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A comparison of single- and multi-payer health insurance systems and options for reform

P. Hussey *, G.F. Anderson

Health Policy and Management, John Hopkins University, 624 N Broadway, Baltimore, MD 21205, USA

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Abstract

A major choice confronting many countries is between single-payer and multi-payer health insurance systems. This paper compares single-payer and multi-payer models in the areas of revenue collection, risk pooling, purchasing, and social solidarity. Single-payer and multi-payer systems each have advantages which may meet countries' priorities for their health insurance system. Single-payer systems are usually financed more progressively, and rely on existing taxation systems; they effectively distribute risks throughout one large risk pool; and they offer governments a high degree of control over the total expenditure on health. Multi-payer systems sacrifice this control for a greater ability to meet the diverse preferences of beneficiaries. Several major reforms of single-payer insurance systems—expansion of the role of private insurance and transformation to a multi-payer system—are then described and illustrated using specific country examples. These reforms have been implemented with some success in several countries but face several important challenges.

Keywords: Health insurance systems; Single-payer; Multi-payer; Health system reform

1. Overview

Over one hundred countries are considering major reforms to their health insurance systems. In the process of reform, these countries often look to other countries' experiences for paradigms and then adapt these models to their own unique circumstances. One reform option for which these countries may seek guidance is that of a single-payer or multi-payer health insurance system. In single-payer systems, one organization—typically the government—collects and pools revenues and purchases health services for the entire population, while in multi-payer systems several organizations carry out these roles for specific segments of the population. Single-payer systems include all citizens within a single risk pool, while multi-payer systems have pools at potentially different levels of health risk. Single-payer insurers have monopsony power in purchasing health services; multi-payer

* Tel.: +1-410-955-7314; fax: +1-410-955-2301.
E-mail address: phussey@jhsph.edu (P. Hussey).

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systems offer the possibility of consumer choice of insurer.

Each of these types of system has advantages and disadvantages. This paper reviews the differences between the two models, illustrated with specific examples from mostly high-income countries. The implications of the two models are then considered in light of four main functions of a country's health insurance system: revenue collection, risk pooling, purchasing, and social solidarity [1]. Revenue collection is the process of collecting health revenues through taxation, premiums, out-of-pocket payments, or other methods. Risk pooling is the aggregation of health insurance revenues for groups of individuals to protect each from the full cost of health care in the event of illness or injury. Purchasing is the system by which insurers procure health services from providers for their beneficiaries. Social solidarity is the sense of unity, interdependence, and community among members of a society that can be affected by mutual participation in a health insurance system. In each area, the comparative advantages of single-payer and multi-payer systems are discussed.

The comparison concludes with a discussion of unique issues that some low- and middle-income countries should consider. Low- and middle-income countries are most likely to be reviewing their health insurance system options. They also may have less capacity to raise revenue, limited capacity for pooling risks, weaker purchasing arrangements, and greater challenges for social solidarity in terms of the health care system than their higher-income counterparts. This may affect their selection of health insurance system.

This review of single- versus multi-payer insurance system reveals several important distinctions. For example, single-payer systems avoid the issue of risk selection, but multi-payer systems offer consumers a greater choice of insurance product. Is there a way to balance these considerations? The second part of this paper discusses two approaches that several countries have adopted: an expansion of the role of private insurance alongside a dominant single-payer public insurance system, and the transformation of a single-payer to a multi-payer system.

2. Differences between single- and multi-payer systems

In this section, the differences between single- and multi-payer health insurance systems are outlined, focusing on four topics: revenue collection, risk pooling, purchasing, and social solidarity.

2.1. Revenue collection

A health insurance system must be able to collect revenues in order to insure a population against the financial risks of ill health. The organization of the insurance system can influence how efficiently the revenues are collected, the aggregate amount of revenue that can be raised, and how equitably this task is carried out [2].

2.1.1. Efficiency

Since single-payer health insurance systems rely primarily on tax collection mechanisms that are used to collect revenue for other purposes and collect health revenues for the entire population, they generally have lower collection costs than multi-payer systems with separate collection systems [3]. Countries with well-functioning tax systems should be able to rely on this infrastructure to collect health care revenues as well.

2.1.2. Aggregate amount of revenues raised

In many countries, however, the government's ability to collect taxes is limited due to the number of workers who earn income in the "informal economy", widespread tax evasion, and other related factors leading to a limited tax base. In these countries, government revenues may not be sufficient to fund a universal single-payer insurance system. Multi-payer systems may allow governments to enlarge the health care resource pool from other sources, when the government's own ability to collect taxes is limited. This issue is particularly relevant to low- and middle-income countries.

The aggregate level of health care funding is still a dominant issue in countries with well-functioning taxation systems, however. The rapid growth in health expenditure in most countries has often led to governments seeking to control this growth,

while in other countries such as the UK there is an explicit policy to increase government spending [4]. The governments of these countries, with single-payer health insurance systems, essentially have total control over aggregate expenditure.

Aggregate expenditure for single-payer health insurance systems is typically determined through an annual budgeting process. In multi-payer systems, it is more difficult to monitor and control aggregate spending. This is because different insurers may use different utilization monitoring, payment, and information systems. This can lead to "cost shifting"—having one insurer pay more than another payer for a similar product.

The high degree of government control over aggregate spending in single-payer insurance systems leads to greater political determination of total health expenditure levels. In the UK, It was widely argued that it has led to under-investment in health care [5]. Others have observed that politicians may be more likely to increase health spending in election years [6]. The recent increases in the level of health spending in the UK enacted by the Labor Government demonstrate the degree of political control over health spending levels [4,7].

2.1.3. Equity

The choice of revenue collection mechanisms determines the degree to which insurance systems are financed progressively or regressively. Progressive financing arrangements are those where the proportion of income contributed rises with income level, so that the affluent contribute a greater proportion of their income than do the poor. Regressive financing is the converse: a system by which the poor contribute a greater proportion of their income than do the rich. Flat taxes represent the same proportion of income for all individuals regardless of income level.

Income taxes are typically the most progressive financing mechanism because under progressive income taxes, individuals at higher income levels pay higher income tax rates. Payroll taxes are generally flat taxes, since the same proportion of income is paid by any individual regardless of income. However, upper limits on the amount that can be paid in flat tax systems can make them regressive. Payroll taxes also do not typically tax assets, making them more regressive, particularly in countries where assets are generally a larger proportion of wealth (i.e. low- and middle-income countries). Premiums and out-of-pocket payments are the most regressive financing options, since each individual pays the same amount, regardless of income. This will represent a greater proportion of income for the poor than for the affluent.

Through progressive financing arrangements, insurance systems can provide greater subsidization of the costs of health care for low-income individuals. Single-payer systems typically accomplish this through progressive taxation. Multi-payer systems are more likely to be financed more regressively through mechanisms such as a payroll tax, as in a social insurance system after the German model, or through premiums, as in the market-oriented system in the US.

Some multi-payer insurance systems redistribute money through a variety of subsidies, such as inter-pool transfers and contribution exemptions for certain groups, such as the elderly or the unemployed. For example, in Japan, inter-pool transfers are made to the insurance pool containing the elderly population. Each insurance pool contributes an equal amount per beneficiary to the elderly insurance pool; in addition, the central and local governments contribute 30% of the revenues of the elderly insurance pool [8].

2.1.4. Summary

Single-payer systems usually have an advantage over multi-payer systems in the efficiency of collecting revenues, overall cost control, and the capacity to subsidize health care for low-income individuals. Multi-payer systems may be better able to collect revenues in countries with a weak taxation system, and can limit the amount of government control over revenue collection.

2.2. Risk pooling

Health insurers pool revenues to protect individuals from the financial risks associated with the use of medical services. Numerous studies show that health expenditures are highly concentrated: a small proportion of the population incurs the great

majority of health expenditures [9]. Insurance serves to spread these risks across a pool of individuals. According to the "law of large numbers", risks that are unpredictable at the individual level become more predictable as the size of the pool grows larger. The size of the insurance pool can vary from a system where all revenues are combined into a single pool (single-payer insurance), to a system where each individual has a prepaid, personal medical savings account.

The uncertainty of health risks can contribute to the problem of adverse selection in health insurance systems. Adverse selection occurs when one member of a transaction uses an information advantage strategically against the interest of the less-informed partner [10]. Sicker individuals are more likely to want to buy health insurance and health insurers cannot afford to insure only unhealthy people. This leads to attempts by insurers to identify those who are likely to have poor health. In a system with multiple insurers, given a choice of health insurance contracts, high-risk individuals will tend to buy more complete insurance coverage than low-risk individuals, who will tend to opt for low-cost, low-coverage, catastrophic policies—or no insurance at all.

Insurers attempt to correct this information asymmetry by screening potential members for risk ("cream-skimming"). For example, individuals with pre-existing conditions may not be offered a policy with coverage of that condition. Groups of individuals with high risks—such as smokers, or workers employed in an industry with high occupational safety hazards—may be offered a more expensive policy than otherwise similar individuals. The process of collecting data for evaluating risks can be expensive for insurers, adding to the administrative costs of insurance.

Unchecked adverse selection can lead to a "premium death spiral" where insurers incurring a loss due to high-risk individuals are forced to raise their premiums. In response to the higher premiums, low-risk individuals will opt out of the insurance pool for a lower-cost alternative. The high-risk individuals remain, continuing to drive up the expected costs of the insurance pool and necessitating further premium increases. This cycle continues until the policy hits the "death" part of the spiral—the insurer stops offering the insurance policy. The premium death spiral has been observed, for instance, in the Federal Employees Health Benefits Plan in the US [11].

2.2.1. Preventing adverse selection

Single-payer systems, since they have only a single pool, do not need to take steps to prevent selection among insurers and the insured population. Multi-payer systems do. Among the methods that can be used to try to prevent risk selection and the resulting death spiral are formation of risk pools unrelated to health, use of risk adjusters to redistribute resources among pools, and regulation. These methods can have the disadvantages of requiring considerable data, being expensive to operate, and only being partially effective.

Large insurance pools with a diverse risk structure have the ability to subsidize individuals with high expected utilization with others with little expected utilization. This type of pool would need to be formed for a reason other than insuring against financial risk of illness. A large risk pool of all of the citizens of a country, as in single-payer systems, is one example. An example that could be applied in multi-payer systems is large employee groups: they are likely to include individuals of varying levels of health risk, because employment—not health insurance coverage—is the primary reason for their existence.

A second way to mitigate adverse selection in a multi-payer insurance system is the redistribution of resources between insurance pools based on their risk structure. Measures that predict utilization are commonly known as "risk adjusters". Risk adjusters can potentially predict 15–20% of actual expenditures at the individual level, although most existing risk adjusters can only explain 10% of the variance at the individual level [11,12].

There are four main groups of risk adjusters: (1) demographic information, such as age and sex; (2) prior utilization; (3) actual utilization, used ex post facto as a type of reinsurance; and (4) medical conditions, such as diagnosis of diabetes [12]. In deciding which type of risk adjuster to implement, policymakers must evaluate their predictive power, the ability of insurers to collect the data, the ability

of respondents to "game" the data, and incentives created by the risk adjustment system. Age and gender are the most commonly used risk adjusters, most resistant to gaming by insurers, and easiest to collect, but are only weak predictors of actual utilization [13]. Other methods have far better predictive power, but the data required to operate the system are more difficult to collect; also, some methods are more subject to gaming. Although experience with formal use of risk adjusters other than age and sex is limited [12], experience in the competitive multi-payer system in the Netherlands and the US' Medicare program shows that the implementation of good risk-adjusters is "a long way from theory to practice" [14,15].

A third way to prevent adverse selection in multi-payer systems is through regulation. For example, insurers may be limited in what types of information they are allowed to collect about potential beneficiaries. They may be mandated to have open enrollment periods. The way premium levels are set can also be regulated. Insurers may be restricted from individually rating each person. Instead, insurers must offer community rates (the same rate for everyone) or community rates by class (the same rate for everyone of a certain age, gender, etc.).

In response to these types of regulations, insurers can be expected to use other methods to attract good risks, such as benefits design—e.g. a spa benefit may tend to attract young, healthy beneficiaries. A more sinister approach is to place the enrollment office on the second storey of a building that does not have an elevator or access for the disabled.

2.2.2. Diverse benefit packages

If risk selection could be avoided or limited despite the difficulties, it is possible in multi-payer systems to design insurance packages to provide services that are appropriate for certain risk groups. Specific insurance products could be tailored to meet specific needs and wants of specific types of individuals. For example, insurers could offer case management benefits to insurance pools containing a high proportion of persons with chronic conditions. Other insurance pools could offer unrestricted access to specialists, or coverage of alternative therapies. Insurance products can also be tailored to an individual's level of risk aversion. For example, a medical savings account or plan with a high deductible may be preferred by less risk-averse people, while those who are more averse to risk-taking may prefer a more comprehensive benefit package with little or no cost-sharing. Groups of individuals that tend to engage in healthy behaviors could be financially rewarded through lower insurance contributions. For example, an insurance policy could be offered exclusively to non-smokers. However, tailoring insurance policies to risk groups can lead to the effects of adverse selection unless it is prevented effectively.

2.2.3. Summary

Single-payer systems, since they have a single risk pool, do not need to take measures to counteract adverse selection. Risk selection is a potentially serious problem in multi-payer systems. Several methods exist to prevent selection, but they often have a considerable data burden, can be expensive, and are not entirely effective in practice. However, if risk selection is avoided, multi-payer systems have the capacity to tailor benefit packages to specific risk groups.

2.3. Purchasing

A third main role of health insurers is purchasing health services and supplies for their beneficiaries. Insurers can purchase services from public or private providers using a variety of payment arrangements, which place financial risk on a continuum from the provider (capitation) to the insurer (fee-for-service). The fundamental goal of purchasing is to achieve the optimum balance between effective provider incentives and an acceptable level of risk held by the provider.

2.3.1. Purchasing power

In single-payer systems, the insurer is generally in a stronger purchasing position relative to providers than insurers in multi-payer systems due to the insurer's monopsony power. There is little or no competition among purchasers. This monopsony power creates options for single-payer

purchasing such as global budgets and negotiated payment rates that might not be possible in multi-payer systems. For example, single-payer insurers can negotiate physician and hospital payment rates, and buy pharmaceuticals in bulk. Some have argued that savings accrue at the expense of providers and drug companies. This creates incentives for these providers to supply less or cheaper care [16].

A concern with rates being set too low is that services demanded by some individuals may not be available [17]. In this case, alternative delivery systems may develop. One common alternative delivery system is doctors who see public patients during certain hours and private patients during others. A disadvantage of this arrangement is that these physicians may provide more attention to their private patients to the detriment of the public patients. For financial reasons, doctors may prefer queues in order to have a steady stream of private patients. Another form of alternative delivery system is an informal market, as can be found in some former Soviet republics [18]. These parallel markets detract from the equity of access to the health care system. Moreover, they could undermine the effectiveness of the public system—e.g. providers who derive a large proportion of income from informal, out-of-pocket payments may not respond to public-sector payment incentives.

2.3.2. *Technology assessment*

Single-payer systems can also take advantage of their monopsony power through technology assessment. Technology assessment is the determination of the value of technologies to inform the allocation process. Policymakers may have different priorities in the allocation of new and established technologies, but common considerations are (1) efficient use, i.e. the greatest health gains per unit of cost [6]; (2) aggregate cost control, since medical technology is considered to be a primary driver of health spending growth [19]; and (3) an equitable distribution of medical technologies.

Technology assessment is applied to allocation decisions in three main ways: approval processes, insurance reimbursement policies, and clinical guideline development and application. Single-payer systems, due to their monopsony power in the health services market, may be better positioned than multi-payer insurers to influence technology allocation through these mechanisms. For example, in the UK, a single public agency, the National Institute for Clinical Excellence (NICE), compiles guidelines for the effective use of health care technologies [20]. Adherence to these guidelines can be easily adopted throughout the entire NHS through the benefit package, since a single, centrally set benefit package applies to every citizen. Capital budgets are allocated annually from the Ministry of Health to regional Health Authorities, allowing further central control over the proliferation and distribution of medical technology. In addition, another public agency, the Commission for Health Improvement, periodically audits providers to assure compliance with NICE guidelines.

A related tool is a drug formulary. Insurers can influence drug utilization by beneficiaries by offering reduced or no coverage for certain drugs. Formularies can be used to limit the use of drugs with unproven effectiveness compared with other treatments, or to encourage the substitution of generic equivalents to brand name products. A single-payer insurer can use its monopsony power to limit aggregate pharmaceutical costs and influence population drug utilization patterns through selective coverage of pharmaceuticals. For example, in Australia, the cost-effectiveness of new drugs is considered before the drugs are eligible for reimbursement by the National Insurance system under the Pharmaceutical Benefits Scheme [21].

There are, however, ways that multi-payer systems can approximate the single-payer systems in terms of purchasing. For example, all-payer rate setting can be used in multi-payer systems to negotiate uniform provider payment rates. This is done in programs, for example, in South Korea and Germany [22,23]. It is also possible for the various insurance bodies in multi-payer systems to use technology assessment or formularies. One way this could be done is through a centralized government body providing guidance on technology assessment and/or drug cost-effectiveness.

2.3.3. Diverse products

The previous section discussed how multi-payer insurers are able to provide diverse benefit packages; the same idea applies to purchasing mechanisms and provider incentives [17]. Different people may have different preferences concerning unrestricted access to specialists, free choice of primary physician, provider payment methods, or levels of deductibles and coinsurance. Different insurance products could accommodate these different preferences. The presence of these different products and the competition for beneficiaries may stimulate innovation in health insurance purchasing arrangements.

2.3.4. Preventive benefits

Multi-payer systems create a financial incentive for insurers to focus on the short term. Since beneficiaries may change insurers every several years, their utilization of health care in 10 or 20 years will probably not affect the insurer currently providing coverage. Since multi-payer insurers often do not expect to receive returns on investments in preventive health care, they may be less likely to encourage utilization of preventive services through coverage or other mechanisms [24–26]. In single-payer systems, where all beneficiaries will be enrolled throughout their lifespan, greater investments in preventive care can lead to long-term savings due to a healthier population. In multi-payer systems it would only be possible to achieve the same result by having more services provided as part of government-sponsored public health or through mandates that require all insurers to provide a certain preventive benefit.

2.3.5. Selective contracting

Another way multi-payer insurers can offer diversity is to selectively contract with certain providers in order to provide a specialized level of service for their beneficiaries. For example, insurers could selectively contract with hospitals and physicians charging low rates in order to provide an affordable benefits package. In Switzerland, individuals can pay higher premiums in exchange for better hospital amenities [27]. Insurers could also contract with higher-quality, higher-priced providers to offer a high-end option to beneficiaries.

It is also possible for single-payer insurers to selectively contract with providers, but attempts to date have had limited success. Countries such as the UK and Sweden have enacted a ''quasi-market'' of competition among providers for single-payer funds. However, these systems have typically seen little change in historical relationships between purchasers and providers [28–32]. In the UK, little competition was noted in response to the Conservative government reforms to introduce competition into provider payment, with the government apparently reluctant to let hospitals fail by not obtaining a contract [28–30]. In the UK, as in many other single-payer insurance systems, doctors and other health care workers are civil servants. This can introduce rigidity in the process of adjusting the supply of health care labor to meet needs due to civil service rules. In Sweden, historical relationships between the regional purchasers and hospitals have also generally persisted, with few observed instances of competitive behavior (although significant productivity gains have been observed in the hospital sector due to new financial incentives) [31,32].

2.3.6. Summary

Single-payer insurance systems are able to take advantage of being the sole purchaser to obtain better prices and exert strict control over the products and services covered through the use of technology assessment and drug formularies. The danger is that if prices are lowered too far, the underprovision of care could be encouraged. However, the control over services available could be used to selectively encourage the provision of appropriate, cost-effective treatments and discourage inappropriate or non-cost-effective care. Multi-payer systems lack this degree of purchasing power but are able to provide a more diverse set of insurance products to beneficiaries. This diversity and competition for beneficiaries may stimulate innovation in approaches to insurance. The design of these products, however, may not follow a long-term perspective on health since beneficiaries may change insurers.

2.4. Social solidarity

Social solidarity is a concept referring to a sense of unity, interdependence, and community among members of a society. Although it has been variously defined, most definitions involve the idea of society's common interests separated from or overriding individual interests [33]. In addition to this societal, communal concept of common interests, solidarity also often includes a sense of charity, e.g. a shared sense of responsibility for providing health care to specific groups such as the elderly, the poor, or people with chronic conditions.

In the case of health insurance, a common concept of solidarity involves all members of a society making a fair financial contribution in return for guaranteed equal access to needed health care [34]. Solidarity is, therefore, strongly tied to an idea of distributive justice [35]. In this case, access to health care is considered a positive freedom—something that people have a right to, as opposed to having freedom from—that should be distributed equally among similar individuals. This concept is supported by the UN Committee on Economic, Social and Cultural Rights [36].

However, these values are by no means shared by all societies, giving rise to a broad array of national concepts of solidarity in the area of health care. For example, the US could potentially be considered to be violating the UN's right to health care based on the distribution of health care resources [36]. The German health care system is guided rhetorically by a notion of social solidarity: everyone is guaranteed insurance coverage, but nonetheless the well-off are allowed to opt into private insurance coverage which gives them better access to health care because providers are paid higher rates [23].

As described above, single-payer health insurance systems tend to be financed more progressively than multi-payer systems. Sharing the burden of health care financing in this way may increase the solidarity between richer and poorer segments of the population. A single-payer insurance system can also foster citizens' trust in the ability of the government to protect their welfare, enhancing the population's view of the legitimacy of the government.

However, in some cases multiple insurance pools might improve the political support of the government. For example, better-off individuals who feel that they are contributing more than their fair share towards insuring the health risks of others may oppose the health insurance system. Allowing them to opt out of a single-payer insurance system may provide greater social solidarity in a normative sense, by securing the political support of high-income earners for the public insurance system. This is particularly important in low- and middle-income countries where the high-income individuals and large industries must be willing to pay most of the cost of the reforms [22].

Multi-payer insurers could also create a sense of solidarity among smaller groups of society. People might have a sense of solidarity with others of the same community, profession, class, ethnicity, religion, or lifestyle. This solidarity could contribute to building "social capital", or features of social organization—such as trust in others and civic participation—that can be used as a resource to help overcome other social problems. In some large or diverse countries, a national identity may be difficult to foster.

2.4.1. Summary

Single-payer systems are more likely to create a sense of national solidarity through national redistribution of resources and legitimization of the government. However, governments might sometimes gain more support for public insurance systems by allowing better-off individuals multiple insurance options. Multi-payer systems can also create solidarity among smaller groups at the possible expense of national solidarity.

3. Considerations specific to low- and middle-income countries

Several characteristics specific to low- and middle-income countries must also be considered in the reform or design of a health insurance system. These are issues that occur primarily

because low- and middle-income countries have difficulties collecting tax revenues.

3.1. Financing

Low- and middle-income countries are able to raise less than half as much public-sector revenue as a share of GDP compared with industrialized countries [2]. Low-income countries raise a median of 19% of GDP in government revenues; in middle-income countries, this figure is 30%. In comparison, high-income countries raise a median of 44% of GDP in government revenues [2]. The main reason is that income taxes are not a good source of revenue in many low- and middle-income countries due to factors including the amount of income earned in the informal economy, lack of urbanization, high degree of income inequality, widespread tax evasion, and limited tax administration capacity [2]. Instead of income taxes, low- and middle-income countries raise a greater share of public revenues through sales taxes and other indirect taxes [2]. Indirect taxes are generally regressive, since the poor pay a higher proportion of their income on goods and services. The degree of regressivity can be moderated by targeting indirect taxes towards higher-income individuals, e.g. sales taxes on luxury goods such as cars.

3.2. Risk pooling

Low- and middle-income countries, with a higher share of rural and agricultural workers and other workers outside of the formal economy, may have difficulty in assuring compliance with an insurance mandate for the entire population. For example, South Korea initiated a compulsory health insurance program in 1976, with coverage mandatory for all residents by 1988. Regional insurance societies, responsible for collecting insurance revenues, had problems collecting payments, determining the correct number of family members, and determining individuals' income levels [22].

3.3. Purchasing

Out-of-pocket payments generally represent a much larger share of health spending in low- and middle-income countries than in industrialized countries [50]. In addition to being undesirable because of their highly regressive nature and lack of risk spreading, high levels of out-of-pocket payments may also undermine the payment incentives of the purchasing arrangements of the insurance system [51]. For example, a hospital collecting user charges from patients per diem may not attempt to shorten lengths of stay in response to per-admission insurance payments.

3.4. Social solidarity

Low- and middle-income countries often have greater disparities in income, resources, and health status than high-income countries [52,53]. They also tend to rely more heavily on out-of-pocket financing than high-income countries [50]. Since the income elasticity of demand for health services is generally greater for poorer individuals, out-of-pocket payments may lead to better access to care for the rich than for the poor. The size of these disparities in income, health status, and access to care presents challenges for social solidarity.

4. Reforming single-payer insurance systems

Single-payer systems have several clear advantages, such as the ability to redistribute revenues among risks and income levels without risk selection, and greater purchasing power. However, multi-payer systems also have their advantages, such as greater diversity in insurance products and more flexible purchasing arrangements with providers. Many countries may be interested in preserving many of the favorable aspects of a single-payer system while incorporating some of the positive aspects of a multi-payer system. This section summarizes two approaches that countries have followed to do so.

The first is to modify a single-payer insurance system by changing the role of private insurance. The role of private insurance could be increased to

create a supplement for the dominant public system with a single payer. A second type of reform is to introduce multiple insurers into a formerly single-payer system, preserving public financing and redistributing revenues among the pools to attenuate risk selection.

4.1. The role of private insurance

One potential way to balance the tradeoffs between single- and multi-payer insurance systems is to increase the role of private insurance alongside a universal single-payer insurer. All citizens would have the option of buying extra benefits in the private insurance sector. In this way, private insurance coverage can accommodate consumer needs that are not met by the single-payer insurer. Those purchasing private coverage to meet these needs are likely to be higher-income individuals, creating multiple tiers in the health insurance system with an adverse impact on the equity of access to care and social solidarity.

Private insurance can exist alongside universal single-payer insurance in three ways: substitutive, complementary, or supplementary [37]. Substitutive private insurance can be offered in lieu of the national single-payer insurance option for eligible individuals. For example, eligibility can be based on income (as in Germany and the Netherlands), employment status (the self-employed in Germany and the Netherlands), or occupation (civil servants in Spain and Germany) [37]. Complementary private insurance can provide coverage of services not included in the single-payer insurance benefits. An example of a country with complementary insurance is Canada. Supplementary private health insurance can be used to provide improved coverage of services also covered by the national single-payer insurer, e.g. access to private providers without waiting lists for elective surgery. An example of a country with supplementary insurance is the UK.

South Africa is another country with a substantial supplementary private insurance system. With a long legacy of apartheid, South Africa has an extremely unequal income distribution: although it is an upper-middle-income country, most of the population are either experiencing poverty or risk being poor [38,39]. This inequality creates difficulties for a universal, equitable health insurance system that meets the needs of the whole population.

The South African solution has been to guarantee coverage by a universal, single-payer system, with a supplementary private insurance option for those willing to pay. The public system is available to all. However, it serves mainly individuals with lower incomes, although all citizens provide revenues through taxation [40]. The public system provides cover for about 82% of the population [40]. Private insurance covers mainly higher-income, employed individuals who purchase it in addition to public coverage. Despite the fact that private insurance covers a minority of the population, it accounts for 60% of health spending, revealing a discrepancy between publicly and privately funded care [41].

A challenge for this type of system is to limit the degree to which the supplementary private system detracts from the public system. Recent reforms have been enacted in South Africa in order to combine the centrally controlled public system with a managed, supplementary private insurance market [40]. This involves increased regulation of the private insurance market in the areas of enrollment, benefits, grievance procedures, etc. to mitigate adverse selection. In addition, private insurers will be required to pay for care beneficiaries receive in public facilities. These reforms aim to solidify the private sector's position as a supplement to the public single-payer system.

Australia is another country that has attempted to stimulate the market for supplementary private insurance alongside the national single-payer insurer. The private share of health care revenues is among the highest in the OECD [42]. Private insurance coverage, regulated by legislation, primarily provides access to private hospital treatment [42]. Since 1995, the Australian government has passed three major reforms to encourage expansion of the private health insurance market. These reforms were (1) a government-provided rebate of 30% of private health insurance premiums; (2) the introduction of selective provider contracting in the private insurance market; and

(3) a switch from community rating to age-specific premium rating.

The Australian private insurance market faces several obstacles to success as a strong supplement to the National Insurance program. One is adverse selection. Since all Australians are guaranteed public insurance coverage, those purchasing private supplemental coverage might be expected to use more services, be more risk averse, or have higher incomes than those who do not. Some observers have pointed to rapidly increasing private health insurance premiums, which have grown faster than total health spending, as a potential indicator of risk selection [42]. In addition, private insurance coverage in Australia is heavily skewed towards higher-income individuals, undermining some of the social solidarity objectives [43].

4.1.1. Summary

South Africa and Australia are two examples of countries that have opted to create a second tier in their insurance system through the expansion of private insurance as a supplement to the public single-payer system. In South Africa, this addresses the demands of better-off individuals in an upper-middle-income country with wide income disparities. The public system provides a basic level of coverage that is universally available. The better off have the option to purchase supplementary private coverage, but they still financially support the public system. In Australia, private insurance serves as a way to inject additional revenues and guarantee rapid access to those who are willing to pay for it. High-income countries like Australia are often searching for ways to pay for escalating health care expenditures without devoting more public revenues.

Other countries with different priorities have opted not to create a second tier in the health insurance system. Recommendations for reform in Canada have preserved the strictly complementary nature of private insurance, based largely on extensive public polling [44]; instead, more public revenues will be devoted to health care [45].

4.2. Transforming a single-payer insurance system to multi-payer: the case of the Czech Republic

After years of central planning, many former Warsaw Pact countries such as the Czech Republic have been increasingly relying on markets to organize the welfare functions of the state [46]. In this vein, the Czech health insurance system was transformed from a single- to a multi-payer employer-mandate system with government coverage of special populations in the early 1990s [47]. Czech citizens are now served by ten insurance providers, although 75% of the population is enrolled in the plan that previously had been the sole provider of insurance coverage [48]. Insurance revenues previously had been collected mainly through general taxation, and are now mainly raised through payroll taxes. These insurance payments do not have any relationship to expected health insurance costs on an individual basis [48].

Although Czech citizens have technically been given a choice of insurer, there is little incentive for them to exercise their newly acquired consumer power. This is because national legislation regulates the operations of the insurers, eliminating most differences that consumers could use to choose between competing plans. Benefit packages, beneficiary contributions, and provider payment rates are determined by the government [48]. The main areas in which insurance plans can differ are the health risks they enroll and in the efficiency of their operations. To counteract the adverse selection problem, a rudimentary risk-adjusted redistribution of revenues is conducted via a central fund, based solely on the proportion of beneficiaries over age 60 [48].

4.2.1. Summary

Although it is difficult to evaluate the administrative, allocative, and technical efficiency of Czech health insurers, they seem to be performing fairly well in these areas [48]. Other health care reforms, including provider payment policies and choice of primary care physician, complicate the picture. However, it seems that to date, adverse selection has been largely avoided through regulation of insurance funds and rudimentary risk adjustment, although the potential for it to occur

exists [49]. A side effect is that the risk adjustment process has introduced weaker incentives for insurers to collect revenues, since the revenues may be redistributed to funds with an older age structure [48]. The regulations remove some of the benefits of a multi-payer system, such as diverse benefit packages. Finally, the financing of the system has become more regressive by the substitution of payroll taxes for income taxes.

5. Conclusion

There is no universal paradigm for the design of health insurance systems. Countries vary greatly in their priorities, populations, development, systems of government, and other factors. This variety has provided countries considering reforms a number of experiences to consider.

Single-payer and multi-payer systems each have advantages, which may meet countries' priorities for their health insurance system. Single-payer systems are usually financed more progressively, and rely on existing taxation systems; they effectively distribute risks throughout one large risk pool; and they offer governments a high degree of control over the total expenditure on health. Multi-payer systems sacrifice this control for a greater ability to meet the diverse preferences of beneficiaries. However, this diversity tends to result in the segmentation of risk groups unless adequate safeguards against adverse selection are used.

In all health systems, however, the demand for health care tends to increase along with economic growth [54]. In single-payer systems, the government, as the sole insurer, uses its purchasing power to limit the growth in expenditure to the degree possible; but inevitably, additional resources must be devoted to health care. This has led some countries, such as the UK, to devote additional public revenues. Australia, on the other hand, has pursued the expansion of supplementary private insurance, making a secondary tier of health insurance coverage more available. South Africa, where it is more difficult to raise revenues through taxation, has followed a similar strategy. For other countries willing to make this sacrifice in the solidarity of the system, this may be an option that increases choice in insurance coverage and raises health care revenue through private financing. One technical challenge is to ensure that private insurance, favored by unhealthy people who desire greater insurance coverage, does not become prohibitively expensive to better health risks. A second technical challenge is to ensure that the private insurance works well alongside the main, single-payer insurance as a supplement. One question that each country will have to settle is which benefits qualify as those that should be universally covered under the single-payer system, and which should only be covered for those who are willing and able to pay for the private insurance supplement.

Some countries, such as the Czech Republic, have opted to forego their single-payer insurance system in favor of a multi-payer system. This raises the formidable technical challenge of avoiding adverse selection among the insurance pools. One possibility for addressing this challenge is through risk adjustment. Sophisticated risk adjustment systems exist, designed to explain as much variation in utilization as possible; however, these sophisticated systems are rarely used. One reason is that they require detailed data that are frequently not available to most health insurance systems. If the data were available, even the most sophisticated risk adjustment system cannot predict all of the variation in utilization. Nonetheless, an investment in information technology is one-approach countries could take to prevent adverse selection in a multi-payer system. A second option is to use regulation to avoid the effects of adverse selection. For example, insurance pools could be limited in the benefit packages that they may offer to beneficiaries. This approach, however, eliminates one of the main advantages multi-payer systems offer: diverse benefit packages.

Low- and middle-income countries are faced with a particularly difficult dilemma when it comes to the design of the health insurance system. There are two feasibility concerns to balance: insufficient financial and administrative capacity to establish a single insurance pool, and adverse selection concerns with multiple insurance pools. One general compromise that has been advanced is the forma-

tion of multiple insurance pools with an eye towards building the capacity needed for a future single-payer system [3]. For example, in Taiwan, the precursor of the current universal single-payer insurance system was three insurance pools covering 55% of the population—private-sector employees, government employees, and farmers [55]. By 2001, 96% of the population had insurance coverage [56]. The planning task force for Taiwanese national health insurance, relying on the experience of other industrialized countries and the expertise of consultants, recommended a single-payer health system, primarily for reasons of efficiency [57]. A single-payer system with global budgets used to purchase care from private providers was identified as the best way to control health care costs [57].

These various experiences illustrate some of the approaches that countries have used to surmount the problems in design of a health insurance system. No country has the single answer for how to design an effective health insurance system. The plethora of experiences, however, provides countries considering reform with many lessons to consider.

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