the third quarter of 2010, 33,918,000 jobs were created, but during this period firms with more than 1,000 employees shed 1,947,000 jobs.[12]

The second traditional argument for self-insurance is that employers can earn interest on reserves prior to paying claims, in contrast to foregoing these earnings on pre-paid insurance premiums. While this argument appears in a number of articles[13] and on the trade association's website, it has not been tested empirically.[14] It is also unlikely that changes in foregone interest on reserves over the past 10 years can explain the increasing popularity of self-insurance over that period.

On balance, the traditional explanations provide a basis for the rise of self-insurance in the early 1980s, but they cannot explain the increasing popularity of self-insurance over the past 10 years. The next section offers two new explanations for self-insurance, which are meant to complement the traditional explanations. This paper's contribution is a reasonable hypothesis for differential rates of self-insurance across time that may offset the superiority of purchased insurance as a risk pooling-mechanism.

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[8] Jensen *et al.* (1995).
[9] The other premium tax measures were the taxes on Blue Cross and Blue Shield and commercial health insurance premiums.
[10] Fleet (2011).
[11] Garfinkel (1995), Gabel *et al.* (2003).
[12] Bureau of Labor Statistics (2011).
[13] Arnett and Trapnell (1984), McConnell *et al.* (1986), Jensen and Gabel (1988).
[14] Two additional untested explanations for self-insurance are lower overhead costs and the ability to tailor the plan to fit the needs of the company.

The new explanations

Preliminary assumptions

Three preliminary assumptions are made. First, we assume the employer wants to offer some type of health insurance coverage, so dropping health insurance is not an option. One could imagine that the employer's demand for coverage is completely inelastic up to a high reservation price. Second, if the employer self-insures, it will hire an administrator to manage the plan(s) rather than doing it in-house. Third, we assume the administrator or insurer has market power to set the price of administrative services or the premium for the insurance policy. In the section "Choice of insurance from a multi-product agent", the third assumption is relaxed. Here, the assumptions regarding the employer's demand for health insurance and the use of TPAs by self-insured firms are justified.

With respect to the assumption that the employer's demand for health insurance is completely price-inelastic, 99 per cent of firms with 200 or more workers and 93 per cent of those with 50–199 workers offer health insurance.[15] Small firms with less than 50 workers have price-elastic demand for health insurance, but these firms are less likely to be in the market for self-insurance.

Self-insured employers typically rely on TPAs because hiring an administrator relieves the employer of the expensive tasks of building a network of health-care providers and negotiating prices with them. According to Jensen and Gabel,[16] 77 per cent of self-insured plans used a TPA in 1984. Recent data on the prevalence of third-party administration was not found, although Fleet[17] remarks that self-insured health plans typically "contract out for some level of administrative services, ranging from enrolling employees and processing claims to creating networks of preferred providers".

Administrator moral hazard

The employer's choice of self-insurance vs. purchased insurance is viewed as a "tug of war" between two opposing forces: *administrator moral hazard* and *employer moral hazard*. This section analyses the first force, administrator moral hazard, which tugs the employer towards purchasing insurance. The analysis in this section is conditional on the employer having decided to self-insure and it explores the consequences of that decision. The key idea is that the administrator for a self-insured employer minimises only the cost of paying claims but not the cost of covered medical expenses. In contrast, an insurer is responsible for the cost of covered medical expenses and it will take steps to manage those expenses, for example reviewing claims for appropriateness and screening out doctors who over-prescribe services.

For administrator moral hazard to exist, it is necessary that the employer cannot monitor the administrator's effort to control the cost of covered expenses. This is an

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[15] Kaiser Family Foundation (2010).
[16] Jensen and Gabel (1988).
[17] Fleet (2011, pp. 30–31).

example of the well-known "principal-agent" problem in economics,[18] in which an agent has private information that is not known to the principal. In this case, the private information is the employees' health risk. Without this information, the employer cannot determine whether the high cost of claims is due to high risk or to the administrator's lack of cost-control effort. If this information failure were not present, the employer could enforce a contract that required the administrator to exert the cost-minimising level of effort.[19] The realism of this assumption will be discussed in the section "Are the assumptions realistic?" after presenting the new explanations. In addition, the agent must have some market power to set the fee for its services. Otherwise, the employer could take bids from competing agents to be its administrator.

We assume the self-insured employer knows the cost of claims C and the function that generates these claims $C=C(R(e_e), e_a)$, where R is unobserved employee risk, e_a is the administrator's cost-control effort, and e_e is the employer's investment in reducing risk. Company-funded wellness programmes and financial incentives for employees to exercise are examples of employer investments. The marginal cost of both administrator effort and employer investment is US\$1.

The technology is given by $\partial C/\partial R>0$, $\partial R/\partial e_e<0$, and $\partial C/\partial e_a<0$. Both types of effort (or investment) have diminishing marginal products. Finally, I assume the marginal product of administrator effort does not depend on risk, $\partial^2 C/\partial e_a\partial R=0$, so the employer can calculate a unique cost-minimising level of administrator effort, denoted e_a^*. However, that assumption could be relaxed to make administrator effort more productive in high-risk firms.

The administrator of a self-insured health plan gains nothing by expending effort to control costs, so it shirks and it sets $e_a=0$. Because the employer cannot monitor its effort, the administrator asserts that $e_a=e_a^*$ and employees' health risk exceeds the actual level of risk.

In contrast, the employer's optimal investment in wellness programmes will not be zero when it self-insures using a TPA. The investment will not affect the TPA's fee but it does affect the "premium" the employer pays for self-insurance (claims plus administrative fee plus wellness programme expense), with claims falling as programme expense rises. The optimal level of employer investment, e_e^*, is found where $\partial C/\partial R^*\partial R/\partial e_e=1$.

The following graph shows the cost of claims and the implied "premium" that would result from this insurance design. For simplicity, the vertical axis shows the premium net of the employer's investment, which has been set at the optimal level.

The optimal levels of administrator effort, claims cost and premium are denoted with asterisks. Actual effort is zero, but the administrator misrepresents effort as e_a^*. The premium is $P_s=e_a^* + C(R(e_e^*), 0) + e_e^*$, the administrator's profit is e_a^*, and the level of inefficiency is $C-P_s^*$. Under administrator moral hazard, self-insurance results in

[18] See, for example, Holmström (1979).
[19] Laffont and Tirole (1993) used a similar model in which the agent's cost function is $C=\beta-e$. If the principal observed the efficiency parameter (β), it could determine how much effort (e) the agent was expending to control costs and it could implement a contract to achieve the optimal level of effort. One such contract would be a fixed-price contract where the agent is the residual claimant to its cost-savings.
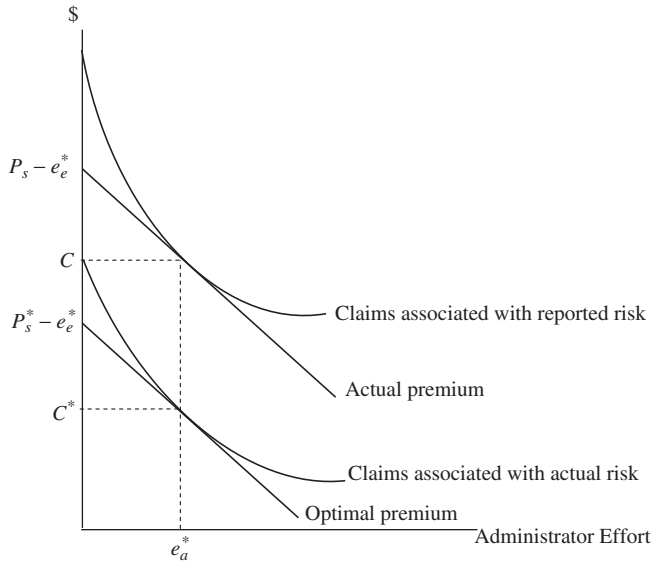
Figure 1. Self-insurance and administrator moral hazard.

an inefficiently low (zero) level of administrator effort to control costs. The following section explains that purchasing insurance may be inefficient as well, but for a different reason.

If administrator effort is more productive in high-risk firms, the employer would believe the optimal level of effort is higher than that shown in Figure 1. Assuming actual effort is zero, the administrator's profit will be higher under this assumption compared with the baseline assumption that $\partial^2 C/\partial e_a \partial R = 0$.

Employer moral hazard

This section is conditional on the employer having decided to purchase insurance. It analyses *employer moral hazard* that arises from that decision, pulling the employer towards self-insurance. The idea behind employer moral hazard is that employers can reduce the health risks of their workers by investing in safety, health promotion and wellness programmes, for example a company-funded alcohol abuse treatment programme. If its insurer utilised perfect experience rating, an insured employer would be able to internalise the gains from its effort to reduce employees' health risks. However, perfect experience rating is not the norm in health insurance underwriting because the insurer cannot verify the employer's effort to reduce employees' health risks. Consequently, the insured employer will underinvest in these programmes.[20]

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[20] A possible exception is an employee assistance programme (EAP) that reduces absenteeism and improves worker productivity in addition to reducing health-care costs. The employer can internalise at least part of the gains from such programmes.

In contrast, a self-insured employer can internalise the gains from company-funded programmes to reduce risk and so it will make efficient investments in these programmes. The inefficiency from purchased insurance is equal to the unrealised savings from the employer's foregone effort to reduce risk.

Considering the insurer's behaviour, purchased insurance is efficient. The insurer has an incentive to choose effort optimally at e_a^*, but it withholds information on the cost of claims and raises the premium. The insured employer does not know the actual cost of its workers' medical claims so it accepts the insurer's reported cost and pays the premium. The premium for the insured product is equal to the insurer's profit plus the cost of claims and the insurer's effort:

$$P_i = \pi_i + C(R(0), e_a^*) + e_a^*.$$

These new explanations suggest that self-insurance and purchased insurance involve a trade-off. Under self-insurance the employer does not observe the administrator's effort to control the cost of claims. The administrator will shirk and cover up by exaggerating employees' health risks. Under purchased insurance the insurer has an incentive to minimise the cost of claims but the employer will not invest in reducing employees' health risks.

Choice of insurance from a multi-product agent

This section presents a framework for investigating the employer's choice of purchased insurance or self-insurance and the agent's profit-maximising offers. We assume the agent is willing to supply both administrative services and insured products. Initially, the agent has market power for both products, but we will consider the effect of competition after finding the first-order condition for the monopoly agent.

The employer's demand function expresses the probability ρ of choosing insurance (i) vs. self-insurance (s) as a function of the respective premiums:

$$\rho = \rho(P_i, P_s), \quad \frac{\partial \rho}{\partial P_i} < 0, \frac{\partial \rho}{\partial P_s} > 0 \tag{1}$$

The monopoly agent's expected profit can be written:

$$\pi = \rho \pi_i + (1 - \rho) \pi_s \tag{2}$$

The agent maximises expected profit by choosing the premium for the insured product. The first-order condition for P_i is:

$$\frac{\partial \pi}{\partial P_i} = \frac{\partial \rho}{\partial P_i} \pi_i + \rho - \frac{\partial \rho}{\partial P_i} \pi_s = 0 \tag{3}$$

$$\rightarrow \frac{\partial \rho}{\partial P_i} (\pi_i - \pi_s) + \rho = 0$$

Profit from the insured product must be greater than profit from the self-insured product because $\partial \rho / \partial P_i < 0$.

Next, we can find the price of the insured product. Substituting profit from each product into the first-order condition:

$$\frac{\partial \rho}{\partial P_i}(P_i - C_i - e_a^* - e_a^*) + \rho = 0 \tag{4}$$

This can be solved for P_i:

$$P_i = \frac{\eta_i}{\eta_i + 1}(C_i + 2e_a^*) \tag{5}$$

The mark-up will be higher when the price elasticity of demand for purchased insurance (η_i) is lower. Holding the price elasticity of demand constant, the premium will be higher as medical claims and the optimal level of effort increase.

Finally, we are interested in the relative premiums of insurance vs. self-insurance. Although the insured product is more profitable, we cannot determine whether P_i is greater than P_s. This conclusion will help in interpreting empirical comparisons of premiums for insurance vs. self-insurance.

Let us assume that the multi-product agent has market power, but this assumption can be relaxed. Insurance market competition plays an important and unusual role in this model. Under most oligopoly models, the price of the product falls as the market becomes more competitive because demand becomes more price-elastic. This is the case in Eq. (5) for the insured product.

However, the price of self-insurance also falls because the employer can take bids from competing administrators to control its medical costs. Competition normally does not make firms more efficient in the second way. As the administrator begins to control costs, increased efficiency in self-insurance spills over into the market for purchased insurance through Eq. (5).[21]

To summarise this section, a multi-product monopoly agent will make more profit from the insured product. The mark-up for the insured product depends on the price elasticity of demand. The premium of the insured product may be higher or lower than the premium of the self-insured product, but both premiums fall as the market becomes more competitive.

Are the assumptions realistic?

This section discusses the realism of the assumptions underlying the new explanations for purchased insurance or self-insurance. First, is it realistic to assume that

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[21] The insurance premium can be written as $P_i = (\eta_i/\eta_i + 1)(C_i + e_a^* + \pi_s)$, where $\pi_s = e_a^*$ when the administrator for the self-insured employer is a monopolist. As the administrator begins to control costs π_s falls and the insurance premium falls.

self-insured employers do not know if their employees' claims cost is due to risk or to the administrator's cost-control effort? This is the most challenging assumption because it is the basis for administrator moral hazard. Employer ignorance may seem implausible because it implies that employers that *want* the administrator to exert the most effort will get "taken to the cleaners" most ruthlessly. If the employer suspected it was paying too much, it could tell the administrator to exert no effort and pay a premium less than P_s in Figure 1.

While employers may have some knowledge of employees' risk, we argue that this knowledge is limited. If knowledge were perfect, employers could perfectly risk-adjust employees' premiums, which we do not observe in the real world.[22] However, employers may be getting better at observing their employees' risk, as explained in the section "The increasing popularity of self-insurance".

Second, is it realistic to assume that the insurer withholds information from insured employers? The evidence is strong that this does occur. LoSasso *et al*.[23] surveyed a random sample of all U.S. employers, including state and local governments, with ten or more employees. Employers that offered health benefits to their employees were asked to rate the importance of factors they found useful in managing the health plans. Self-insured employers were more likely to rate "health plan utilisation data" (53 per cent vs. 33 per cent) and "medical expense trend" (50 per cent vs. 35 per cent) as very useful in managing their health plans compared with insured employers.

Impressionistic evidence also suggests that employers have difficulty obtaining information on claims costs. In interviews with benefit managers from several large, self-insured employers, it was found that the most important stated reason for choosing self-insurance is, "We can control our own data".[24] The managers contrasted control over their data to lack of control and lack of information if they purchased insurance. One mentioned that the employer had to fight its administrators to obtain health-care claims data for its employees, even though the employer technically owned the data.[25]

Third, do we give both insured and self-insured employers too much credit by assuming they can calculate the optimal level of administrator/insurer effort? This assumption also is necessary for the theoretical models. If employers could not calculate the optimal level of effort, the insurer or administrator could wildly overstate both effort and health risk. The assumption of this paper is more realistic.

Finally, would the administrator for a self-insured employer have an incentive to compensate for the employer's failure to act efficiently? For example, would the administrator introduce a health promotion programme and pay for it, while keeping the returns as extra profit? This is unlikely. While the administrator may have an

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[22] Glazer and McGuire (2001), Polsky and Nicholson (2004).

[23] LoSasso *et al.* (1999).

[24] Similar statements can be found in the literature on property-casualty insurance, where one of the reported advantages of self-insurance is that companies selecting this model "can generate their own reports—and not rely on a TPA (third-party administrator) to provide them" (Faulhaber, 2003, p. 5).

[25] According to the benefit manager, the administrators' primary objection to releasing claims data was that the employer would "reverse engineer" their provider fee schedules and use that information to negotiate lower payments for administrative services.

incentive to introduce the programme, it is likely to need the employer's cooperation to run the programme, which it cannot verify.

Previous studies

This section looks for predecessors to the new explanations for purchased insurance and self-insurance. While several previous papers have suggested that moral hazard can affect administrators and employers as well as policy-holders, none has offered the new explanations in this paper.

In his survey of optimal insurance under moral hazard, Winter[26] noted that moral hazard can be perfectly general, but he did not discuss administrator moral hazard. Mayers and Smith[27] raised the possibility of administrator moral hazard, but they dismissed it because they believed that administrators and employers share similar interests in screening applicants based on physical health and discouraging unsafe work practices and shirking by feigning illness. Furthermore, they thought that the cost of contracting in health insurance is low. My new explanations for self-insurance are based on questioning both views. In particular, the administrator and the employer may not share similar interests and the costs of contracting for the administrator's effort may be high.

In a subsequent paper, Mayers and Smith[28] concluded that, when contracting is expensive, "incentives exist to allocate risk to those agents who have a comparative advantage in risk bearing". This passage is more in line with my explanation that firms will choose the least-costly way to manage moral hazard (the administrator's or their own), but Mayers and Smith did not apply this idea to health insurance.

The closest predecessors to my approach can be found in the field of operations research, where Martin and Eckerle[29] and Martin and Harrison[30] discussed the problem of administrator moral hazard as a "cost-plus contract". Martin and Harrison[31] noted that self-insurance places a portion of the cost control burden with the plan administrator, but "the reimbursement schemes commonly used in these arrangements do not provide incentives for the administrator to join the cost control battle". To overcome the administrator's incentive to shirk, they recommended that the employer implement rule-based systems to identify errors in paying claims.

Finally, in a recent paper, Thompson[32] analysed a different type of moral hazard due to an insurer investing in risky assets. During the financial crisis of 2007–2009, many insurers of financial products were unable to pay large claims. Thompson traces this problem to risky investments that left insurers without the resources to pay claims. The problem arises because the premium is paid up front, leaving the insured party no way to influence the insurer's investment decision. Interestingly, Thompson thinks

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[26] Winter (2000).
[27] Mayers and Smith (1981).
[28] Mayers and Smith (1982, p. 283).
[29] Martin and Eckerle (1991).
[30] Martin and Harrison (1993).
[31] Martin and Harrison (1993, p. 820).
[32] Thompson (2010).

that insurer moral hazard has an upside: it gives the insured party an incentive to reveal information that it holds poor-quality assets (e.g. substandard mortgages) because the insurer will invest in safer assets when it knows the truth about its potential claims liability.

Empirical implications of the new explanations

The new explanations suggest that self-insurance invites administrator moral hazard but it encourages employers to reduce employees' health risks. Several strong empirical predictions from the new explanations and one weaker one can be tested with data. Generally speaking, the available evidence supports these predictions.

Employers that offer health maintenance organisations (HMOs) will purchase insurance

If administrator moral hazard is an explanation for purchasing insurance, then employers that offer HMOs should purchase insurance more often than employers that offer traditional insurance plans. The reason is that HMOs, at least in theory, take an active role in reducing the use of low-value medical services. It is much more difficult for an employer to monitor the extent to which the HMO performs this role than it is to monitor the claims-paying role in traditional health insurance. Consequently, the employer can purchase insurance to induce the HMO to perform this role.

This prediction is borne out by empirical evidence. According to the Kaiser Family Foundation's,[3] annual survey of employer health benefits, 60 per cent of all covered workers are in self-insured plans, but only 41 per cent of those in HMOs and 26 per cent in point-of-service (POS) plans are in self-insured plans.[33] Even large employers that offer a choice of HMOs and traditional plans often purchase HMO insurance and self-insure their traditional plans.

Self-insured employers will invest in reducing employees' health risk

A second important prediction is that self-insured employers should be more likely than those that purchase insurance to invest in programmes to reduce employees' health risk.[34] Kenkel[35] (p. 212) put the argument thus:

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[33] A POS plan combines features of an HMO (the enrollee receives full benefits by using the plan's network of contracted providers) with the ability to receive reduced benefits from non-network providers.

[34] Wellness programmes include weight loss, gym membership discounts or on-site exercise facilities, smoking cessation, personal health coaching, classes or web-based resources in nutrition and healthy living, and wellness newsletters. EAPs are more broadly defined as helping employees deal with personal problems (e.g. substance abuse) that may affect their productivity, health and well-being. I will not draw a distinction between wellness programmes and EAPs because both can be considered as investments that reduce employees' health risks.

[35] Kenkel (1997, p. 212).

Suppose a firm that purchases health insurance establishes a worksite alcohol abuse program that reduces employee health claims. From the firm's perspective the immediate result of a successful program is an increase in its insurance company's profits. The firm only benefits in the future if the lower claims translate into lower premiums, depending on the extent of experience- vs. community-rating of health insurance premiums. In contrast, a self-insured firm captures all of the reduced health-care costs as a benefit, and can use claims data to evaluate and improve future worksite programs. In economic terminology, the self-insured firm more fully internalises the benefits of investments in worksite alcohol programs.

Kenkel[36] estimated the probability that private worksites offer several types of alcohol abuse programmes.[37] Controlling for other institutional features of the worksite and characteristics of the workforce, he found that self-insured worksites are more likely to offer all types of programmes. For example, the estimated effect of self-insurance increases the probability of offering an employee assistance programme (EAP) by 8.3 percentage points.

Kenkel's finding is illustrated by the case of JCB, Inc., a manufacturer of heavy equipment headquartered in Pooler, GA. After becoming self-insured in 2005, the company introduced a number of wellness programme and became tobacco-free across its entire campus. According to Steve Hooper, JCB vice president of human resources, "Being self-insured, we control our benefits and directly recoup cost savings, not the insurance company. Therefore it behooves us to keep employees as educated and healthy as possible".[38]

Self-insured employers will overestimate the benefits of programmes that reduce employee health risk

An interesting but less precise prediction is that self-insured employers will overestimate the benefits of programmes that reduce employee health risk, leading to occasional disappointment after the results are observed. Under self-insurance, the employer will introduce health risk-reducing programmes if it believes that the reduction in risk exceeds the cost of the programme. The employer knows the cost of the programme but it may overestimate the likely reduction in risk. Because of administrator moral hazard, it believes the baseline level of risk is higher than the actual level. This may lead it to over-estimate the net return from risk reduction. Imagine a firm contemplating a programme to reduce alcohol abuse. If the programme has economies of scale, the firm may overestimate the net return by taking the administrator's word that alcohol abuse is a serious problem among the workforce. Consequently, Kenkel's finding that such programmes are more commonly offered by

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[36] Kenkel (1997).

[37] A single firm can have multiple worksites with different health promotion activities at each site.

[38] Hart (2006).

self-insured firms cannot be interpreted as implying that the level of investment by self-insured firms is optimal.

Although we lack pre- and post-implementation observations from the same employers to test this prediction, it is clearly the case that employers are not very enthusiastic about the results of wellness programmes. Only 44 per cent of employers that offered health insurance and wellness programmes in 2010 thought those programmes were effective in reducing the firm's health-care costs (Kaiser Family Foundation[15]).

Implications for premiums

The new explanations for self-insurance vs. purchased insurance do not predict which premium is higher. This is consistent with empirical studies, which have not shown that self-insurance is less expensive for employers.

Among the first comparative studies of premiums, Jensen and Gabel[16] found that self-insured plans cost more than purchased plans in 1981 and 1985. Jensen and Morrisey,[39] using data from medium and large business establishments, also found that self-insured plans were more expensive from 1981 to 1984. They argued that this effect was not an artefact from having omitted certain aspects of coverage because self-insured plans had less generous coverage than purchased insurance. However, in a later study utilising data from 1993 to 2001, Gabel *et al.*[40] found that premiums for purchased insurance increased more rapidly than those for self-insured plans. By 2001, with the single exception of self-insured preferred provider organisations, self-insured plans were not more expensive than purchased plans.

A drawback of these studies is that employers can select the financing method they prefer, and if they select either self-insurance or purchased insurance for unobserved reasons that are correlated with premiums, the results may be biased.[41]

The increasing popularity of self-insurance

As mentioned earlier, the percentage of workers covered by employer-sponsored health plans who were in self-insured plans rose from 44 in 1999 to 60 in 2011. To some extent this increase can be explained by a decrease in the popularity of HMOs, which are less likely than conventional health plans to be self-insured. However, HMO enrolment stopped falling in 2005, while self-insurance kept increasing. Thus, the increasing popularity of self-insurance is likely due to other causes.

Part of the increase in self-insurance may be due to changes in relative premiums for insured and self-insured health plans after 2001, when Gabel *et al.*'s[40] data ended. From 2001 to 2011, premiums for insured family coverage in employers with 200 or

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[39] Jensen and Morrisey (1990).
[40] Gabel *et al.* (2003).
[41] Jensen and Gabel (1988) controlled for benefit coverage and found that self-insured plans had less generous benefits than purchased insurance, but they had to assume that the same relation applies to unmeasured benefits.

more workers rose by 7.4 per cent per year. This is slightly faster than the 7.1 per cent rate of increase for self-insured family coverage among employers of the same size. However, the difference does not seem large enough to be the major driver of the growth in self-insurance.[42]

The increase in self-insurance was driven mainly by medium to large employers switching from purchased insurance to self-insurance: the percentage of self-insured medium firms (1,000 to 4,999 employees) increased from 62 to 79; the percentage of self-insured large firms (5,000 or more workers) increased from 62 to 96.[3]

The new explanation for self-insurance suggests a plausible mechanism: the use of risk assessment to negotiate premiums with self-insured health-plan administrators. Risk assessment refers to the use of individual-level diagnostic or demographic information to determine the expected demand for health-care services in the covered population. Risk-assessment systems have become increasingly sophisticated and are marketed by a variety of health benefit consulting firms. Risk assessment lets the self-insured firm complete the calculation it was previously unable to perform: if our covered employees are spending more than they should for their level of risk, then our plan administrator is not trying hard enough to control costs.

Keenan et al.[43] described how several purchasing coalitions such as the Pacific Business Group on Health (PBGH)[44] and large employers (e.g. the University of California and Harvard University) use risk assessment to negotiate premiums. A website that advises employers on the pros and cons of self-insurance recommends obtaining and sharing cost data to compare premiums and bench-marking plan costs against those of similar-size firms in the same region. The site advises, "Without this data, it's tougher to judge whether your premium rate adjustment at renewal time is fair".[45]

Another form of risk assessment relies on employees completing surveys that include questions about medical history, health status and lifestyle. This form of risk assessment is much more popular among large employers than small employers. For example, 81 per cent of firms with more than 5,000 workers offer employees the option to complete a health risk assessment and 59 per cent offer financial incentives to complete an assessment.[3] The corresponding percentages among firms with 200–999 workers are 47 and 38, respectively. Information gained from health risk assessment can be used to reduce administrator moral hazard in self-insured health plans. This should increase the popularity of self-insurance, especially among larger employers.

Summary

This paper has proposed a new explanation for self-insurance that does not rely on the ERISA pre-emption of state benefit mandates and premium taxes. The explanation is

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[42] The data is from the Kaiser Family Foundation (2011). To remove the effect of high or low premiums in 2001 or 2011, percentage growth rates are based on a regression of $\ln(PREMIUM) = \beta_0 + \beta_1\ YEAR$.

[43] Keenan et al. (2001).

[44] PBGH requires that members have at least 2,000 benefit-eligible lives in California.

[45] Health Risk Assessment (2010).

administrator moral hazard: administrators will overstate the amount of effort they devote to controlling costs for self-insured employers. It has also proposed a new explanation for purchased insurance: avoidance of employer moral hazard.

Considering only administrators' efforts to control costs, self-insurance is inefficient compared with purchased insurance. However, when employers' risk-reduction efforts are considered, the relative efficiency of these two methods of financing ESI depends on which type of moral hazard is more severe.

Given recent advances in measuring employees' health risk, it is increasingly likely that self-insured employers can observe both expenditures and risk; hence, they can monitor administrators' effort. Improved risk assessment should go hand-in-hand with the spread of self-insurance.

Acknowledgement

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