

PRIVATE VOLUNTARY HEALTH INSURANCE IN DEVELOPING COUNTRIES

Chapter 2: SUPPLY

Report submitted to the World Bank by

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2.1 Introduction

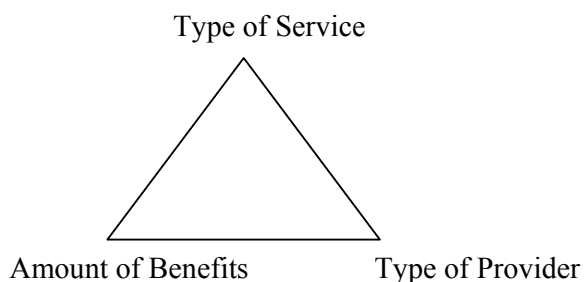
This chapter reviews the main dimensions characterizing both the extent and the structure of health insurance coverage offered by a private insurer. The benchmark case is a competitive, unregulated market; however, an attempt is always made to qualify the argument when considering the situation prevailing in developing countries (LDCs), with case studies (where available) cited for support. A specific variant considered is community-based health insurance (CBI), which has some interesting features (Dror, 2002 p. 2). Throughout the chapter, private insurance is also compared to public insurance. The term public insurance is defined to mean a compulsory monopolistic insurance scheme carried out by a government agency.

The chapter starts out with elements of the supply of insurance coverage that can be determined or at least influenced by the individual insurer in an unregulated market, continuing with elements that are more related to market processes and outcomes. The first considered is the composition of the benefits package (section 2.2). The broader the package, the more opportunities for risk diversification exist in principle. However, this argument needs to be qualified in the case of both LDCs and CBI. The next element is the loading, i.e. the price of health insurance (section 2.3). It should be noted that the gross premium as such has no influence on supply because the component that equals expected loss is paid out to the insured. It is the loading that contributes to cost recovery and expected profit. Next, vertical integration is studied (section 2.4) because nature and scope of products supplied importantly depend on the degree of vertical integration (distinguished from vertical integration with vertical restraints). Variants of Managed Care constitute a prominent example of vertical integration in health insurance. The final element considered is the degree of concentration prevailing on the market (section 2.5). The amount of concentration does not only reflect decisions taken by insurers but is also influenced by antitrust legislation and enforcement. In all of these considerations, the role of the legal environment at large and of the institutional environment are taken into due account (Appendices I and II).

2.2 Benefit package

An unregulated private insurer has the option to specify its offer along three dimensions (Zweifel and Breyer, 1997, p. 159). First, it can decide to cover only certain types of services and leave out others, for instance, to include inpatient and exclude outpatient care like the community health fund in Tanzania (Musau, 1999). Secondly, it can differentiate its offer by covering or excluding services offered by certain provider categories, for instance including only physicians registered with a public agency and excluding those who are not. Thirdly, it may determine the amount of the benefits paid in case of sickness. The compensation may state a certain quantity of services, the compensation per unit of consumption, or the limit up to which expenditures are refunded (see figure 1).

Figure 1: Differentiation of benefits



There are many possible combinations between the three dimensions, creating opportunity for product innovation and the building of profitable market segments. The optimal choice is influenced by several factors listed in table 1, which are discussed starting with the insurer's point of view and moving towards demand-side considerations and regulatory and institutional factors that affect insurer's decision making.

(1) Risk aversion of insurer

The relevance of risk aversion for the behavior of insurers has been the subject of continued debate (Greenwald and Stiglitz, 1990; Chen, Steiner and Ann, 2001). In industrial countries, owners of insurance companies can be assumed to hold fully diversified portfolios. As such, they are exposed only to undiversifiable risk, which is reflected in the beta of the company (the slope of the regression linking the company's expected rate of return to the expected rate of return prevailing on the capital market at large). Therefore, diversification is only in the interest of shareholders to the extent that it lowers the company's (positive) value of beta. Management, being much less diversified in its assets, has an interest in diversification of its own. Therefore, the extent to which it actually engages in diversification of the underwriting portfolio is a question of corporate governance.

Assuming an interest in risk diversification caused by risk aversion, its impact on the benefit package can still go either way. To the extent that e.g. inpatient and outpatient services constitute complements rather than substitutes, they are positively correlated. Including both in the benefits package then adds to the variance of liabilities *ceteris paribus*, which runs counter the interests of a risk-averse insurer. Benefits triggered by communicable diseases have the same effect, motivating their strict limitation. Even if there is negative correlation, it should be noted that risk diversification does not necessarily imply more complete benefit

packages at the individual level since the insurer can offer different packages to different client groups.

To the extent that domestic investors in LDCs cannot rely on a sufficiently developed capital market (or are prevented from full international diversification), their risk aversion is more likely to be relevant for management decisions. Management, finding itself in a similar situation, will tend to further reinforce this tendency (assuming corporate governance to be as imperfect as in industrial countries).

In CBI, which amounts to a mutual insurer, owners are individuals and households whose degree of asset diversification is still far lower. This calls for an even keener interest in diversification. However, the low income level of CBI enrollees may force most CBI schemes to stick to narrowly defined products in spite of a basic need for diversification (Musau, 1999). Moreover, in the presence of imperfect capital markets borrowing opportunities for CBI schemes are limited, giving rise to liquidity constraints to diversification.

Table 1: Factors affecting the size of the benefit package

Factor	Factor serves to increase (+)/decrease (-) benefit package			
	Private Insurance (Competitive Market)	Private Insurance (LDC)	Community-based Insurance (CBI)	Public Insurance (LDC)
(1) Risk aversion of insurer	+ /-	+/- ↑	+ ↓/-	na
(2) Synergies among benefits	+	+	+ ↓	na
(3) Moral hazard	-	- ↓	- ↓	- ↑
(4) Diversity of preferences	+	+ ↓	+ ↓	+ ↓
(5) Diversity of risks	+	+ ↓	+ ↓	+ ↓
(6) Emergence of new health risks	+	+ ↓	+ ↓	+ ↑
(7) Regulation	+	+	+	+ ↑
(8) Fraud and abuse	-	-	- ↑	- ↓

Note: ↑ Reinforcement of relationship ↓ Attenuation of relationship na: not applicable

A public health insurance agency is unlikely to be significantly risk averse with respect to its financial results. Its opportunities to shift the financial risk to the government - who can resort to printing money if necessary - and the responsibility for failure are numerous. Therefore, risk aversion cannot have much importance in determining the benefit package.

(2) Synergies among benefits

Synergies denote economies of scope in production, distribution, and marketing that are unrelated to risk diversification effects. They cause insurers to benefit from offering a combination of benefits rather than a single benefit. In production, synergies arise when the costs of writing and executing contracts (specifically the processing of losses, cf. the term $\mu\pi$ in equation (1) of section 2.3 below) do not rise proportionally with the number of benefits, resulting in decreasing expected unit cost. In distribution, the same channel may be used for selling additional products. In marketing, brand advertising benefits all the products sold by a given insurer.

In LDCs synergy effects can be as strong as in industrial countries. To the extent that private health insurers in LDCs seek to maximize profits, they want to make full use of economies of scope. For instance, Fedsure Holdings, a South African insurance company, was able to decrease unit costs by cooperating with Norwich Holdings, a medical scheme administrator and private hospital owner. This alliance thus enabled Fedsure to make their medical benefit package more comprehensive (McGregor et al., 1998).

For CBI, synergy effects typically are limited. They often lack the capacity to jointly administer several insurance products. The scarcity of healthcare providers in their area of operation also means that there is little scope for combining services to be covered. Moreover, CBI schemes sometimes rely on barter, and the goods offered in exchange for services may not accord with the preferences of a great variety of providers (Tenkorang, 2001). For example, the Mburahati Health Trust Fund in Tanzania only offers a limited benefit package of outpatient care, along with a cost reimbursement of ten percent for treatment in public hospitals. Chronic diseases, HIV/AIDS, and tuberculosis are not covered (Musau, 1999). In general, scope for synergy effects appears to lie with closer cooperation between CBI schemes. On the other hand, this would result in larger pools, which tend to make moral hazard problems worse.

In a public insurance system, synergies are not a very relevant criteria for a public decision maker who aims at providing public and merit goods to the population (see section 3.2). This objective tends to override the economic justification of extending benefits purely because of synergies.

(3) Moral hazard

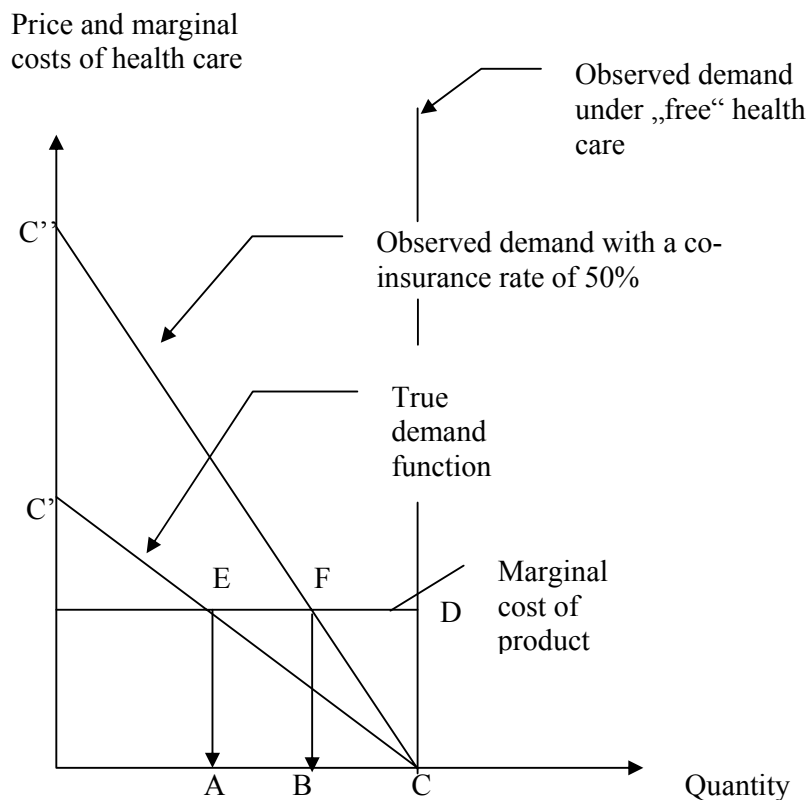
The effect of ex-post moral hazard (for a definition, see section 2.3) on the benefit package can be illustrated as follows. Assume that consumers' willingness to pay out of pocket for a medical service or product is given by the linear demand function $C'C$ of figure 1. In the case of health insurance with a 50% coinsurance rate, maximum willingness to pay is doubled, from C' to C'' . More generally, the demand function is rotated outward to become the effective demand function CC'' . The lower the rate of coinsurance, the more pronounced this

rotation. With no co-payment at all (as is often the case with tax-funded schemes), the curve runs fully vertical from C.

Therefore, the market equilibrium shifts from point E to F, with a higher quantity of the service or product transacted. In terms of eq. (2) below, the benefits to be paid (I) increase, resulting in an ex-post moral hazard effect. As will be argued in section 2.3 below, a decrease of the rate of coinsurance causes both parts of the loading and hence the premium to increase. This creates a negative income effect (shifting the demand curve inward) that is neglected for simplicity.

The moral hazard effect is of relevance to the choice of benefit package because it comes to bear with each additional item in the package. The more complete the package, the larger the loading component in the gross premium and hence the larger the net cost of insurance. Therefore, moral hazard considerations should lead an insurer to exercise caution in expanding the package. Specifically, it would want to add services characterized by low price elasticity of demand because the moral hazard effect is more limited in this case. In figure 1, lower price elasticity means that for a given maximum willingness to pay such as C', the demand function runs steeper, causing point C to shift towards the origin. This serves to reduce the difference between the true and the observed demand curve, and hence the size of the ex-post moral hazard effect.

Figure 2: Ex-post moral hazard



- A: equilibrium quantity without insurance coverage
- B: equilibrium quantity with 50% coinsurance
- B-A: ex-post moral hazard effect with a coinsurance rate of 50%
- C-A: ex-post moral hazard effect in a scheme without coinsurance

(Ahuja and Jütting (2003, p. 13) argue that ex-post moral hazard is less of a problem in LDCs, mainly because density of supply is still very low, causing nonmonetary costs of utilization to weigh heavily. The following example may illustrate their argument. Suppose that the total cost of using medical care in a LDC is 100, of which 50 is the money price of the visit and 50 consists of the cost of travel, accommodation, and lost income. With full coverage, this total cost falls to 50, or by one-half. By way of contrast, in an industrial country, the total cost may be 500. However, because of income replacement there is only a cost of travel to the insured, amounting to 100. Even this cost is relatively low due to a high density of medical supply. If the price of the visit is reimbursed in full, total cost then falls from 500 to 100, a reduction of 80 percent. Thus, LDCs are still characterized by barriers to access that serve to limit ex-post moral hazard effects, which in principle should facilitate the expansion of benefit packages.

Moral hazard may be even less of a problem in CBI, which usually consist of small risk pools. First, asymmetric information is less pronounced in a small (often rural) community, where each member of the pool can easily monitor the behavior of the others. Therefore, any overuse of an extended benefit package would be quickly detected. Furthermore, the sanctions meted out by the community can be enormous (in the extreme, expulsion from the community), constituting a very effective device to enforce discipline among the insured. The experience of community-based credit schemes is instructive in this regard. Failure to pay back a credit may be sanctioned by whipping and indeed expulsion from the community (Hoff and Stiglitz, 1993). *Ceteris paribus*, CBI schemes should be less hampered than private insurers by moral hazard considerations when deciding about an expansion of their benefit package.

In a public insurance system, moral hazard sooner or later becomes an important consideration in the determination of the benefit package. The consumption of health care services usually entails little or no cost sharing for the user, which means that in figure 2 the vertical observed demand function applies. Therefore, the public insurer must finance the maximum quantity C times the unit price CD for each benefit added. It is subject to the ex-post moral hazard effect to a higher degree than a private insurer, who would offer policies with varying degrees of cost sharing. Unless contributions (often levied in the guise of a payroll tax) or tax allocations are increased accordingly, the scheme ends up in deficit.

(4) Diversity of preferences

The creation of a benefit package depends on its value to consumers. Consumers will demand a package that combines benefits to the extent that their marginal rate of substitution is equal on expectation. A unit of benefit will be added to the package until its ratio of expected marginal utility to the premium increase occasioned is equal across all benefits. This expected value importantly depends on the amount of risk aversion and the relevant probabilities of loss. Differences in loss probabilities are addressed below.

Diversity of preferences among the insured causes their optimality conditions to be satisfied at different (sometimes zero) levels of benefits. In order to attract consumers, insurers will customize their products in an attempt to maximize expected profit. The diversity of preferences may relate to e.g. the amount of the deductible, the rate of coinsurance, and the limits on benefits, as well as type of service (for instance alternative medicine) and type of provider. In this way, permanent innovation and adjustment to changing demand occurs. As a general rule, product differentiation is costly.

Consumers at low levels of income and wealth are less willing and able to bear this cost. For this reason, the relationship between diversity of preferences and size and structure of benefit packages likely is attenuated in LDCs, both for private and CBI schemes. This reasoning also holds for a public health insurer operating in a LDC.

(5) Diversity of risks

Diversity of risks (in the sense of differences in loss probabilities) promote a differentiation of degrees of coverage, combined with a differentiation of premiums. If insurers are unable to assess risks, a differentiation of premiums cannot take place, which encourages the purchase of excess coverage by high risks and reduced coverage by low risks. Therefore, the insurer runs the danger of incurring a deficit when expanding the benefit package under these conditions. The same argument holds when the insurer is prevented from differentiating premiums by a mandate to take on every applicant on the same conditions. When combined with asymmetric information, diversity of risks thus hampers the creation of comprehensive benefit packages.

This argument seems to be relevant for LDCs as well. For instance, ISAPRE in Chile, a private health insurance group, have been offering fair comprehensive benefit packages while avoiding deficits. However, they have the right to form homogeneous risk groups, which are charged differentiated, risk-based premiums. This makes coverage too expensive for the poor and large subsets of the elderly (Hohmann and Holst, 2002). In Indonesia, where premium differentiation is more limited, most private health insurers greatly reduce benefits offered to people aged 55 and more (Hohmann et al. 2002).

CBI schemes typically provide uniform coverage to all participants at a uniform premium. According to the argument advanced above, this should cause them to opt for small benefit packages. This prediction is borne out in the case of the Kisiizi and Chogoria insurance schemes in Kenya, which exclude HIV/AIDS treatment, eye glasses, self-inflicted injuries, and dental care (Musau, 1999, p. 10). Of course, other reasons may be responsible for the limited size of the benefit package in this country and other LDCs.

For a public health insurer, uniformity of benefits is part of its mission because it acts on behalf of the government, whose likely objective is to provide citizens with a maximum of public and so-called merit goods (see section 3.2). By assumption, public goods are enjoyed by everyone to the same degree; therefore, if the government views access to health care as a public good, its insurance branch must act accordingly, guaranteeing equal access through equal benefits. Diversity of risks can hardly be reflected in a diversity of (planned) benefits under these circumstances.

(6) Emergence of new health risks

New health risks give rise to demand for an extension of the benefit package. However, even under competitive conditions insurers will not adjust to this demand immediately. First, they need time to assess the probability of loss π . Second, an extension of the benefit package calls for a premium adjustment, which in turn usually requires a cancellation of the policy. It takes new business to provide the insurer with the opportunity to test consumers' willingness to pay a higher premium for the added benefit. Even under competitive conditions, new health risks will thus be covered only with a certain delay.

With regard to LDCs, the expected cost of treating a new disease is of crucial importance. While coverage of costly new diseases certainly increases willingness to pay of consumers, the necessary premium adjustment may result in an amount exceeding the consumer's income. Moreover, in LDCs some of the new risks will be communicable diseases, which cause individual illness probabilities to be positively correlated. Extending the benefit package therefore may increase the risk of ruin. This latter argument carries even more weight for CBI schemes because they operate in areas where close personal contact is very common (Nugroho et al. 2001). A public insurer is called upon to cover emerging new risks because public health is at stake. While hardly concerned by the risk of ruin, it still has take into account that the government possibly must cover high deficits.

(7) Regulation

Regulation typically concerns not only premiums but also products because premium regulation can be subverted by product differentiation. Premium regulation typically prevents insurers from differentiating premiums according to true risk. A given uniform premium is associated with a contribution to expected profit in the case of a low risk but cause of an expected deficit in the case of a high risk. Therefore, it becomes vital for an insurer to attract as many low risks as possible. One way to achieve this is to modify the benefit package, excluding services that attract high risks. More generally, insurers will use benefits to compete with differentiated products since price competition is hindered by the regulator. In all, premium regulation in principle serves to increase the variety of benefit packages in the market, unless product regulation neutralizes this tendency.

Overall, regulation of insurance can be efficiency-reducing, in particular if it seeks to minimize the social cost of insolvency by avoiding insolvency altogether (see Appendix I and table I.1.) Typically this type of regulation limits itself to mitigating the social costs of insolvencies while permitting them in principle. An overview is provided by appendix table I.2.

A country with little regulation of private health insurance is Croatia, and the choice of products is indeed very wide (World Bank 2003, p. 19). However, the benefit package may also include coverage of the copayment imposed by the public insurance scheme, which exposes the scheme to moral hazard of the ex-post type and thus causes the true price of public health insurance to increase [see item (7) of section 2.3]. In addition, the danger of cartelistic agreements is considerable because two insurers, dominate the market, one of which is even government-owned.

The extent to which premiums and products are regulated in developing countries differs greatly. Some private insurers, like those in Taiwan and Singapore, face strict regulations with regard to both premiums and products (for an overview of the different national regulatory systems, see appendix table I.3). By way of contrast, insurers in countries such as Chile and Thailand have more autonomy in setting their premiums, and their benefit packages are more varied.

In most CBI schemes the premium is determined by members themselves. The resulting premium is uniform; however, this triggers but little risk selection effort through product differentiation because the risk pool is very homogeneous. Moreover, most schemes CBI are local monopolies; therefore, they have little incentive to compete for members with differentiated benefit packages. An example in point is the Mburahati Health Trust Fund in

Tanzania (Musau, 1999), which only offers coverage for outpatient care and a small contribution towards public hospital care.

Since public health insurance can be seen as being subject to a maximum degree of regulation (see section 3.2), it is also most strongly exposed to it in the determination of the benefit package. Expanding benefits is in the logic of a government who seeks to provide a maximum amount of public goods; therefore, a strong tendency in this direction can be expected.

(8) Fraud and abuse

Fraud and abuse may occur at three levels. First, it constitutes an extreme form of moral hazard on the part of the insured, which however may be countered by the insurer by inspections and curtailment or even denial of benefits. Second, providers of services may act fraudulently; here, the countermeasure is to pattern their remuneration in a way to give them an incentive for honesty (revelation principle, see e.g. Laffont and Tirole, 1993, ch. 1). Third, fraud and abuse may occur when health care providers effect their purchase. Being one step remote, it cannot easily be neutralized by the insurer unless competition between providers is strong.

In LDCs generally weak institutions foster corruption, which may affect the quality and quantity of benefit packages. According to international corruption indices, like the annually published Transparency International Bribe Payers and Corruption Perception Indices, unfair market behavior is much more common in developing countries as compared to OECD countries (Transparency International, several years). Countries such as Taiwan, Russia, and China scored particularly poorly in both indices in 2002 (see Appendix II). Providers of medical supplies may ex-ante fraud physicians and hospitals e.g. by offering money payments in exchange for their more expensive products being used for treatment rather than cheaper products from competing suppliers. These products tend to be also of lower quality and quantity since corrupted suppliers have to recover their bribery payments through their sales margins. This results in insurable medical services being of lower quality at a given price. An insurer considering the extension of its benefits package thus has to take into account that such an addition may well be of lower quality, thus failing to induce much willingness-to-pay in terms of higher premiums. This makes more comprehensive benefit packages not very attractive.

For instance, some private health insurers in Thailand decided to terminate coverage for ambulatory care because auditing the bills and checking for fraud became too costly (Health Systems Research Institute 2002, p. 07).

Turning to CBI, the fact that they dispose of minimum administrative capacity means that their capability of monitoring the behavior of health care providers is very limited. Therefore, they may run an even greater risk of purchasing services of lower quality when extending their benefit package. This forces them to concentrate their package on those (possibly few) services where purchasing is little infected by corruption.

A public health insurer in principle is affected by corruption in the same way as a private one in that it can offer only fewer services or lower-quality services for the amount of payroll tax or general tax received. This means that the benefit package is not as comprehensive as it could be. However, the list of benefits cannot easily be purged of those items whose suppliers

had bought their slots. This serves to attenuate the negative relationship between benefits and fraud, at least as long as incurring a deficit is an option.

2.3 Loading

Private insurers pay an indemnity I to cover a loss against a premium. The gross premium can be divided in a net premium ($\pi * I$), with probability of loss depending negatively on preventive effort on the one hand and a loading on the other. The net premium covers the expected amount of benefit to be paid. The loading can be further subdivided in a component that is a per-unit amount μ associated with claims processing. The higher the likelihood of a claim being presented, the more often an administrative process is triggered. The other component is a multiple λ of expected benefits net of copayment (symbolized by a rate of coinsurance c for simplicity), reflecting acquisition cost, a risk premium, and profit. Therefore, a viable insurance contract must be priced to contain the following elements (Zweifel and Breyer, 1997, ch. 6.2),

$$P(I) = \text{net premium} + \text{loading} = \pi(V) * (1-c) * I + \mu * \pi(V) + \lambda * \pi(V) * (1-c) * I \quad (1)$$

P: Premium

μ : Loading factor for variable administrative costs

π : Loss probability, probability of illness; $0 < \pi < 1$, $\pi'(V) < 0$

V: Preventive effort (unobservable)

c: Rate of coinsurance; $c < 1$

λ : Loading factor for acquisition cost, risk premium, and profit

I: Benefit paid in the event of illness

This equation needs to be completed by the following consideration. The more complete coverage, denoted by I , the weaker in general are insured's incentives for prevention V^1 . Taking into account this ex-ante moral hazard effect, the amount of loading can be written

$$\text{Amount of loading} = \mu * \pi(V(I)) + \lambda * (1-c) * \pi(V(I)) * I \quad (2)$$

The question arises immediately whether the concept of loading has any relevance to a public health insurer. It does, and for two rather different reasons. First, a public scheme also has its administrative expense, which rises as the frequency of claims π increases. This frequency depends on preventive effort V precisely as with any private insurer, and V in turn is again negatively related to coverage I (the ex-ante moral hazard effect). The term $\mu * \pi(V(I))$ of eq. (2) therefore applies to public insurance as well. Second, although a public insurer need not charge for acquisition cost, risk bearing, and profit, it gives rise to a 'loading' that is very similar to the second term of eq. (2). The larger the expected value of benefits to be paid net of coinsurance [$(1-c) * \pi * I$], the higher must be the rate of tax levied on labor income or on sales. Now as is well known, taxes cause inefficiencies because they reduce the volume of transactions; some contracts that would have been mutually beneficial are not struck under the influence of tax. These inefficiencies easily amount to 20 percent of transaction value (see e.g. McMaster, 2001) and thus are of a comparable magnitude as λ in eq. (2).

¹ Under certain circumstances the incentives for prevention are higher when coverage increases. V responds positively to an increase in I when the insured earns a high wage, is risk averse and/or enjoys a generous sick leave. This can be a common situation in developed countries (Zweifel and Manning, 2000, p. 417)

In all, the expression for the loading given by eq. (2) can be applied to public health insurance as well, at least to a first approximation. The ‘loading’ may of course differ depending on the type of taxation used to fund the scheme. The income tax base is very weak in some developing countries (e.g. Uganda, Sierra Leone, Zambia) where only a few workers receive formal pay which could be taxed, a majority of workers being employed in the informal sector. A consumption tax is the preferred form of financing public insurance in many LDCs, and since its levy is not so costly, it may even give rise to a smaller ‘loading’.

The amount of loading is influenced by several factors listed in table 2.

Table 2: Factors affecting the net price of health insurance (loading)

Factor	Factor serves to increase (+)/decrease (-) the amount of loading			
	Private Insurance (competitive market)	Private Insurance (LDC)	Community-Based Insurance (CBI)	Public Insurance (LDC)
(1) Administrative expenses (including capital charge)	+	+	+ ↓	+
(2) Reinsurance	+ / -	+ / - ↑	+ / - ↑	n.a.
(3) Pool size	+ / -	+ / -	+ / -	-
(4) Benefit package	+	+	+	+
(5) Share of high-income members	+ / -	+ / - ↓	+ / - ↓	+ / -
(6) Copayments and caps	-	-	-	- ↓
(7) Moral hazard	+	+ ↓	+ ↓	+ ↑
(8) Quality and proximity of health care services	+	+ ↑	+	+
(9) Regulatory framework	+ / -	+ ↑ / -	+ ↓ / -	+ ↑ / -
(10) Fraud and abuse	+	+ ↑	+ ↓	+ ↑

Note: ↑ Reinforcement of relationship, ↓ Attenuation of relationship, n.a. not applicable

(1) Administrative expenses

Administrative expenses must be recovered before the insurer reaches the break even. They are added to the expected loss. The loading factors μ and λ reflect these expenses and thus importantly determine the amount of loading [see eq. (2)]. They depend on possible economies of scale, implying that a critical number of contracts and transactions may be necessary to reach minimum average cost. The loading factors also include capital utilization costs, and surcharges for uncertainty about future cost inflation in the healthcare sector and about the loss probability π .

Administrative capacity differs widely between developing countries, reflecting differences in labor productivity. On the other hand, wage costs are an important component of administrative expenses. Since wage rates and labor productivities are highly correlated, their combined effect on μ and λ is undetermined. Therefore, it is not clear whether these loading factors are higher or lower in LDCs compared to industrial countries and whether they differ systematically between LDCs.

CBI schemes are known for their low administrative expenses because they do not employ much staff. Moreover, the staff they do have is voluntary in the main (Nugroho, 2001). This serves to keep the loading factors at a low value. In fact, members bear part of the costs of organization by spending time and effort to decide on the product to be offered and premium to be charged.

Public health insurance constitutes a monopoly, which means that marketing and advertising expenses are reduced. On the other hand, a monopoly reduces the pressure to minimize cost. On the whole, the relationship may be comparable to that in private competitive health insurance.

(2) Reinsurance

Generally, reinsurance is an expense that reduces the expected value of profit (if the premium exceeds the actuarial value of losses ceded) (Doherty and Tinic, 1981). It is therefore similar to administrative expense, causing the loading to increase, *ceteris paribus*. The benefit of reinsurance is that it improves the solvency of the insurer, permitting a lower value of the loading factor λ . Still, if additional capital is available at lower cost than reinsurance, it is preferable for an insurer to rely on the capital market rather than taking out reinsurance.

Interest rates, and thus capital costs, are higher in LDCs, since the risk premium in the credit lending market is high. Consequently insurers might have a strong interest to purchase reinsurance rather than raise costly new capital.

Reinsurance can be beneficial to CBI, where pool size usually is insufficient for the law of large numbers to come to full effect. According to the law of large numbers, insurers are able to estimate π and hence the expected value of benefits to be paid more precisely when the number of risks increases. *Ceteris paribus*, this facilitates the attainment of a given level of solvency. In addition, the typically undiversified individual (member) owners of such schemes will gain from the lower variance of the surplus (assets minus liabilities) generally afforded by reinsurance. This benefit in terms of variance reduction, however, has to be

weighed against the reinsurance premium. Therefore, low-cost reinsurance may become a precondition for the viability of CBIs, which most often do not have access to capital markets.

Reinsurance will hardly be an issue for a public health insurer. Its large risk pool allows to minimize per-capita reserves [see item (3) below], to which reinsurance contributes. In addition, these reserves are usually provided by the government as a lender of last resort; ultimately, the taxpayers act as the reinsurers of the public health insurer. Compared to a private insurer, these savings on reinsurance entail a cost advantage of the public monopolist.

(3) Pool size

A large number of insured of similar type allows to estimate the unknown parameters π and I with greater precision. Therefore, the insurer does not have to carry as much reserves per unit risk for attaining a given level of solvency (Dror, 2002, p. 135). The pertinent loading factor λ becomes smaller, resulting in a smaller total loading.

On the other hand, a large pool size shields the individual insurance buyer from social control through other members. This control likely refers to the benefits claimed (I) rather than preventive behavior and hence π . Increased pool size thus strengthens ex-post moral hazard and lessens ex-ante moral hazard. The second term of eq. (2) increases, indicating that the amount of loading increases.

The same arguments apply to a private insurer operating in a LDC.

In the case of CBI, the trade-off between the two influences can be studied. For instance, the Dana Sehat schemes in Indonesia are organized in several thousand independent groups, with approx. 50-100 families in each group. Families are homogenous with regard to household size and income, and due to the community environment, behavior is closely monitored. Although the total number of Dana Sehat participants is very large (7 million people in Indonesia), moral hazard can be controlled effectively, resulting in a small loading in spite of small pool size. Taiwan's "Farmer's health insurance" provides a counter example. There, a risk pool typically comprises a few thousand individuals (Bureau of National Health Insurance, Taiwan). This could lead to a lower value of λ ; however, greater pool size also calls for more complex management, and social control is undermined. Although information about the total loading is not available, it is likely to be higher than in Indonesia.

Public health insurance schemes have too large risk pool sizes for moral hazard effects to be mitigated by social control anymore. Therefore, expanding the pool even more causes to the loading contained in the contribution to unambiguously decrease.

(4) Benefit package

An extension of the benefit package increases the likelihood of some claim being submitted. Therefore, the probability of loss π increases even without any behavioral modification on the part of the insured (moral hazard effects are dealt with below). Likewise, payment may occur under additional titles, resulting in an increased value of payments I . Therefore, the amount of loading must increase according to eq. (2).

This argument holds also for LDCs in general, but also for CBI and public health insurance.

(5) Share of high-income members

Two elements promote higher expected consumption of healthcare services by high-income insureds. Insured with higher labor income have higher opportunity costs of time. This makes prevention (which often is time-intensive) more costly, leading to a higher value of π , i.e. a higher likelihood of illness. Second, medical care is a normal good (although income elasticity in developed countries has been found to be quite low, between 0 and 0.2 (Ringel et al., 2002)); this per se means that richer insured seek to consume more medical care or medical care of a higher quality, leading to a higher value of I . However, the use of health care usually involves taking time out from work or from household chores. Once more, high-income policyholders bear higher high opportunity costs of time, serving to reduce the quantity (but not necessarily the quality) of medical care. This effect in turn is mitigated if supplier density is high.

On balance, the value of the product $\pi (\cdot) * I$ in eq. (2) is likely to increase for a higher share of high-income insured. However, the share of high-income members may also affect the two loading factors. Provided there is some copayment, every treatment episode is associated with a risk of collecting receivables. A high-income member triggers less administrative expense on this score, resulting in a lower value of μ . An insurer accounting for the financial risk will also reduce its safety loading and hence λ . The net effect of an higher share of high-income members on the total amount of loading is therefore ambiguous.

The same argument holds for LDCs, except where benefits are paid in cash against presentation of the receipt. This eliminates the risk of collecting receivables. In that case, high-income members do not give rise to lower loading factors, making a positive impact on total loading more likely. With respect to CBI, potential differentiations between high and low income members within a scheme have little relevance, since it is the nature of CBI that homogenous groups, of similar income, join.

In contrast with private insurance, a mandatory public scheme can impose price discrimination with regard to income, thus making health insurance a vehicle for systematically redistributing wealth (see chs. 3.2 and 3.3 for more detail). Individuals with high incomes are therefore charged a 'loading' in the sense that their contributions tend to exceed the expected value of benefits received. In return, the 'loading' charged to the majority of low-income contributors can be reduced even to the point of becoming negative. However, this redistribution strategy may still fail if the rich not only pay more but also consume more medical services, a scenario that seems not uncommon in LDCs (Filmer et al., 2002).

(6) Copayments and caps

Copayments and caps have three effects on total loading. First, they serve to limit ex-post moral hazard. Copayments increase the net price of medical care to consumers, causing them to lower the quantity demanded, while caps increase the net price to its full market value when the threshold quantity is exceeded. Therefore, the value of payments I decreases on average and with it the amount of loading. Caps have the additional feature of excluding very high values of I , thus reducing also the (semi-)variance of I and hence the loading factor λ .

Second, copayments relieve the insurer of part of the payment in the advent of illness. As shown in eq. (4) below, an increase in the rate of coinsurance c serves to lower the total

amount of loading. Copayments and caps thus unambiguously serve to reduce the amount of loading.

The same arguments hold for LDCs and CBI schemes. They have even greater force for public health insurance, where the initial rate of copayment is zero, resulting in maximum ex-post moral hazard effects. Indeed, according to eq. (4) below, the amount of loading reacts most strongly to a variation in the rate of coinsurance c when $(1-c) = 1$, i.e. when $c = 0$ initially.

(7) Moral Hazard

Moral hazard increases the consumption of health care services by the insured and thus causes additional costs to the insurer compared to the situation without insurance. It is a common phenomenon in the insurance and healthcare industry. It is convenient to distinguish between ex-ante and ex-post moral hazard. Ex-ante moral hazard refers to the probability of illness π . This probability depends on related preventive effort on the part of the insured, denoted by V .

While preventive effort can hardly be observed in the context of health behavior, it generally decreases when the amount of coverage offered is extended. Ex-ante moral hazard thus results in a positive relationship between π and the amount of insurance coverage I .

Indeed, because of ex-ante moral hazard an increase in I not only is associated with a higher gross premium, but a higher amount of total loading as well. For convenience, eq. (2) is repeated here:

$$\text{Amount of loading} = L = \mu * \pi(V(I)) + \lambda * (1-c) * \pi(V(I)) * I \quad (2)$$

The derivative of this expression with respect to I (neglecting possible effects of I on the loading factors μ and λ) is given by:

$$L'(I) = \underbrace{\mu}_{(-)} * \underbrace{\pi'(V)}_{(-)} * \underbrace{V'(I)}_{(-)} + (1-c) * \underbrace{\lambda}_{(-)} * \underbrace{\pi'(V)}_{(-)} * \underbrace{V'(I)}_{(-)} * I + \underbrace{\lambda}_{(-)} * (1-c) * \underbrace{\pi(V(I))}_{(+)} > 0 \quad (3)$$

With π' and V' negative, the first term is positive. For the same reason, the second term is positive as well, and the third term is positive by definition. In analogy to the development in Zweifel and Breyer (1997, p. 183), the loading usually increases progressively in I , i.e. $L''(I) > 0$ if $\pi'' > 0$ (prevention becoming less effective at the margin) in addition to $V'(I) < 0$.

According to eq. (3), some health insurance benefits may be more affected by ex-ante moral hazard than others because preventive effort V responds more strongly to an increase in I . Conversely, this effect may be mitigated to some extent if health insurance is provided through the employer, who can at least monitor prevention at the workplace. This difference would be reflected in a more moderate increase of the loading (as well as the gross premium) when coverage becomes more complete or more comprehensive.

Summing up, ex-ante moral hazard likely causes an increase in the total loading, which may be even progressive in benefits I . There do not seem to be strong reasons to modify this argument for private insurers operating in LDCs or CBI schemes. With regard to public health insurance, the government's objective of maximizing the provision of public and merits goods (see section 3.2) frequently militates against imposing a copayment. However, this implies

that any increase in benefits must go along with a maximum increase in the loading because of ex-ante moral hazard. In eq. (3), the amount of loading reacts most strongly to an increase in benefits if $(1-c) = 1$, i.e. when $c = 0$.

Turning to ex-post moral hazard, this means the tendency of the insured to demand more medical care (or care of higher quality or provided by a more expensive provider) after the onset of an illness. It was illustrated in section 2.2, figure 2; there the role of coinsurance played a crucial role. It remains to be shown that a decrease in copayment also increases the amount of loading.

For this, a slightly different interpretation of the variable I is needed. Now I becomes the amount of benefits that is actually claimed (rather than promised in the contract), which depends on the rate of coinsurance. Therefore, I has to be replaced by $I(c)$ in eq. (2) above:

$$L'(c) = -\lambda * \pi * I + \lambda * (1-c) * \pi * I'(c) < 0 \quad (4)$$

(-) (-)

Therefore, the higher the rate of coinsurance, the lower the loading, and conversely, the lower the rate of coinsurance, the higher must be the loading. The ex-post moral hazard effect is given by $I'(c) < 0$: the more the actual utilization of covered services increases with a decrease in cost sharing, the more marked is the ex-post moral hazard effect.

As already argued in section 2.2, item 3, ex-post moral hazard is of less concern in LDCs as the density of supply is very low, causing nonmonetary costs of utilization to weigh heavily. In the context of loading this implies that in LDCs ex-post moral hazard effects are limited, resulting in a smaller absolute value of $L'(c)$.

Ex-post moral hazard problems in CBI schemes are of minor concern for the same reasons as outlined in section 2.2. CBI benefit from a smaller degree of asymmetry of information, combined with effective sanctioning mechanisms that serve to contain overuse.

The 'loading' contained in the contributions to public health insurance is affected strongly by ex-post moral hazard, again because the rate of coinsurance is usually zero. With $(1-c) = 1$ or $c = 0$, the absolute value of eq. (4) is maximum. Put the other way around, this means that moving away from a rate of coinsurance would have a very marked beneficial effect on the loading.

(8) Quality and proximity of healthcare services

Healthcare services of high quality have a direct effect on the total loading because the benefits actually claimed typically are more expensive [see the effect of a high value of I in eq. (2)]. High quality of services may also aggravate ex-post moral hazard effects. This can be illustrated using figure 2 of section 2.2 again. Maximum true willingness to pay for such services must be very high, causing the observed demand function to run steeply. In this case, ample insurance coverage (low c) results in a marked discrepancy between true and observed willingness to pay. Graphically, the distance between quantities A and B becomes larger. In terms of eq. (4) above, a decrease of the rate of coinsurance c would cause benefits claimed to increase very strongly. With $I'(c)$ large – equivalent to a steep demand function - the loading must increase more strongly with a decrease in c . Therefore, the loading depends positively on the quality of medical services in general.

Increasing proximity of services causes the cost of access and hence total cost of utilizing medical care to fall. Therefore, the amount of services claimed I increases, and with it the amount of loading, see eq. (4). In addition, as argued in section 2.2, item (3), this reduction of access cost may be greater in LDCs than in industrial countries. This implies that increased proximity of services may boost the loading even more in LDCs than in industrial countries.

Most members of CBI schemes are located far away from high-quality healthcare service providers. Any increase in the proximity of a health care provider therefore is likely to have a considerable effect on the cost of access, inducing a particularly marked increase in utilization. However, CBI benefit from a degree of mutual monitoring of their members that does not prevail in the context of a private insurer operating in a LDC. Therefore, the amount of loading may not respond more strongly to an increase in proximity than in industrial countries.

Increased quality and proximity also drive up the loading component in contributions to public health insurance; eq. (4) applies once more.

(9) Regulatory framework

The types of regulation of relevance in this context are again premium and product regulation. If designed to guarantee solvency, premium regulation typically amounts to an increased safety loading, which is reflected in λ . Conversely, if regulation is consumer-orientated, it may result in increased transparency for consumers, enhancing demand and resulting in a larger risk pool. This means that the reserves held per unit risk can be reduced, causing λ to be smaller. Turning to product regulation, this implies that certain procedures in loss settlement have to be followed, presumably at an increased cost to the insurer. This drives up the value of the other loading factor, μ . Therefore, the overall effect of regulation on the loading is ambiguous, although in the case of U.S. automobile regulation, Frech and Samprone (1980) found that regulation had a demand-decreasing net effect, pointing to a positive relationship between regulation and loading.

The insurance regulatory authorities of many LDCs are pressured to relax regulations in order to satisfy WTO requirements (Lee, 2000). China in particular seeks to increase the degree of competition on its domestic insurance market by attracting additional companies. With regard to the type of regulation pursued, LDC regulators see few possibilities of having insurers build up deposited reserves that could be used to mitigate social cost in the event of insolvency. Therefore, they tend to concentrate on measures that are designed to minimize the risk of insolvency. According to table I.1 of Appendix I, this type of regulation tends to be efficiency-reducing.

Many LDC regulatory authorities hope that competition among private insurers will keep loadings and hence premiums low. Companies then are under increased pressure to keep their loading factors down. This is true in particular of the loading for management and administration costs (μ). With regard to λ , the typical objective is not to reduce the safety loading component but possibly the profit component. As a result, the expectation is that the efficiency of insurance companies will improve and that consumers will have better choices at lower loadings and hence premiums (given the expected value of benefits paid).

In an oligopolistic market, however, with insurers pursuing a Bertrand strategy (where price is the decision variable), rate wars cannot be entirely excluded. This would result in inadequate reserves and hence failure to mitigate the social cost caused by an insolvency. This argument

pushes regulators to accepting rather high premiums, in the hope of maintaining a sufficiently high safety loading. In LDCs, oligopolistic insurance markets will be prevalent for some time to come, possibly justifying regulation of the stringent type that keeps the amount of loading and the premium high (Lee, 2000).

In CBI schemes, insurance packages and the premium rate are strictly regulated by the members themselves. This regulation does not aim at creating reserves through a loading surcharge on the risk premium; rather, the insured must come up with additional contributions (often in kind) in the event that the scheme runs a deficit. The downside of the reduced loading is an increase in the residual asset variance for members; however, risky insurance is associated with reduced willingness-to-pay.

Public health insurance is usually governed by an elaborate regulatory framework (in section 3.2 below, the view will be expounded that public insurance is at the high end of a scale depicting increasing regulatory intensity). This adds to administrative expense and hence the 'loading'; the total amount of loading may still be low due to savings on the cost of acquisition.

(10) Fraud and abuse

Fraud and abuse are closely related to the institutional framework (see Appendix II). In section 2.2 (item 8), emphasis was on the corruption possibly occurring between suppliers of medical inputs and physicians and hospitals. At this juncture, fraud and abuse by the insured are taken up and their impact on the loading discussed.

Fraud and abuse are an extreme form of moral hazard. In the case of ex-ante moral hazard, preventive effort V could be said to turn negative, implying that insured's behavior increases the probability of illness to 1. A negative value of V may well be induced by insurance; in terms of eq. (3), $V'(I)$ would have to be strongly negative. This means that the amount of loading must increase very rapidly with any increase in I .

Fraud can also occur ex post, e.g. in the guise of conjuring with providers to overstate medical bills. Again, this is an extreme form of ex-post moral hazard that is encouraged by a vanishing rate of coinsurance (or more generally, the absence of cost sharing). For as soon as the insured have to pay parts of the medical bill out of pocket, they have an incentive to resist fraudulent overbilling. In general terms, the relationship between the degree of cost sharing c and benefits claimed I is strong in the presence of fraud. For the insurer, the term $I'(c)$ in eq. (4) takes on a very large value (in absolute terms), indicating that the total amount of loading must increase strongly with a decrease in cost sharing when fraud is prevalent.

As discussed in section 2.2 (item 8), a particular version of fraud that is commonly seen in LDCs occurs at the purchasing stage, viz. hospitals and physicians allowing available cheaper products to be substituted by more expensive alternatives (Coris, 2003). The insurer has to pay for the more expensive product, causing I to increase and with it the amount of loading, according to eq. (3). In LDCs this may have severe consequences, since poorer people, who might be able to pay the premium under non-corrupted conditions, are now unable to afford health insurance.

As argued in section 2.2 (item 3), moral hazard in CBI schemes, and as such also any extreme form of it, is mitigated due to the characteristics that prevail in rural communities (enormous

sanctions, close to full information). Therefore the amount of loading due to fraud and abuse should not increase much in CBI schemes.

A public health insurance scheme operating in a LDC is under reduced pressure to control fraud and abuse; contrary to private insurers, it does not have to compete for customers through a favorable benefit-cost ratio (to which a low amount of loading contributes).

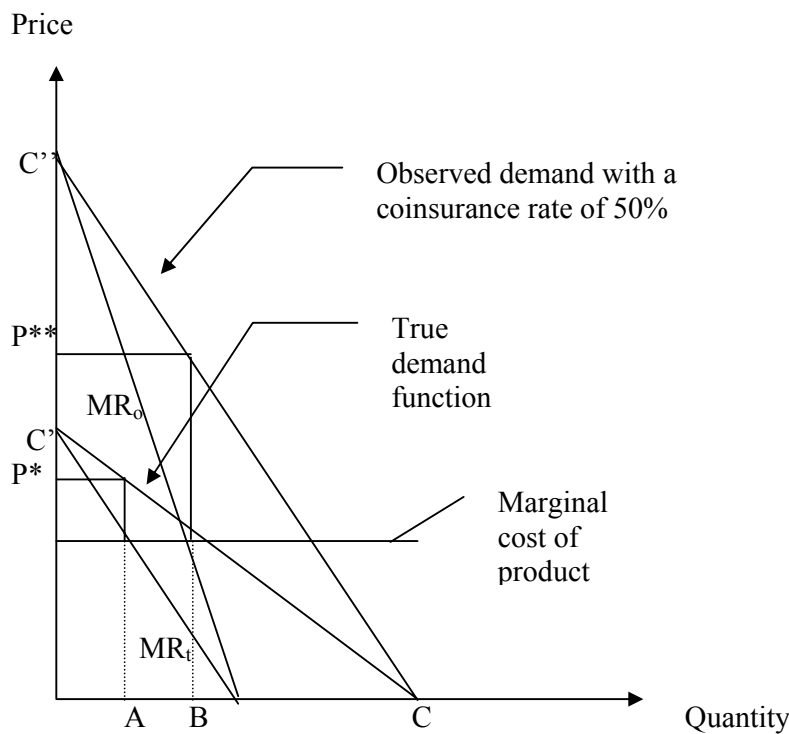
2.4 Vertical restraints/Vertical integration

Two forms of vertical restraints (in the extreme: full vertical integration) can be distinguished, insurer-driven and provider-driven. A third form of integration is not vertical but lateral. It occurs when a firm with main activities outside the sector takes up business in health insurance or the provision of health care. It will be dealt with only in passing.

2.4.1 Insurer-driven vertical integration

A private insurer can limit its activities to the refunding of medical expenditures incurred. This amounts to a total absence of vertical restraints, let alone vertical integration. Such a policy is costly to the insurer, however, if the providers of medical care have some

Figure 3: Effect of insurance coverage on monopolistic pricing



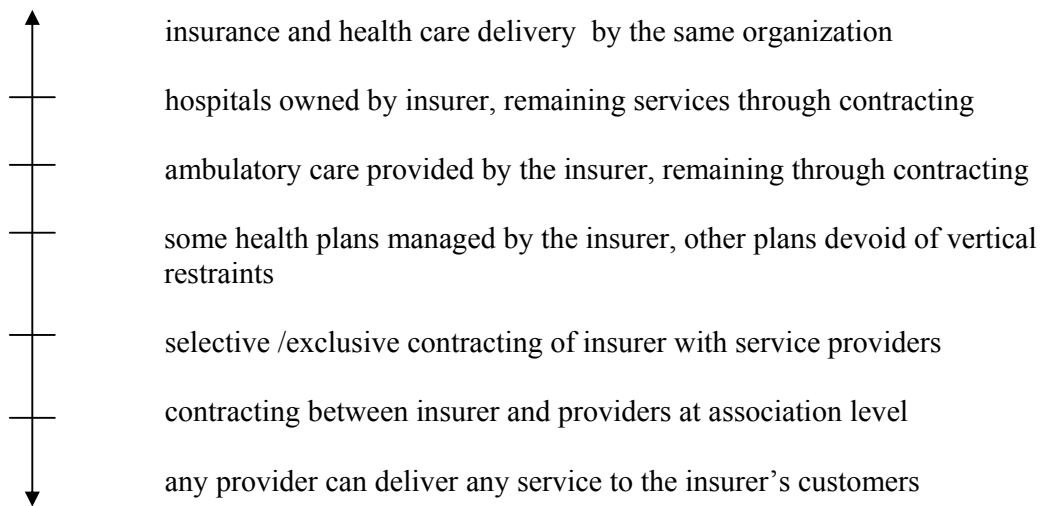
monopolistic power. In that event, insurance coverage drives up providers' markup over marginal cost. This can be illustrated by figure 3, which builds on figure 2 above.

The added feature of figure 3 are two marginal revenue functions (MR). Without insurance coverage, the provider faces the MR function derived from the true demand function (MR_t). The quantity satisfying the optimality condition, "marginal revenue equals marginal cost" (of healthcare services) is A. Accordingly, the monopoly price is P^* , which already contains a markup over marginal cost. With insurance, the MR function becomes MR_o , associated with the observed demand function. The new optimal quantity of services provided is B, consistent with a higher monopoly price at P^{**} , reflecting an increased markup over marginal cost. In this situation, the moral hazard effect of insurance not only consists of an increased quantity consumed ($B > A$), but also higher prices ($P^{**} > P^*$). Since this boosts payments I, the amount of loading and hence the price of insurance increases as well according to eq. (3) of section 2.3 (item 7). One rationale of insurer-driven vertical integration is to avoid this extra moral hazard effect, given by $(P^{**} - P^*)$.

In more general terms, the provision of health insurance and of healthcare services may be viewed as two parts of a system. The extra moral hazard effect then amounts to an externality within the system that the insurer may seek to mitigate by imposing vertical constraints on service providers. To be successful, it must itself have a degree of monopoly power (see item 1 below). Therefore, the objective of the insurer becomes to avoid a double monopoly markup, or double marginalization (Waldman and Jensen, 2001, p. 468f). The solution can be a two-part remuneration scheme. First, the provider agrees to charge a price equal to marginal cost, and second the insurer pays a fixed amount sufficient to motivate the provider to sign the contract. In the extreme case, the insurer can opt for fully integrating service providers to avoid this and other externalities. The different possibilities form a continuum between independent provision and full vertical integration (see figure 4).

Figure 4: Forms of vertical restraints and integration imposed by the insurer

More vertical
integration/restraints



Less vertical
integration/restraints

For example, when full integration would be inefficient, the insurer may limit itself to ownership of hospitals while contracting with ambulatory care providers. It also can mix insurer-managed plans with plans that are governed by contractual relationships devoid of vertical restraints. The imposition of restraints can finally be delegated to e.g. a medical association, with the likely result that individual provider behavior is not very effectively restrained.

Some of the factors encouraging and hampering vertical integration by the insurer are listed in table 3. As a general observation, many LDCs suffer from weak law enforcement. It is known from the credit literature that e.g. in Thailand legal actions, such as foreclosure after insolvency, are hardly executed due to cultural and religious reasons (Harmer, 2003). A weak legal infrastructure, corruption and bribery burden insurers with high costs when trying to sanction breaches of contract in the context of vertical relationships. On the other hand, vertical restraints provide the integrating firm with incentives and sanctions permitting it to often do without the clauses of official contract law. This implies that not only the costs but also the benefits of vertical constraints and integration can be greater in LDCs than in industrial countries. Therefore, the effects listed in table 3 are not generally reinforced or attenuated in the cases “Private Insurance (LDC)”, “Community-Based Insurance (CBI)”, and “Public Insurance (LDC)” but must be individually examined.

(1) Market power of the insurer

This amounts to a necessary condition for the imposition of vertical restraints. If one of many insurers were to impose vertical restraints, a given service provider would always have the opportunity to strike a contract with a competitor that does not seek to impose such constraints. Moreover, as long as these constraints do not amount to exclusive dealings, failure to sign up with a particular insurer has negligible consequences for a service provider. Therefore unless the insurer considered wields a degree of market power, service providers do not need to accept any vertical restraints.

With regard to private health insurers operating in LDCs, the definition of the relevant market is of some importance. Under present conditions, only the urban areas of most LDCs form the relevant market. As the number of insurers with activity in LDCs is smaller than in industrial countries to begin with, market concentration is more marked. In addition, as shown in section 2.5 (table 6), barriers to entry usually are higher and antitrust policy more lenient, making it easier to build up market power. This factor thus facilitates insurer-driven vertical integration in LDCs.

Market power is still higher in the CBI segment of the market because CBI schemes as a rule wield a monopoly in the rural area they serve. On this score, their degree of market power would certainly enable them *ceteris paribus* to impose vertical restraints.

A public health insurer, being a monopolist, can impose strong vertical restrictions on providers in terms of prices and products delivered if not prevented by legislation. There is a risk of abusing market power; in particular, purchasing prices may be set so low as to drive foreign suppliers drugs and privately funded hospitals out of the market. This is higher under a public insurance scheme than under a competitive private insurance system. Grant and Grant (2002), citing an unpublished paper, refer to the example of a sub-Saharan African country where payments by national health insurance are so low that service suppliers have to heavily rely on unofficial charges for finance. The authors also use data from Transparency

International which shows that up to 80% of recent transactions with health workers in certain countries involves an unofficial fee or bribe.

Table 3: Factors affecting insurer-driven vertical integration

Factor	Factor serves to facilitate (+)/hamper (-) vertical restraints			
	Private Insurance (competitive market)	Private Insurance (LDC)	Community-Based Insurance (CBI)	Public Insurance (LDC)
(1) Market power of the insurer	+	+ ↑	+ ↑	+
(2) System efficiency gains to be realized	+	+	+	+ ↓
(3) Management know-how of insurer	+	+	+	+
(4) Contestability of healthcare markets	+	+ ↓	+ ↓	+ ↓
(5) Potential to increase entry barriers to competitors	+	+	+	n.a.
(6) Contestability of health insurance market	-	- ↓	- ↓	n.a.
(7) Lack of capital of insurer	-	- ↑	- ↑	- ↑
(8) Opportunistic behavior and fraud on the part of insurers	-	- ↑	- ↓	- ↓
(9) Cartelization of service providers	-	-	- ↓	- ↓
(10) Legislation prohibiting vertical restraints	-	- ↓	- ↓	-

Note: ↑ Reinforcement of relationship ↓ Attenuation of relationship

(2) System efficiency gains to be realized

The double marginalization problem noted above is not the only within-system externality that can be mitigated by vertical restraints. One that is also discussed in the industrial organization literature (Carlton and Perloff, 1999, ch. 12) is the risk of the distributor delivering substandard quality, with adverse reputation effect on the producer. In the present context, this translates into physicians and hospitals skimping on quality in the treatment of patients enrolled with a particular insurer. The solution to this problem can be the creation of a quality assurance scheme by the insurer.

Another problem that is more peculiar to the healthcare sector is fraud. As emphasized by Ma and McGuire (1997), the insurer has to rely on a report provided by the physician to be able to establish the appropriateness of treatment. The typical vertical restraint used here is a clause to the effect that service providers are to offer additional information in case of ambiguity.

A third within-system externality, of particular relevance to health care, is the “medical technology race”. Given that insurance coverage is complete and density of supply high, service providers cannot compete much by price and location. An important remaining parameter of competition is medical technology. However, for the insurer it suffices to have few specialized providers offering the most advanced technology for diagnosis and treatment of a given health condition. This implies that a technology race among the providers who are contractual partners amounts to a source of inefficiency. To avoid it, the insurer may assign providers to certain health conditions, at the same time guaranteeing them a minimum number of cases per period. Such a commitment can be supported by a premium reduction offered to enrollees in return for a restricted choice of provider, as is often the case with managed care contracts.

These within-system inefficiencies are of relevance to private health insurers operating in LDCs as well. First, double marginalization may be a problem, since physicians tend to be organized in urban areas, where private insurers typically are active. The risk of substandard quality being delivered is considerable; it may be mitigated somewhat in the event that in some LDCs (like in the case of the Thonburi-Hospital in Thailand) the billing is paid by the insured themselves, with later reimbursement provided by the insurer (Thonburi-Hospital, 2003). On the other hand, as argued in section 2.2, item 8, fraud is more common in LDCs, constituting an important reason for within-system inefficiency. Finally, there are signs of a technological race in the major cities of emerging economies. In the poorest LDCs, at most one (public) hospital located in the capital offers advanced medical technology. Some insured prefer not to be treated even there but to travel to an industrial country. Imposing a vertical restraint on these institutions located abroad is beyond the possibilities of an insurer located in a LDC, however.

CBI schemes also face a double marginalization problem. In the rural areas where they operate, an individual physician or hospital may be a local monopolist. The fact that CBIs contract with nonprofit institutions is of limited relevance as soon as these providers must recover their cost. Quite likely the patients treated free of charge or at a reduced fee are those without any insurance coverage at all. The deficit incurred must be neutralized by higher fees from those who do have insurance protection, viz. members of CBI schemes. Provision of substandard quality therefore can be an issue for CBIs as well, since these providers are also monopsonists in their local labor markets. This induces them to pay a comparatively low wage, making them unlikely to attract the most skilled healthcare workers. With regard to fraud, CBIs may benefit from the nonprofit status of especially hospitals (like missionary

hospitals – such as in India, see Ramani, 1996); however, public hospitals have a tradition of cheating to ease bureaucratic processes. The technological race between competing providers can be excluded from consideration since CBIs are localized primarily in rural areas of LDCs where local monopolies prevail.

Another source of efficiency gain, peculiar to CBI schemes, is mode of payment. In many rural areas of LDCs, service providers are still paid in kind. However, service providers generally prefer to receive cash. This has led some CBIs to use so-called money lenders as intermediaries who transform the in-kind contributions of CBI members into cash, to be paid to providers. In return, hospitals in particular have been willing to accept prospective payment for treating CBI members, which constitutes a vertical restraint.

A public health insurer operating in a LDC, being protected by a monopoly, is under reduced pressure to reap any system efficiency gains through vertical restraints. Therefore, this particular motivation is seen as of reduced importance compared to competing private insurers.

(3) Management know-how of insurer

Of course, ample management know-how helps to successfully negotiate and monitor vertical restraints. This is especially true of full vertical integration, which presupposes knowledge on the part of the insurer on how to efficiently run provider facilities.

Management know-how of insurers is much lower in LDCs. Education is a good proxy for management know-how, and the augmented Barro-Lee dataset (World Bank, 2000) provides evidence that average years of schooling are substantially lower in developing countries compared to industrial countries. At one extreme, Afghanistan, Bangladesh and Mozambique show values of 1.7, 1.1 and 2.6 years respectively. This stands in great contrast with countries such as Australia and Norway, where average values are 10.9 years and 11.8 years, respectively. This indirect evidence suggests that health insurers in LDCs generally lack the know-how necessary to successfully impose vertical restraints, let alone carry out full vertical integration.

Management know-how is even more scarce in CBI schemes, making vertical restraints less likely than conventional, often not fully specified contracts with service providers. For public health insurance, it may be roughly comparable to that of private health insurers operating in LDCs.

(4) Contestability of healthcare markets

Contestable markets are characterized by an actual or potential influx of suppliers, with the potential influx becoming effective as soon as incentives to enter become strong enough. As the experience of Managed Care Organizations in the United States suggests, newcomers to the market for medical services are more likely to participate, i.e. to accept the corresponding vertical restraints.

Barriers to entry in LDCs are generally higher than in industrial countries (WTO, 2003), and this difference is expected to translate to markets for healthcare services. This means that an insurer doing business in a LDC has difficulty finding providers who may be willing to agree to vertical restraints.

Having their centers of activity in rural areas, CBI schemes cannot count much on the contestability of the healthcare markets they deal with. If at all, service providers move from the countryside to the cities. Therefore, chances for CBIs to find partners who accept vertical constraints are rather slim.

To a public health insurer, increased contestability of healthcare markets certainly facilitates vertical restraints. However, public administrators still have to seek out those alternate providers that are available; their incentive to undertake this effort may be undermined by the monopoly status of the scheme.

(5) Potential to increase entry barriers to competitors

One motivation for vertical restraints and integration can also be to foreclose the insurance market to potential entrants². For, a new health insurer has to establish contractual relationships with insurers to build a delivery system. By tying up scarce supply of healthcare services, incumbent insurers thus can indirectly preclude the entry of new competitors. Given the complexity of healthcare services and its high human capital content, controlling a part of healthcare supply can become a more effective barrier than closing the insurance market itself. On the other hand, vertical restraints can be disrupted by an outsider willing to offer a compensation high enough to make the healthcare supplier leave the vertical arrangement. However, such payment tends to be above the level a newcomer is willing to pay (Carlton and Perloff, 1999, p. 357, “natural asymmetry”).

The same argument applies to LDCs, and in similar fashion to the urban areas where private health insurers typically operate.

CBI schemes benefit from a different type of barriers to entry, which obviates the use of vertical integration to protect their market from outside competition. This follows from a likely analogy to credit markets. There, most community schemes are set up along kinship lines, at least in rural areas. In the case of Nigeria, more than 95 percent of borrowing and lending occurs within a given community scheme that usually coincides with a tribe. This suggests that a challenge to an incumbent CBI would have to surmount a high barrier in the guise of kin relationships.

To a public health insurance scheme, the potential of vertical integration to reinforce entry barriers confronting competitors has no relevance because entry by a competitor is prohibited by law.

(6) Contestability of health insurance markets

When insurance markets are and remain contestable, incumbent insurers will be strapped for resources in defending their position, being mainly absorbed with assuring their survival in the insurance market itself. In addition, when insurers have to compete because entry or exit barriers are low, profitability is driven down to the competitive return; funds and management time will be too scarce to engage in the imposition of vertical restraints or even full vertical integration.

² see for a discussion of the issues Preker, A., Harding, A. and Travis, P., “Make or buy decisions in the production of health care goods and services: new insights from institutional economics and organizational theory”. *Bulletin of the World Health Organization* 2000.

Barriers to entry and exit can be quite substantial in LDCs. Some incumbent insurance companies – like Cigna in India – provide both health insurance and healthcare services. In this way, they can reap the within-efficiency gains discussed as item 2 above. In addition, operating in a market with a large number of reasonably homogenous risks, they also benefit from economies of scale. These factors combine to enable them to offer private health insurance products at a lower cost than a smaller potential rival. Furthermore, these insurance companies are able to increase spending in advertising campaigns, which serve to further strengthen barriers to entry.

As to barriers to exit, long-term labor contracts are often the norm in the formal sectors of LDCs. Therefore, when exiting from the market, an insurer may have to continue to pay for employees that are redundant. This provides an incentive to defend the position of an incumbent against a new rival. In sum, insurance markets in LDCs do not appear to be very contestable, which fosters vertical restraints and vertical integration, *ceteris paribus*.

With regard to CBIs, barriers to entry emanate mainly from the characteristics of informal markets. Many health insurers who might consider entry do not accept in-kind payment of the premium. This payment may not only take the form of cattle but also the provision of bonded labor and the cession of land rights. Thus, barriers to entry do not seem to hamper the imposition of vertical restraints by CBIs, *ceteris paribus*.

In the case of a public health insurer, the contestability of the market for health insurance has again no relevance since the law makes that market not contestable to begin with.

(7) Lack of capital of insurer

This is another impediment especially to integration. Often, full vertical integration (but less so vertical restraints) requires a capital investment on the part of the firm acquiring control. If internal finance is available, management enjoys some leeway in deciding about such an investment, monitoring by the owners of the firm being incomplete. Lacking internal finance, the integrating firm has to convince banks and investors that vertical integration will improve profitability and that the debt can be repaid.

In many LDCs, domestic capital markets and the banking industry are not fully developed, and access to international capital markets is exceedingly costly. Thus, the alternative of external finance often does not in fact exist. In this situation, lack of capital on the part of the insurer can make full integration of e.g. a hospital impossible.

CBIs are organized as mutuals and thus do not sell tradable shares of ownership. This precludes external equity finance, except through increasing membership. However, this alternative frequently runs into problems because the scheme may lose its homogeneity and hence an important cost advantage, as argued in section 2.3, item 3. Finance through e.g. banks is also difficult because CBI cannot offer marketable collateral. However, in some cases lateral integration may help. Citing the experience of communities in Bangladesh, Desmet et al. (1999) argue that community-based credit schemes which many individuals are already involved in may provide the entry point to finance health insurance. But on the whole, lack of capital constitutes an even greater impediment to integration for CBI schemes than for private insurers operating in LDCs.

Turning to public health insurance, lack of capital hampers vertical integration as well because the scheme is not permitted to accumulate funds or issue debt for such purpose. Initiatives of this type would be interpreted as a sign of for-profit orientation.

(8) Opportunistic behavior and fraud on the part of insurers

Insurers with a reputation of opportunistic and fraudulent behavior have difficulty striking contracts calling for vertical restraints. By engaging in opportunistic behavior, insurers inflict damages on providers, albeit at the expense of their own reputation and credibility. This reduces their chances of successfully arranging vertical restraints with providers. Insurers must therefore first establish their credit and payment reputation among providers in order to win them over for vertical restraints.

This is particularly a problem in LDCs, where opportunistic behavior and fraud is more common, see section 2.2, item 8 and Appendix II. Weak legal infrastructures but also complicated and time-consuming bureaucratic procedures lubricate opportunistic behavior on the part of insurers in general. This means that providers will be especially reluctant to agree to vertical restraints because they cannot rely on receiving their share of the attainable efficiency gain.

However, fraud seems to be a minor issue in CBI schemes because service providers wield a local monopoly in many cases. If found cheating, a CBI therefore stands to lose the one available provider in the region. Since this constitutes an effective sanctioning mechanism disciplining CBI schemes, it should be easier to agree on vertical restraints.

Opportunistic behavior and fraud can also occur with a public insurer, undermining the willingness of service providers to enter vertical agreements. However, this effect is attenuated by the consideration on the part of providers that they have no choice but to sign up if they want to profit from the demand-enhancing effect of insurance coverage (see section 2.2).

(9) Cartelization of service providers

On the provider side, cartelization makes the imposition of vertical constraints more difficult. First, the cartel is a means for providers to jointly increase their incomes. An insurer seeking to negotiate a vertical restraint must beat this benchmark. Second, a cartel must impose discipline on its members to be successful, notably with respect to restricting output. Restrictions on output however conflict with the integrating firm's desire to avoid double marginalization, which may result in the imposition of a minimum volume of sales. In the present context, a medical association would like to see its members keeping to a low volume of treatments to support higher fees. However, an insurer may want to contract for a minimum volume of services at a fixed fee to avoid upward pressure on fees induced by insurance coverage (see figure 3 again). These intentions are in conflict.

Health insurers considering vertical restraints in LDCs are confronted with very much the same problems because physicians in particular are highly organized in urban areas.

To CBIs, cartelization of healthcare providers has little relevance. In rural areas of LDCs, providers are sufficiently protected from competition through mere distance. They can therefore do without the protection afforded by a cartel.

For a public health insurance scheme, cartelization of providers constitutes an obstacle to vertical restraints and integration in much the same way as for a private insurer. However, since the cartel has no one else to contract with, it may agree to a uniform set of vertical agreements to secure the viability of the system (and its demand-enhancing effect) as a whole.

(10) Legislation prohibiting vertical restraints

Restraints can be entirely impossible when there is legislation prohibiting vertical restraints and integration in the healthcare sector altogether. For example, medical practices and/or hospitals must not be owned by individuals not having a medical degree in several industrial countries. At the very least, medical management must lie in the hands of physicians.

In many LDCs, such rules are not enforced fully. First, the legal infrastructure is often weak, not least due to corruption (see Appendix II). Second, church hospitals are generally exempted from such rules because they contribute importantly to the provision of health care, and sponsors would have to cease operations if required to ensure management by a physician. However, it is not clear that such an exemption clause would be extended to a private insurer acquiring a church hospital.

For a CBI, by way of contrast, there seem to be few legal impediments to vertical integration. In fact, CBI schemes were able to closely cooperate with missionary hospitals in several countries such as Uganda, Kenya, and Indonesia.

A public health insurer must presumably respect legislation concerning vertical integration in the same way as a private insurer does since the objective of this legislation is to secure the independence of the comparatively small businesses of healthcare providers.

2.4.2 *Provider-driven vertical integration*

The second type of vertical integration is provider-driven. The typical case would be a hospital chain that seeks to avoid double marginalization in its dealings with insurers that wield a degree of market power. The chain may also view an insurer as a sales channel, where promotional effort is decisive for the market success of its products. If insurers provide an insufficient amount of advice to future patients, client matching suffers, with unfavorable effects on hospitals' reputation. A competing insurer could free-ride on these efforts by letting the other make promotional effort while selling its own policy at a lower premium. Such free riding would of course undermine insurer's incentive to provide advice. The solution to the problem can be the assignment of exclusive territories to insurers or even exclusive dealings (Carlton and Perloff, 2000, p. 403-405).

In general, the factors encouraging provider-driven vertical restraints and integration (see table 4) are the same ones hampering their insurer-driven counterparts (listed in table 3). With regard to public health insurance, however, provider-driven vertical integration is regarded as not applicable throughout (resulting in the 'na' entries in the last column of table 4). The reason is that a hospital or a group of physicians will find it impossible to impose rules on a public agency e.g. with regard to the amount of contribution to be paid by the insured. For full integration, they would even have to acquire property in the agency, which is not imaginable according to known legal codes.

Table 4: Factors affecting provider-driven vertical integration

Factor	Factor serves to facilitate (+)/hamper (-) vertical restraints			
	Private Insurance (competitive market)	Private Insurance (LDC)	Private Insurance (LDC)	Public Insurance (LDC)
(1) Market power of service provider	+	+	+	na
(2) System efficiency gains to be realized	+	+	+	na
(3) Management know-how of provider	+	+	+	na
(4) Contestability of insurance market	+	+	+	na
(5) Potential to increase entry barriers to competitors	+	+	+	na
(6) Contestability of healthcare markets	-	-	-	na
(7) Lack of capital of service providers	-	-	-	na
(8) Market power of insurer	-	-	-	na
(9) Cartelization of insurers	-	-	-	na
(10) Legislation prohibiting vertical restraints	-	-	-	na

Note: ↑ Reinforcement of relationship ↓ Attenuation of relationship na: not applicable

(1) Market power of service provider

As in the case of insurer-driven vertical constraints and integration, market power is a necessary condition for success. This condition usually is not satisfied by a single physician but may be met by a physician network, or a hospital with a large catchment area.

In LDCs, hospitals generally are much more sparse than in industrial countries. This has enabled them in some cases to integrate insurance business into their operations (see Table 5). Another reason may be the leniency of antitrust authorities, resulting in a high concentration specifically of hospital markets. In South Africa, several hospital groups were able to merge, leading to only few units controlling most of private health provision³ (Health System Trust,

³ See for example the merger between Afrox Healthcare Limited and Amalgamated Hospital Limited (South African Competition Tribunal, 2001).

1998; see also section 2.5, item 6). This prepared the ground for some of the groups to integrate health insurance into their business. In a similar vein, the Apollo hospital group of India, which has a substantial share of the market, also writes health insurance.

In the rural areas where CBIs are typically active, notably hospitals have the market power to impose vertical restraints on insurers or to integrate insurance altogether. An example is provided by the Kisiizi hospitals of Uganda (see Table 5).

(2) System efficiency gains to be realized

The possible efficiency gains are the same as those discussed in section 2.4.1, item 2. It is conceivable that an insurer has enough market power to increase premiums independently of the cost incurred from paying service providers. This again results in a double marginalization, hurting the healthcare provider this time.

Skimping on quality by the insurer is also possible in the guise of delayed reimbursement of patients, but also of having unjustified recourse to small print in its insurance policy. However, it is not quite clear whether the loss of reputation caused falls on the service provider rather than the insurer. In the latter case, there is no externality affecting the healthcare provider.

In the same vein, fraud by the insurer (in particular, failure to pay in the event of insolvency) might constitute a source of within-system inefficiency. The ensuing loss of reputation is more likely to fall on the insurer than the service provider, however.

Negative external effects because of insurers engaging in a technological race do not seem to be an issue either.

Up to this point, incentives for healthcare providers to integrate health insurance into their operations seem to be rather weak. However, provider-based insurance schemes may have some cost advantages compared to a non-integrated competitor since they already have some relevant risk information about the insured. This is an efficiency gain accruing to healthcare providers.

In many LDCs, the problem of double marginalization is particularly acute because insurers are allowed to engage in mergers and acquisitions to build substantial market power. Also, private insurers may be more likely than in industrial countries to offer substandard quality of services, e.g. by delaying payment for healthcare costs incurred. This has the potential of burdening the healthcare provider with a negative reputation effect. Fraud and opportunistic behavior is another issue, as outlined in section 2.4.1, item 8, leading to within-system inefficiency for which the solution typically is full vertical integration. Finally, there are again no signs of a technological race between insurers which would constitute a motive for imposing vertical restraints.

Healthcare providers and in particular hospitals dealing with CBI schemes must take into account double marginalization since a given scheme usually is the monopoly supplier of health insurance in its region. This consideration speaks in favor of vertical restraints or even full integration. On the other hand, the possibility of a CBI to deliver substandard quality of service is rather remote. After all, the insured own the scheme themselves, and it is they who would suffer from a lower quality of service than contracted for (Musau, 1999). Also, hospitals are confronted with fraudulent behavior on the part of CBIs, as evidenced by the

case study of Chogoria Hospital in Kenya. Here, CBIs running group policies let non-members (who initially were not identifiable as such at the point of service) present themselves for treatment, creating bad debts for the hospital (Musau, 1999). A technological race is not an issue, most CBIs lacking the resources for building up elaborate administrative capacity.

On the whole, there does not seem to be a stronger incentive for providers than in industrial countries to reap gains from avoiding within-system inefficiencies through vertical integration.

(3) Management know-how of provider

Management know-how is another factor, facilitating the implementation of vertical restraints and especially vertical integration.

However, as already outlined in section 2.4.1, item 3, average years of schooling in developing countries can be very low. This suggests that domestic health providers in LDCs have difficulty mastering the skills to effectively apply management know-how that is needed to impose vertical restraints and/or vertical integration on insurers.

The lack of management know-how is still more marked in CBI schemes, leading to even less vertical restraints/integration between health providers and insurers.

(4) Contestability of insurance market

If the market for health insurance is contestable, a healthcare provider considering vertical integration has a chance to strike an agreement with newcomers. This serves to increase the likelihood of successfully imposing vertical constraints.

As already outlined in section 2.4.1., item 4, barriers to entry in LDCs are higher in general than in industrial countries. This difference is also expected to translate to the market for health insurance. This means that a health provider doing business in a LDC has difficulty finding private insurers who may be willing to agree to vertical restraints.

Being organized along kinship lines, CBI schemes do not face much contestability of their markets. A newcomer would have to incur extremely high investments to match the advantages of social control enjoyed by CBIs. In conclusion, healthcare providers in LDCs face considerable obstacles when seeking to impose vertical constraints on health insurers, regardless of whether they are of the private, profit-oriented or the CBI type.

(5) Potential to increase entry barriers to competitors

Vertical restraints and integration can also serve a strategic purpose by raising the entry barrier e.g. to a new hospital. The same applies to physician networks that set up an insurance scheme to the disadvantage of outside physicians.

The same tactic is applied in LDCs. A case in point is provided by South African hospitals that seek to establish in areas controlled by incumbent groups. Their difficulties seem to at least in part be due to the fact that the incumbents also offer health insurance.

Hospitals dealing with CBIs, being local monopolies, could in principle attempt to protect their markets through integrating the CBI scheme operating in their catchment area. However,

the little evidence available suggests that the main motive for provider-driven vertical integration is the prospect of eliminating within-system inefficiencies (see item 2 above).

(6) Contestability of healthcare markets

Providers find it difficult to integrate insurers if their market is contestable. In analogy to the arguments proffered in section 2.4.1, item (6), resources must be spent on defending their position in the market, leaving little room for investing in vertical restraints and integration.

Healthcare markets are even less contestable in LDCs than in industrial countries because bureaucratic hurdles are more important. *Ceteris paribus*, this gives incumbent hospitals the leeway for imposing vertical restraints or pursuing vertical integration.

Most healthcare providers doing business with CBIs are located in poor rural areas. This means that even if there should be any monopoly rents, their amount must be very limited. Therefore, the incentive for a new competitor to break into such a market is weak, resulting in a small degree of contestability.

(7) Lack of capital of service providers

Especially physician networks may lack capital because their joint liability status impedes their access to capital markets. In a deregulated, competitive market, for-profit hospitals and especially hospital groups may offer an investment with favorable hedging properties. With a measure of independence from the capital market and hence comparatively low beta, they can raise capital at a lower cost than other industries.

Many LDCs have limited access to international capital markets, which consequently affects the availability of capital to domestic healthcare providers. In analogy to the arguments expanded in section 2.4.1, item (7), this lack of capital hampers vertical integration in particular.

Lack of formal capital is an even greater problem in the case of healthcare providers dealing with CBIs. Located in rural areas, neither physicians nor hospitals have easy access to domestic capital markets. In addition, with intermediation by money lenders incomplete, healthcare providers have difficulty raising internal finance.

(8) Market power of insurer

Insurers with market power require ample compensation to let themselves be constrained or integrated.

The same argument holds to an even higher degree for LDCs. As argued in section 2.4.1, item (1), insurers in LDCs tend to have more market power than in industrial countries. This factor therefore hampers provider-driven vertical integration.

In CBIs, market power of insurers is high since they usually are the only supplier of health insurance coverage. *Ceteris paribus*, a healthcare provider considering vertical integration would meet with some difficulties.

(9) Cartelization of insurers

The costs of negotiation are particularly high in the case of cartelization because all members of the cartel must usually be included.

In LDCs, this influence is reinforced for two reasons. First, fraud and opportunistic behavior add to the costs of negotiating an agreement satisfying all members of an insurer cartel. Second, as argued in section 2.4.1, item (1), the degree of cartelization likely is higher because agreements can be struck at a lower cost among fewer participants. Moreover, the likelihood of detection and punishment is low in view of weak antitrust authorities. These influences serve to encourage insurer cartels and hence to hamper provider-driven vertical integration.

With regard to CBI schemes, cartelization is of little relevance for two reasons. First, the fact that they often operate along kinship lines makes it more difficult to reach horizontal agreements. Second, as stated in section 2.4.1, item (1), CBIs usually constitute a monopoly, causing them to have little interest in the protection from competition afforded by a cartel. In sum, this results in an attenuation of cartelization as a factor influencing vertical restraints.

(10) Legislation prohibiting vertical restraints

There may be legislation prohibiting medical providers to own an insurer. However, no instance is known to the authors, relating to either industrial countries, LDCs in general, or CBI schemes in particular.

2.4.3 Actual examples of vertical integration

As tables 3 and 4 and their discussion show, there are factors facilitating and hampering both insurer- and provider-driven vertical integration. This leads to the expectation that depending on the mix of these influences, imposition of vertical restraints and attainment of full vertical integration does occur.

Table 6 below contains evidence on some of the existing variants of insurer- and provider-driven vertical integration as well as lateral integration. It relates to the competitive case, LDCs, and CBI schemes, illustrating that the factors discussed above may result in all three types of integration in all three settings.

Table 5: Forms of integration

	Variants	Competitive Case	LDC	Community-based
Insurer-driven	-Insurer running clinics and ambulatory care centers -Insurer-owned ambulatory care centers	-BUPA (British United Provident Association) offers private health insurance and cooperates closely with domestic healthcare providers	-Cigna (US insurance company) provides health insurance and health care services in India. -Holding Banmédica S.A., second biggest private health insurer in Chile, expanded by building an alliance with Las Américas of the Penta group, which primarily offers health care services and controls Chile's largest private hospital, Clinica Alemana. -Fedsure Holdings (South Africa) owns and controls subsidiaries involved in life insurance. Over the past few years Fedsure Holdings has purchased substantial shares in Network Healthcare Holdings, the largest private hospital group in South Africa.	Atiman Health Insurance Scheme in Tanzania cooperates closely with local healthcare providers.
Provider-driven	-Hospital setting up insurance schemes -Ambulatory care centers/ association of doctors setting up insurance schemes	-Community hospitals in rural Pennsylvania/USA forming a risk retention group - a group of similar entities that pools its resources and insures its own members.	-Apollo hospitals group in India follows the strategy to extend health insurance through alliances with private insurance providers and enhance coverage to a wider section of society.	In Uganda the Kisiizi hospital together with the Engozi Society provides a community based health insurance scheme. The Chogoria Hospital in Kenya offers an insurance scheme.
Lateral	-Companies/ cooperatives active in the credit or insurance sector extending their product line	-Singapore, product line extended towards bancassurance activity	-Bangladesh (Desmet)	-Chogoria Hospital Insurance Scheme in Kenya focuses increasingly on the treatment of HIV

2.5 Market structure

Market structure has several dimensions, among the more important being the number of buyers and sellers and the amount of product differentiation (Carlton and Perloff, 1999, ch. 1). The number of buyers has not been an issue in health insurance markets, even in countries where employers are involved in its provision. With regard to product differentiation, it can be said that its degree increases with the number of sellers unless economics of scope are very marked (see below). Often, the amount of vertical integration is also seen as a dimension of market structure. However, in view of its great importance for the organization of the healthcare sector as a whole, vertical integration is discussed separately (see section 2.4). Thus, the number of sellers (and with it, the degree of their concentration) will be retained as the principal dimension of market structure.

One particular aspect of market structure that will be left out from this exposition is the legal form of the insurance company. Originally, most health insurers were mutuals, presumably because a reasonable degree of homogeneity of risks could be attained in this way. Homogeneity of risks ensures that the variance of total claims to be paid does not increase without bounds when more risks are added (Malinvaud, 1972, Appendix). A finite variance in turn implies that the expected value of the loss can be estimated with increased precision (a

decreased standard error according to the Law of large numbers), permitting the insurer to hold less reserves per unit risk while holding its probability of insolvency constant (Cummins, 1991). However, mutuals are at a disadvantage when it comes to raising capital for expanding their risk pool because they do not issue tradable ownership shares.

For this reason, the preferred legal form of insurers has become the publicly traded stock company in industrial countries. By way of contrast, health insurers in LDCs do not rely to the same extent on their (local) capital market, which usually is not very developed yet. Indeed, the mutual form is alive and even thriving in the guise of CBI. In the wake of development, with increasing demand for capital to finance expansion, the CBI schemes may change their legal form to become stock companies. However, assessing the conditions governing such a transition is not the aim of this chapter. For this reason, it is taken as given that for the foreseeable future private insurers (which need not be stock companies either) and CBI will continue to coexist in LDCs.

Focusing on the degree of concentration on the main descriptor of market structure, some important factors influencing it are listed in table 6. The discussion starts with factors that relate to the demand side and then shifts to the supply side. Table 6 has no entries for public health insurance in LDCs for the simple reason that the scheme is assumed to be a monopoly under all circumstances.

(1) Diversity of preferences

With greater diversity of preferences, a larger set of differentiated insurance products is necessary for matching supply and demand. This creates potential for niche products written by specialized insurers, and therefore a greater number of companies, *ceteris paribus*. However, the theory of consumer demand also says that diversity of preferences becomes effective only if incomes are sufficiently high. With a very small income, the attainable consumption set in attribute space is too restricted to permit choices that lie far apart. Therefore, the number of profitable product varieties (and usually firms) is low when income is low.

In keeping with this argument, the concentration of sellers is expected to be high in LDC markets for private health insurance. Moreover, they cluster in urban areas, where the number of high income earners is large enough for a sufficient pool size and hence an acceptable loading factor λ , causing a viable total loading (see section 2.3, item 3).

In the case of CBI schemes, there is the countervailing effect of lacking access to the capital market, which limits the size of the unit and its geographical expansion. The balance of the two influences is an open issue.

(2) Economies of scale

In the case of an insurer, the size of its risk pool may be the source of economies to scale, defined as decreasing unit cost as a function of the number of individuals insured. Thanks to the Law of large numbers, a larger pool size enables the insurer to reduce its reserves per unit risk without increasing its risk of insolvency (Cummins, 1991, table I). This means that the premiums of a large insurer contain a smaller amount of loading (see section 2.3, item 3), which results in a lower premium for a given amount of expected benefits paid. A large

insurer could therefore gain even more market share, with the so-called natural monopoly as a possible outcome.

However, a growing pool within a given country may require the acceptance of less favorable risks, with the consequence of a rise in the expected value of the benefit to be paid. Also, a larger pool can be associated with a loss of social control among the insured, encouraging moral hazard. According to eqs. (2) and (3) of section 2.3, both effects cause the amount of loading to increase, thus counteracting economies of scale. There does not seem to be very much empirical evidence on this issue in the domain of insurance, let alone health insurance. However, the available evidence points to constant rather than increasing returns to scale (see e.g. Fecher, Perelman, and Pestieau, 1991). Absent economies to scale, however, there is no reason to expect a particularly high degree of concentration on private insurance markets, at least for this reason.

Fujita, Krugman and Venables (1999) argue that economies of scale occur due to positive spatial externalities. In our context this may explain why health insurers in LDCs concentrate mainly in urban areas. Strong centripetal forces that draw businesses closer to one another (because firms may want to share a customer base or local services, have access to trained and experienced labor) outweigh weaker centrifugal forces that drive businesses farther apart (because firms compete for labor and land). The first set of influences constitute spillover effects resulting in economies to scale in the guise of lower costs of administration and advertising. As such, they encourage concentration.

Table 6: Factors affecting the degree of concentration of health insurance sellers in markets for private health insurance

Factor	Factor serves to increase (+)/decrease (-) concentration		
	Private Insurance (Competitive Market)	Private Insurance (LDC)	Community-based Insurance (CBI)
(1) Diversity of preferences	-	- ↓	-
(2) Economies of scale	+/-	+	+
(3) Economies of scope	+	+	+
(4) Barriers to entry	+	+ ↑	+ ↑
(5) Barriers to exit	-	- ↑	- ↑
(6) Antitrust policy	-	- ↓	- ↓

Note: ↑ Reinforcement of relationship ↓ Attenuation of relationship

Fujita, Krugman and Venables (1999), although not focusing on CBI schemes, also provide an intuition as to why CBIs are concentrated in rural areas. There, strong centripetal forces (such as the ability to serve certain customers and the acceptance of informal market behavior like barter) outweigh the weaker centrifugal forces (such as small customer base, bad infrastructure, and an underdeveloped capital market). Economies of scale thus may occur due to the first set of influences, serving to lower unit costs given the market characteristics of CBIs.

(3) Economies of scope

Economies of scope prevail in insurance if the cost of providing an extra unit of coverage in one line of business decreases as a function of the volume written in some other line. In the context of health insurance, economies of scope may operate at two levels. First, the health insurance line may benefit from other business activities of the same firm. For instance, it may be possible to market health insurance through the existing distribution network for selling e.g. banking services. The tendency towards an increased degree of concentration in the health insurance market is indirect and hence not very marked in this case. Also, the limited amount of available empirical evidence suggests that economies of scope at this level are not important (Suret, 1991).

Second, however, health insurers A and B may realize that while their products are differentiated, the expenses for marketing and administering those of A increase less than proportionately when the quantity of B's products is increased as well. The amount of loading hence would increase less than proportionately with the expected volume of benefits combined, providing a powerful motive for a merger of the two companies. With economies of scope (often also called synergies) of this second type, there is a tendency towards concentration, which however does not have to be accompanied with a smaller number of product varieties. More generally, the number of product varieties sold in the market does not vary in step with the number of firms in this case.

This argument holds also for LDCs in general, as well as CBI.

(4) Barriers to entry

High barriers to entry exist when a newcomer to the market must make large investments that cannot be recuperated if entry fails (high sunk costs). Barriers to entry thus cause the degree of concentration to be higher than it would otherwise be. They are clearly relevant in the case of health insurance markets, where a newcomer usually needs to launch an extensive advertising campaign to gain even a small share of the market. This investment cannot be recuperated if the newcomer should decide to withdraw later in time.

A small number of sellers makes the negotiation and monitoring of collusive agreements less costly. For this reason, concentration poses a threat to price and product competition also in insurance markets. However, collusive agreements can be destabilized by the emergence of an additional competitor. This destabilization is less likely to occur when there are high barriers to entry. Therefore, barriers to entry not only increase the degree of concentration but may also reinforce the anti-competitive effects that usually accompany a high degree of concentration.

These considerations apply to health insurance markets in LDCs as well. However, there are frequently additional barriers to entry in the guise of restrictions on foreign ownerships. Thailand, for example, limits foreign equity in new local insurance firms to 25 percent or less (USTR, Foreign Trade Barriers Report, 1998). Neighboring Malaysia offers 51 percent equity in insurance to foreign investors (WTO), which is still substantially lower than ownership quotas in Indonesia, where 80 percent foreign ownership of joint ventures is now possible, and in the Philippines, where 100 percent is possible. High barriers to entry like in Thailand and Malaysia contribute to the concentration of domestic health insurance markets.

Barriers to entry in CBIs are reinforced by the informal nature of the market (e.g. not all insurance companies are willing to accept payment in kind). Furthermore the relationship between the insurance scheme and its members usually develops over a long period of time (which also helps to minimize moral hazard effects). A newcomer to CBI thus would have to make a substantial non-recuperable investment to acquire this experience. This constitutes a barrier to entry facilitating concentration in the CBI segment of the market for health insurance.

(5) Barriers to exit

When challenged by a newcomer, one or several of the incumbents may consider exiting from the market rather than defending their position. However, exit is not an attractive alternative if it entails the loss of investments that cannot be recuperated (i.e. constituting sunk costs). For instance, a sales force specialized in health insurance is not an asset anymore once the firm leaves the market; even with economies of scope, it has a reduced value e.g. in selling life insurance. Barriers to exit thus keep the degree of concentration lower than it would otherwise be. However, through their stabilizing effect, they still help to preserve collusive agreements, reinforcing the anticompetitive effect of concentration. Bailouts of ailing companies also modify the opportunity cost of leaving the market, thus creating a barrier to exit.

As noted in section 2.4.1, barriers to entry in LDCs are higher than in industrial countries, a difference that is expected to hold for private health insurance as well. In addition, given the small number of private health insurers in LDCs, bailouts have a strong lowering effect on concentration there – but also a marked anticompetitive effect in view of weak antitrust policies (see item 6 below).

On the whole, high barriers to exit serve to keep the degree of concentration in LDC health insurance markets low, *ceteris paribus*.

Markets in which CBI schemes operate may be characterized by still higher barriers to exit. These schemes benefit from advantages due to their favorable reputation and established social control mechanisms (limiting in particular ex-post moral hazard, see section 2.4.1, item 7), which are lost if an exit from the market occurs. Again, this constitutes a factor that contributes to a lower degree of concentration, *ceteris paribus*.

(6) Antitrust policy

In many countries, merger projects must be submitted to antitrust authorities. Mergers that would result in a notable increase in the level of concentration are subject to scrutiny according to the rules followed both by the U.S. Federal Trade Commission and the Commission of the European Union. Up to this point, few mergers of health insurers have

been blocked. This does not mean that antitrust policy does not have an impact on concentration. Indeed, the mere risk of having a merger proposal rejected may well keep concentration at a lower level than would otherwise obtain.

Antitrust policy is less effective in many LDCs. For instance, in South Africa a recent wave of mergers between health insurers, between pharmaceutical manufacturers, and hospital groups has resulted in a small number of companies controlling most of the private healthcare industry (South African Health Review, 1998). While most insurance markets are probably still reasonably competitive, there is a danger that further consolidation might lead to near monopoly positions for certain players in several geographic areas.

Mergers of CBI schemes are very rare, but not because of effective antitrust policies. Arguably antitrust policies do not take effect at all in CBI schemes. CBI consists of small groups, whose members share common characteristics like close family and long-run community relationships. Mergers between CBI schemes thus come at the cost of increased heterogeneity, which seems to greatly outweigh their benefits. The literature on credit markets offers evidence on the importance of market segmentation along geographic and kinship lines. Udry discovered that loans between individuals in the same village or kinship group accounted for 97 percent of the value of transactions (Udry, 1993, p. 95). Hardly any loans were provided to outside communities, as information about repayment possibilities and village sanctions as a mechanism for contract enforcement were lacking. Similar evidence on informal credit markets is reported in a case study of rural China (Feder et al. 1993).

2.6 Concluding remarks for chapter 2

Four dimensions are used in this chapter to characterize of the supply of health insurance: the size of the benefit package, the amount of loading as the net price of coverage, the amount of vertical integration between insurers and healthcare providers, and market structure as indicated by the degree of concentration. The following conclusions are mainly based on theoretical considerations, whose degree of empirical confirmation is very limited. Admittedly, the case studies cited in the text are too far and in between to provide real confirmatory evidence. The following conclusions must therefore be regarded as very tentative.

With regard to the benefits package, private insurers doing business in less developed countries (LDCs) are predicted to offer less comprehensive packages than in industrial countries (which are used as the competitive benchmark, although many of them heavily regulate health insurance or permit their cartelization, see Appendix table I.1 to I.3). However, some important factors encouraging comprehensive benefits are attenuated in LDCs, as evidenced in table 1 of section 2.2. This finding holds to an even greater extent for community-based health insurance (CBI).

The amount of loading contained in health insurance premiums in LDCs is expected to be high in comparison to the competitive benchmark because important factors such as the regulatory framework and the prevalence of fraud and abuse exert pressure in that direction (see table 2 of section 2.3). Since administrative expenses are lower in CBI schemes to an extent that is unlikely to be neutralized by regulation, CBI may well have a competitive advantage on this score.

The imposition of vertical restraints or completion of full vertical integration can originate with insurers or healthcare providers. Private health insurers in LDCs seem to be hampered in

these endeavors to an even greater extent than their counterparts in industrial countries (see table 3 of section 2.4). CBI schemes may have an advantage here because they are less prone to behavior hurting their reputation with healthcare providers and because they do not have to deal with provider cartels. Such a difference cannot be discerned in the case of provider-driven integration efforts (see table 4 of section 2.4); settings reminiscent of managed care may therefore originate with CBI schemes.

Finally, there is the presumption that the degree of concentration prevailing on LDC markets for private health insurance may well be higher than in the competitive benchmark case, notably due to high barriers to entry. According to table 6 of section 2.5, CBI schemes should not systematically differ in this regard.

In all, there is reason to expect that for some time to come, the structure of supply in LDCs will differ from the competitive benchmark case in all of the four dimensions distinguished.

Appendix I: Types and efficiency effects of regulation

The main motive to regulate private health insurance is to (1) eliminate the social costs caused by insolvency by preventing insolvency, or (2) mitigate the social costs caused by insolvency while accepting the possibility of insolvency (Zweifel and Eisen, 2003, ch. 8.1). Indeed, individuals losing their health insurance protection may face hardship and poverty that affect society as a whole.

(1) Regulations designed to eliminate insolvencies also seek to avoid instability in insurance markets that may occur due to adverse selection processes. Typically, they are very comprehensive and detailed because current operations of insurers must be monitored to attain the objective. However, this type of regulation generates inefficiency because it prevents insurers from adopting least-cost solutions. Thus, regulation aimed at avoiding insolvency under all circumstances may not maximize social welfare. Once private insurance schemes are fully regulated – such that e.g. prices, quantity and quality of private insurance products are determined outside the market mechanism – resource allocation is likely to deteriorate. In other words, wrong insurance product pricing, wrong insurance packages, and reduced competitive behavior may lead to an inefficient and inequitable allocation of private health insurance products. Table I.1 below provides an overview of regulations that tend to lower efficiency, along with a short explanation. For example, budget approval (item A.6) stifles product innovation because, apart from possible delays, the insurer runs the risk of having the cost of innovation disapproved.

(2) However, regulation can also be designed to reduce social cost once insolvency occurs by making insurers bear them. One way to internalize these costs is to require the deposit of reserves, another, the establishment of a guaranty fund financed jointly by the insurers (items B.2 and B.6 of table I.1). These measures go a long way towards eliminating hardship of insured in the advent of insolvency. Even these regulations are not without their cost, however, because e.g. the reserves deposited could usually be invested at a higher rate of return. In addition, there is the direct cost of administering these regulations. On the whole, however, regulations motivated by the objective of internalizing the social cost of insolvency seem to have a better chance of being efficiency-enhancing.

Finally, insurance regulation may have the objective of creating demand for private coverage, which is seen as a precondition for an expanded provision of private health care and the reaping of efficiency gains associated with it (Griffin, 1989, p. 23)

Table I.1: Regulations that tend to lower efficiency

A.1	Imposed premiums	Lack of incentive signals Undermines price competition Premium fails to reflect expected costs Disturbs balance of underwriting and investing activities
A.2	Obligation to provide specific products, approval of product	Restricts product competition Does not reflect individual benefit-cost estimates
A.3	Rules on active/passive ownership (vertical integration)	Prevents insurers from finding the optimal degree of vertical integration
A.4	Obligation to provide certain benefits and/or to insure certain risks	Can make insurance not viable Does not reflect individual benefit-cost estimate
A.5	Separation of lines of business	Loss of synergy effects both for insured and insurer (allocation of reserves is not optimal)
A.6	Budget approval	Hampers product innovation
A.7	Rules on investments	May prevent insurers from obtaining maximum expected return for a given volatility
A.8	Subsidies and tax exemptions in favor of insurers	Justified if insurers provide a public good (e.g. cohesion of society) Induces overconsumption of insurance
A.9	Obligation to contract with providers	Lowers pressure on providers to reach efficiency

Table I.2: Regulations that tend to enhance efficiency

B.1	Licenses for insurers	Serves to lower probability of insolvency
B.2	Minimum capital	Serves to lower probability of fraud
B.3	Minimum liquidity requirements	Serves to lower probability of insolvency
B.4	Reinsurance schemes	Serves to lower probability of insolvency
B.5	Provision of a guarantee fund	Serves to lower probability of insolvency
B.6	Industry-wide insolvency fund	Serves to lower probability of insolvency
B.7	Provision of information to regulators and consumers	Serves to increase transparency
B.8	Agreed-on accounting procedures, internal and external auditing	Serves to increase transparency
B.9	Mandatory risk adjustment scheme among insurers in the presence of adverse selection	Avoids cream-skimming by insurers Often a complement of premium regulation

Table I.3: Specific country examples of regulation

REGIONS/ COUNTRIES	Regulations reducing efficiency	Regulations enhancing efficiency	Extra Comments
OECD COUNTRIES			
Switzerland	A.1, A.3, A.5, A.7	B.1, B.2, B.3, B.5, B.7, B.8	
The Netherlands	A.2, A.4, A.8,	B.1, B.2, B.3, B.4, B.5, B.7, B.8	General: (1) 31% of the population is covered by private health insurance
UNCERTAIN		B.6, B.9	
Australia	A.1, A.2, A.3, A.4, A.6, A.7, A.8, A.9	B.1, B.2, B.3, B.4, B.5, B.6, B.7, B.8, B.9	General: (1) 1/3 of the population is covered by private health insurance
USA	A.1, A.2, A.3, A.4, A.5, A.7, A.8, A.9	B.1, B.2, B.3, B.4, B.7, B.8	General: (1) Note that answers greatly depend on which state is being considered (e.g. A.1).
UNCERTAIN	A.6	B.3, B.5, B.9	
Canada	A.2, A.3, A.4, A.8	B.1, B.2, B.6, B.7, B.8	
UNCERTAIN	A.7	B.3, B.5	
New Zealand		B.1, B.3, B.7, B.8	Ad B.3: \$500,000 must be kept in a trust. General: (1) Private health insurer must provide an annual annotated statement, otherwise business hardly regulated.
AFRICA			
South Africa		B.1, B.2, B.8	
UNCERTAIN	A.6, A.7		
Zambia		B.1, B.2, B.4, B.5	
UNCERTAIN	A.1, A.2, A.3, A.4, A.6, A.7, A.8, A.9	B.3, B.6, B.7, B.8, B.9	
Zimbabwe		B.1, B.2, B.4, B.5, B.8	
UNCERTAIN	A.1, A.2, A.3, A.4, A.5, A.6, A.7, A.8, A.9	B.3, B.6, B.7, B.9	
Nigeria		B.4	General: (1) 0.03% of the population is covered by private health insurance
UNCERTAIN	A.2, A.3, A.4, A.5, A.6, A.8, A.9	B.1, B.2, B.3, B.5, B.6, B.7, B.8, B.9	(in July 1995)
ASIA			
Philippines	A1	B.1, B.2, B.4, B.5, B.6, B.7, B.8	Ad A.1: Premiums are taxed at 5% per annum. General: (1) Private health insurance covers 2% of the population. (2) Premiums for poor citizens are paid/subsidized by the governmental public health insurance scheme.
UNCERTAIN	A.4, A.6, A.8	B.3, B.9	
Thailand	A.3, A.7, A.8	B.1, B.2, B.3, B.4, B.5, B.6, B.7, B.8	General: (1) Private health insurance covers 2% of the population (2) 24% of the population is not

UNCERTAIN		B.9	covered by any form of health insurance.
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REGIONS/ COUNTRIES	Regulations reducing efficiency	Regulations enhancing efficiency	Extra Comments
Singapore	A.2, A.4, A.7, A.8	B.1, B.2, B.4, B.5, B.7, B.8	Ad A.2: like Eldersfield Ad B.2: Risk-based capital requirements. General: (1) Monetary Authority of Singapore estimates risk profiles for each Singapore-based health insurer. More critical insurers more stringently supervised.
UNCERTAIN	A.3	B.3, B.6, B.9	
Malaysia	A.8	B.1, B.2, B.4, B.7, B.8	
UNCERTAIN	A.6, A.7	B.3, B.5, B.6, B.9	
Indonesia	A.4, A.7	B.1, B.2, B.3, B.4, B.8	General: (1) Private health insurance covers 1% of the population. (2) Only 14% of the population has some form of insurance. Private health insurance protection expires with the age of 55 years. (4) Community- based primary insurance – Dana Sehat
Taiwan	A.1, A.2, A.3, A.4, A.5, A.6, A.7, A.8, A.9	B.1, B.2, B.3, B.4, B.5, B.7, B.8, B.9	General: (1) Taiwan also runs a community-based Insurance program, (Farmer's health Insurance)
China	A.1, A.2, A.4, A.6	B.1, B.8	General: (1) 3.17 percent of urban and 1.41 percent of rural population are covered by private health insurance
UNCERTAIN	A.3, A.5, A.7, A.8, A.9	B.2, B.3, B.4, B.5, B.6, B.7, B.9	
India	A.7	B.1, B.2, B.3, B.4, B.7, B.8	
UNCERTAIN	A.6, A.8		
EAST EUROPE			
Slovenia	A.2, A.3, A.4, A.5, A.7	B.1, B.2, B.4, B.5, B.6, B.7, B.8	
UNCERTAIN	A.6, A.8	B.9	
Kazakhstan	A.4, A.7	B.1, B.4, B.6	General: (1) Healthcare regulations differ between oblasts (states)
UNCERTAIN	A.1, A.2, A.3, A.5, A.6, A.8, A.9	B.2, B.3, B.5, B.7, B.9	
Turkey	A.8	B.1, B.2, B.4, B.8	General: (1) Approx. 30% of population without any form of insurance
UNCERTAIN	A.2, A.3, A.4, A.5, A.6, A.7, A.9	B.3, B.5, B.6, B.7, B.9	
Russia	A.2, A.4, A.7, A.8, A.9	B.1, B.4, B.8	
UNCERTAIN	A.3, A.5	B.2, B.3, B.5	

REGIONS/ COUNTRIES	Regulations reducing efficiency	Regulations enhancing efficiency	Extra Comments
LATIN AMERICA			
Colombia UNCERTAIN	A.1, A.2, A.4, A.8 A.3, A.5, A.6, A.7, A.9	B.4, B.6 B.1, B.2, B.3, B.5, B.7, B.8	General: (1) Approx. 1% of working- age population enrolled solely in private health insurance only.
Brazil UNCERTAIN	A.3, A.4, A.5, A.6 A.8	B.1, B.4, B.8 B.2, B.3, B.5, B.6, B.9	
Chile	A.1, A.2, A.4	B.1, B.4, B.8	Ad A.1: Government determines compulsory premium, currently 7% of private income. General: (1) Private health insurance covers 33% of population. Among those aged 60+, which account for 9.5% of population, this share drops to 3.2%
Costa Rica UNCERTAIN	A.1, A.7 A.2, A.3, A.4, A.5, A.6, A.8, A.9	B.4, B.8 B.1, B.2, B.3, B.5, B.6, B.7, B.9	General: (1) Public company monopolizes the insurance market
Argentina UNCERTAIN	A.2 A.6, A.7, A.8	B.1, B.4, B.7, B.8 B.2, B.3	General: (1) Private health insurance covers 9% of population.
Mexico UNCERTAIN	A.7 A.2, A.3, A.4, A.5, A.6, A.7, A.8, A.9	B.1, B.4, B.5, B.6, B.7, B.8 B.2, B.3, B.9	

Appendix II: Institutional framework and choice of indicator

The institutional framework of a country has several dimensions. For instance, the international economics and development literature emphasizes the degree of openness towards international trade and capital flows because this openness has a disciplinary effect on domestic political decision-makers (Dornbusch, 1982). For the purposes of this report, however, the corruption dimension is more relevant because most of a health insurer's contractual partners and partners in vertical restraints are domestic.

The extent of corruption can be measured in several ways. Among the more traditional indices are the ones developed by Business International Corporation (used by Mauro, 1995, Ales and Di Tella, 1997) and Political Risk Service Inc. International (used by Knack and Keefer, 1995, Tanzi and Davoodi, 1997). However, their construction seems to involve some degree of arbitrariness. For instance, the Business International index had a value of 10 for Iraq during the period 1980-1983, indicating no corruption at all. At this time, the regime of Saddam Hussein, widely recognised as corrupt, had already been in power for many years.

For the present purpose, preference is given to the Transparency International (henceforth: TI) corruption index. It has the advantage of including data provided by institutions such as the World Economic Forum, the World Business Environment Survey of the World Bank, the Institute of Management Development, PricewaterhouseCoopers, the Political and Economic Risk Consultancy, the Economist Intelligence Unit and Freedom House's Nations in Transit. The TI corruption index is a perception index based on surveys, and one condition to be included in it is that at least three survey sources are available. Another condition for inclusion is that the source must provide a ranking of nations, and that it must measure the overall perceived level of corruption but not forecast changes in corruption or risks to political stability. The index is an inverted measure and should be read as 10 indicating no corruption at all, while 0 implies absolute corruption.

Table II.1: Transparency International Corruption Index 2003 for countries cited

Country	Corruption Index		Country	Corruption Index
Switzerland	8.8		Indonesia	1.9
The Netherlands	8.9		Taiwan	5.7
Australia	8.8		China	3.4
USA	7.5		India	2.8
Canada	8.7		Slovenia	5.9
New Zealand	9.5		Kazakhstan	2.4
South Africa	4.4		Turkey	3.1
Zambia	2.5		Russia	2.7
Zimbabwe	2.3		Colombia	3.7
Nigeria	1.4		Brazil	3.9
Philippines	2.5		Chile	7.4
Thailand	3.3		Costa Rica	4.3
Singapore	9.4		Argentina	2.5

Malaysia	5.2		Mexico	3.6
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Appendix III: Quality of governance

Shareholders of an insurance company can be viewed as holding a call option on the value of the insurer's asset portfolio, with a strike price equal to the terminal value of the company's liabilities (i.e. the value of the policyholders' claims). When assets at the end of the period are larger than liabilities, shareholders' wealth equals the difference between the two. When assets fall below the value of the liabilities, their wealth falls to zero rather than becoming negative. This is the consequence of their limited liability. The right to dispose of their shares at a zero rather than negative price amounts to a put option in the hands of shareholders. Conversely policyholders bear the loss when liabilities exceed assets. The value of their policy is therefore given by its stated nominal value less they have implicitly sold to shareholders.

Given that the maximum loss to the shareholders is limited and in the event has to be borne by the insured, shareholders engage in risky projects at the expense of the policyholders. At this point, good governance (in the interest of the owner of the firm) seems to call for actions of management that serve to devalue the contingent claims held by policyholders. The limited judicial capacity and enforcement in LDCs make this scenario real. According to the OECD / WB roundtable on Corporate Governance (OECD (2003), "tunneling", i.e. insiders taking the assets of the company for themselves, is one primary problem with corporate governance in developing countries. If corporate governance is lax, management can even move funds out of the company to their own benefit once policyholders have paid the premium.

Even when discarding this extreme case, the management of an insurance acting in the interest of shareholders is predicted to act against the interests of policyholders. The one countervailing argument is that informed policyholders are not willing to buy insurance coverage from a company pursuing such a business policy. Therefore, at a given price (loading), demand for the products of this company will be weak, or alternatively, these products must be sold at a discount. This hurts future profits and thus lowers the value of shareholders' call option. In the case of the United States, Cummins and Sommer (1996) have indeed found that companies react to volatility increases by augmenting reserves, presumably in order to restore the value of the claims held by policy owners. Ultimately, good governance calls for management of an insurance company to take this type of feedback from the product market into due account. However, this requires a sufficient amount of information on the part of policyholders – a condition that is not always satisfied in LDCs. Disseminating information about the risk exposure of insurance companies therefore becomes an important task for a LDC government prepared to consider an enlarged role for private health insurance.

Absent such information, there is much scope for siphoning off reserves from an insurance company (also called 'tunneling', see OECD 2003, p. 30). For example, assets may be transferred to individuals who are not owners of the firm, or they may be invested at less than market return in a company (typically to the benefit of the majority stockholder of the insurance company), or liabilities may be shifted to the insurance company, again at an insufficient compensation.

Issues of quality of governance concern public insurers as well. Lack of competition, the absence of monitoring through the capital market, and the presence of vested-interest groups facilitate the diversion of public resources.

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