

Chapter 2

Economic Rationales for the Design of Health Care Financing Schemes

2.1 Introduction

In most countries governments decide about the introduction of mandatory coverage and mandatory cross-subsidies on the basis of a number of underlying arguments. These arguments can be manifold e.g. ethical, historical (i.e. path dependency), political (i.e. pressure groups), economic etc. In this chapter, a general framework that analyses the main economic rationales for the design of health care financing schemes is developed.¹ In particular, the following question is addressed:

- What can be the economic arguments for governments to enforce a system of mandatory cross-subsidies and to implement a legal mandate to purchase coverage for a set of predefined services?

This chapter is organised as follows. In the next sections, we make a distinction between a system of *mandatory cross-subsidies* (Sect. 2.2) enforced to achieve affordability in the financial access to basic services, and *mandatory coverage* (Sect. 2.3) introduced to guarantee that certain groups of individuals are covered and protected against the financial risk of needing certain medical services. This distinction is based on the divergence between the arguments for the enforcement of a system of mandatory cross-subsidies and the arguments to mandate the coverage for predefined health care services. The main implications for the design of health care financing schemes are summarised in Sect. 2.4.

¹Other studies have been focusing on the identification and measurement of the criteria adopted by policymakers in setting priorities in health care, i.e. Multi-Criteria Decision Analysis (MCDA) (Baltussen et al. 2006, 2007, 2010; Scuffham et al. 2010; Jehu-Appiah et al. 2009).

2.2 Mandatory Cross-Subsidies

Although universal mandatory coverage for a uniform set of services may guarantee an affordable access to care, it may not be a necessary and proportionate tool from an economic perspective. In order to achieve an affordable access to basic health care services for vulnerable groups (e.g. low-income or high-risk individuals), it is sufficient for governments to introduce a system of cross-subsidies, in which low-risk and/or high-income individuals contribute to the financing of health care services needed by high-risk and/or low-income individuals.² Although in most societies individuals appear to be willing to support such a system of cross-subsidies, government intervention may be required in order to assure its existence and functioning. Theoretically, government intervention would not be necessary if the individuals' willingness to cross-subsidise overwhelms the incentives for free riding. In particular, if the contributions are not given voluntarily (e.g. by external donors) governments may have to impose a system of mandatory income- or risk-related cross-subsidies.³ The broader the minimum set of health services considered as basic,⁴ the higher are the mandatory cross-subsidies' contributions.

In the following subsections, we discern the main economic arguments related to the enforcement of a system of mandatory cross-subsidies that aims at achieving affordable financial access to health care services for the high-risk and/or the low-income groups. In particular, we distinguish and discuss the following economic arguments: the presence of externalities in the demand for some health care services (Sect. 2.2.1), the individual's risk of becoming a high risk (Sect. 2.2.2), and the moral hazard effect induced by cross-subsidisation (Sect. 2.2.3).

2.2.1 Externalities

For some goods and services, including many forms of medical treatment, consumers may be willing to pay for the consumption by others. A reason for this is that the consumption of health care services produces external effects. Externalities arise when a consumption (production) activity of one set of individuals affects the utility functions of other individuals, while this effect is not included in the individuals' utility functions (Rosen 2005). Externalities can be both positive and negative. *Positive (negative) externalities* occur when actions of one set of

²Cross-subsidisation may apply to both services and insurance coverage. There are several intervention strategies to increase the financial accessibility to care or to health insurance. For a more in depth analysis of two of the strategies (i.e. explicit premium-subsidies and implicit premium-subsidies) we refer to Chap. 5 in this book.

³Empirical evidence concerning the importance of the free rider problem in public good provision is not conclusive (see Brunner 1998; Palfrey and Prisbrey 1997).

⁴Basic services are the totality of cross-subsidised services.

individuals make other individuals better (worse) off, yet the first set neither bear the costs nor receive the benefits of doing so (Gruber 2005). The external effects generated by an individual's (non-) consumption of health care services' are mainly the consequence of two types of interpersonal preferences: altruistic and egoistic preferences. The literature tracks down a third type of interpersonal preferences so-called paternalistic preferences (van Doorslaer and Schut 1999; Culyer and Simpson 1980). Since the only difference between paternalistic and altruistic preferences is in the extent and the focus of an individual's concern about others, we simply distinguish between two types of altruistic preferences. We refer to *type-1* altruistic preferences if an individual's concern is about others' *general wellbeing* and to *type-2* altruistic preferences if an individual concerns specifically about others' *health status*.⁵

2.2.1.1 Altruistic Preferences⁶

A first important consumption externality in health care is the presence of type-1 altruistic preferences that is an individual's concern about the wellbeing of others. Thus, an individual's concern about others' well being generates an altruistic externality that calls for subsidisation. Type-1 altruistic preferences may undertake a very general form of interpersonal dependencies. For instance, the interpersonal utility function for individual B may look like the following:

$$U_B = U_B(H_B, U_A[H_A(M_A), C_A], C_B)$$

The utility of B is in this case a direct function of the utility of individual A and therefore of A's health status (H_A) and non-medical consumption (C_A). An important implication of this model is that B respects the preferences of A. For example, if A prefers other goods (C_A) over health or health care, than B may also be willing to pay for A's consumption of these other goods (C_A). Therefore, A freely chooses, based on his/her own preferences, whether to consume medical care (M_A) or other goods (C_A). A financial transfer of income (lump sum) from B to A would appear to be the simplest transaction in order to increase A's utility.⁷ Alternatively, an

⁵The social concern for the distribution of the use of health care services may be based on viewing medical care as involving good-specific altruism (Diamond 1992) or commodity-egalitarianism (Evans 1978).

⁶In this chapter, we do not deal with the question: what determines altruism? This question has given rise to an entire field of study of social capital, the value of altruistic and communal behaviour in society. A central finding of this field is that individuals are likely to be more altruistic when they are more "trusting" others. Anderson et al. (2003) found that most of the attitudinal and behavioural measures of trust were positively correlated with high contributions to merit or public goods.

⁷The problem with this "lump-sum solution" is the virtual impossibility of establishing lump-sum taxes and subsidies that do not affect incentives of either the payer of the tax or the recipient of the subsidy (Graaff 1971; Nath 1969; Samuelson 1947).

individual's concern about others may not be focused on others' general wellbeing but specifically on their health status (type-2 altruistic preferences). In other words, an individual may prefer to contribute to improvements in others' health status rather than others' general welfare (Reinhardt 1998; Arrow 1963). In this case, type-2 altruistic preferences may be expressed by the following interpersonal utility function for individual B:

$$U_B = U_B(H_B, H_A(M_A), C_B)$$

The utility of B is a direct function of A's health status (H_A), therefore B's willingness to subsidise limits itself to A's medical consumption, in so far that it positively contributes to A's health status. Possible interpersonal transactions, which could increase the utilities of both individuals, would have to be income- or risk- related subsidies earmarked to the consumption of specific services that positively contribute to health. Most people seem to be unwilling to deny effective care to other members of society.⁸ Presumably, an individual's concern toward others' health status does not only depend on the effectiveness of treatments, but also on the costs and the severity of the illness. For instance, in case of lifesaving interventions individuals may be willing to cross-subsidise the financial access of high-risk or low-income individuals to services or treatments, even if they are not particularly cost-effective. Thus, altruistic preferences may be stronger for some health care services than for others.

Given the presence of altruistic preferences, an individual's utility of supporting a system of cross-subsidies may depend on the following factors: the cost-effectiveness of services, the initial health status of the beneficiary, the expected cost of services per consumer, and the consumers' responsibility for the incidence of the disease. Each of these factors will be discussed below.

Cost-Effectiveness of Services

Cost-effectiveness analyses (CEA) are usually indicated as the primary tools policy-makers adopt in deciding whether to include (or exclude) a service in the basic benefit package or basket (Drummond et al. 1997).⁹ The information provided by

⁸Van den Berg et al. (1986) found evidence of the presence of strong altruistic preferences for medical care consumption in the Netherlands. From data of the 1985 Health Interview Survey by the Netherlands Central Bureau of Statistics (CBS) they conclude that 78% of the representative sample population fully disagreed with the statement that "people with a less favourable health status should pay more for health care than people in good health" (9% partially agreed, only 3% fully agreed and 10% had no opinion).

⁹An extensive literature review about CEA methodology may be found elsewhere (Hauck et al. 2003). Key problems include choice of a summary measure to capture other benefits important to patients and the public; non-comparability of the values elicited with different health state value elicitation instruments; generalisability of studies beyond the study setting or country; choice of target population receiving the intervention; accounting for uncertainty in measuring costs and

CEA may affect an individual's utility of contributing to a system of cross-subsidies, since they allow comparisons among different services in terms of costs and effects. The results of a CEA are summarised by the cost-effectiveness (CE) ratio.¹⁰ The CE ratio compares the incremental cost of an intervention with the incremental health improvement attributable to the intervention. The health improvements of using the intervention are typically measured in quality-adjusted life-years (QALYs) gained. Therefore, the CE ratio is usually expressed as a cost per QALY gained.¹¹ The intervention with the relatively lower CE ratio is considered the most cost-effective. In other words, CE ratios indicate which health care services will provide health improvements most efficiently (i.e. at a lower cost) (Garber 2000).

Economically rational individuals with altruistic preferences maximise their utility by maximising the effect of cross-subsidies on others' health status. In particular, the effect of cross-subsidisation on others' health status increases the lower the CE ratio of the treatment. The lower the CE ratios of services are, the more effective cross-subsidisation on others' health status is, and thereby the more the altruistic preferences of rational individuals are satisfied. All in all, the lower the CE ratio of an intervention for a specified diagnosis, the higher an individual's utility of contributing to a system of cross-subsidies that guarantees the financial access to the intervention by others.

Initial Health Status of the Beneficiary

Cost-effectiveness information is not the only grounds on which individuals' altruistic preferences are based, and thereby for governments to decide whether a certain service should be cross-subsidised. For instance, in the case of lung- or heart-transplants, a relatively high cost-effectiveness ratio does not appear to constitute a sufficient motivation to exclude these services from cross-subsidisation in most countries. A parallel argument can be made for Viagra, which is not included in the basic basket of most countries despite its low cost-effectiveness ratio.

Apparently, when it comes to assess whether and to what extent specific health care services generate altruistic externalities, other factors, besides cost-effectiveness,

outcomes; inability to account for the opportunity costs of the cost-increasing element of new interventions; and the requirement to consider portfolios of programmes, rather than individual technologies.

¹⁰Let the subscripts 1 and 0 denote the intervention under study and the alternative to which it is compared, respectively. If C_1 and C_0 are the net present values of costs that result when the intervention and alternatives are used, and E_1 and E_0 their respective health outcomes, the incremental CE ratio is simply: $CE \text{ ratio} = (C_1 - C_0)/(E_1 - E_0)$. This ratio, which is a cost per unit incremental health effect, is often used as a measure of value.

¹¹In many respects QALYs are analogous to life expectancy, but include interventions that improve quality of life even when they do not affect survival. Each year that an individual lives longer contributes an additional year to the life expectancy calculation. The amount that each additional year of life adds to QALYs, in contrast, is a preference weight or utility that takes a value between 0 (death) and 1 (best health imaginable).

such as the individuals' initial health status have to be considered.¹² Our proposition is that an increase in an individual's utility produced by an improvement of a given size in others' health status is likely to be greater the lower the patient's initial health status.

From the "law of diminishing marginal returns" it follows that an improvement on an individual's "own" health status increases his or her "own" utility more the lower his "own" health status. This is also likely to hold for the marginal utility of "other's" health. The assumption of decreasing marginal utility of "other's" health implies that for equal improvements on A's health status ($H_{A1} - H_{A0} = H'_{A1} - H'_{A0}$), the difference in B's utility decreases the higher is A's initial health status ($U'_{B1} - U'_{B0} < U_{B1} - U_{B0}$). More precisely:

$$\delta U_B(H_A) / \delta H_A < 0$$

Therefore, the plausible assumption of decreasing marginal utility of "other's" health implies that an individual's marginal utility of supporting a system of cross-subsidies that guarantees the financial access to specific services is greater the lower others' initial health status. Everything equal, the poorer the initial health status (measured in QALYs) of a patient, the more the effect of cross-subsidies satisfies an individual's altruistic preferences.

In current CEA, health improvements (i.e. gains in QALYs) produced by consumption of health care services are weighted equally regardless the initial health status of patients. Thus, only the number of QALYs gained determines priority, while in a decision-making process of a rational altruistic individual QALYs that are gained by people with a lower initial health status may be given more weight. For instance, patients eligible for a lung transplant normally are in such poor health states (in Fig. 2.1, closer to 0 on the X-axis, i.e. H_{A0}), which altruistic individuals may find it acceptable to cross-subsidise the high cost per QALY in order to provide patients with a "last resort medicine". This phenomenon may be especially pronounced for lifesaving interventions. In contrast, erectile dysfunction is generally considered not to be life-threatening. Since it generally occurs to people with good health status (in Fig. 2.1, H'_{A0} , i.e. high initial health status), the QALY gains produced by Viagra, which is a cost-effective treatment, would receive a relatively low weight.¹³ In deciding whether (and for which diagnoses) the financial access to a service should be cross-subsidised, weights

¹²Although related to the argument of individuals' initial health status, the concepts of severity of illness (Nord et al. 1999), fair inning (Williams 1997) and proportional shortfall (Stolk et al. 2004; Johannesson 2001) will not be discussed, since they do not explicitly refer to the variation in an individual's utility of supporting a system of cross-subsidies generated by an improvement in others' health status or quality of life.

¹³Note that in specific patient groups such as patients with erectile dysfunction due to spinal cord injuries, this argument does not hold, since these patients' initial health status is low. Therefore, a rational altruistic individual may be willing to cross-subsidise the low cost per QALY of Viagra to patients with a diagnosed erectile dysfunction due to spinal cord injuries.

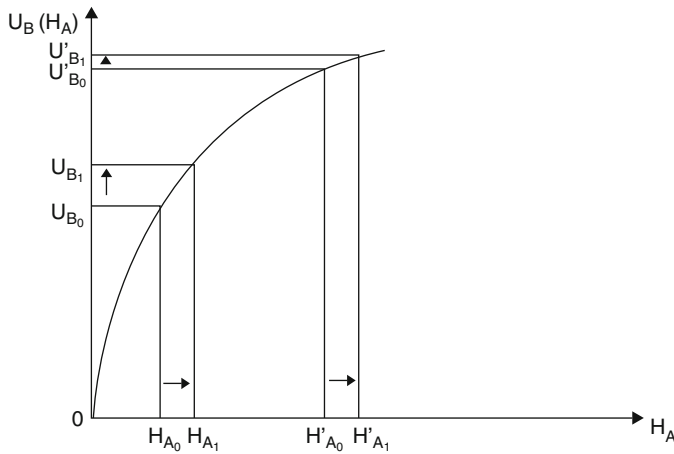


Fig. 2.1 Decreasing marginal utility of other's health

that consider the cost-effectiveness of services and the initial health status of patients could be used to reflect the individuals' altruistic preferences.

The Expected Cost of Services per Consumer

A rational and altruistic individual's utility of supporting a system of cross-subsidies may also be affected by the expected costs of health care services faced by others. All other things equal, the lower the expected cost of services per consumer the weaker the effect of cross-subsidies is likely to be in satisfying individuals' altruistic preferences. In general, a system of cross-subsidies satisfies altruistic preferences, and thereby produces a welfare gain, if it increases financial access to otherwise unaffordable care (Nyman 2003). Whether and to what extent health care is unaffordable may vary across individuals, and it depends in particular on their available income (or total wealth). For instance, if services involve low utilisation rate and are relatively cheap (i.e. Paracetamol), an individual may not be willing to cross-subsidise people who need them, given that these services may be easily accessed without constituting an excessive financial burden on each consumer. Nevertheless, there always are individual consumers for whom even low prices or volumes are hard to afford, and the absence of subsidies may cause differences in health care use. These differences may generate altruistic externalities for some health care services used by some individuals, and thus call for subsidies.

Ceteris paribus, the higher the expected price and volume of medical care per consumer, the greater an individual's utility of contributing to a system of cross-subsidies, and thereby the stronger governments' arguments to enforce it.

Consumer's Responsibility for the Incidence of the Disease

Another factor that may influence an individual's willingness to support a system of cross-subsidies can be derived from a consumer's responsibility in originating the condition for which services are demanded. Consider the case of health care expenditures that are clearly caused by the individuals' behaviour, such as smoking or skiing accidents. All in all, the greater a consumer's responsibility in originating a condition is, the less would the use of services satisfy altruistic preferences, and thereby the lower an individual's utility to support cross-subsidisation for the consumption of the services. In practice, however, it may be difficult to establish a clear connection between someone's responsibility and health care consumption. And, even if so, it may be practically unfeasible to set-up a system of cross-subsidies that corrects for it.

2.2.1.2 Egoistic Preferences

Externalities generated by the individual's (non-) consumption of health care services may also be the consequence of egoistic preferences. For instance, individual B may be concerned about the use of medical care by individual A simply for egoistic reasons in the case of communicable diseases. The interpersonal utility function for B looks like the following:

$$U_B = U_B(H_B[M_B, H_A(M_A)], C_B)$$

The medical consumption of A (M_A), for example in the form of vaccination, reduces the chances that A gets a communicable disease and improves, in that way, the health of A (H_A). However, because of the existence of a chance that B will also be infected by A (external effect), this has an influence on the (expected) health of B (H_B), and thereby on B's utility U_B . In general, immunisation for communicable diseases yields a positive utility for all non-immunised individuals.¹⁴ This externality limits itself to the use of the few health care services for which there is a divergence between collective and individual benefits or costs of consumption (Schut 1995; Schut and Lapre' 1988). If the full cost of immunisation is borne by each consumer then the risk of underconsumption is likely to occur, that is individuals may purchase less of these services than the socially optimal level.¹⁵ In fact, rational consumers

¹⁴Similarly, effective preventive care may generate positive externalities. The consumption of effective preventive care may constitute a net gain for society as a whole, since it may reduce the chance of using more costly curative services in the future. This holds true if society pays for the future costs of curative services.

¹⁵The demand for preventive care is likely to be less than socially optimal because of the fact that moral hazard results in a substitution away from preventive care toward curative care (Pauly 1974). The gains from preventive care are uncertain and occur in the future, while the costs (in terms of money and time) have to be made in advance. By contrast, curative care often offers a short-term and more certain gain. Therefore, the stronger the individual's asymmetry with respect to uncertainty surrounding gains and losses, the less likely the person will demand preventive care (Fuchs 1982).

would purchase goods until the ratio of the marginal utility of each to its price is equal across all goods. Therefore, when there is a positive consumption externality, the collective marginal utility is greater than that of the individual, so that (some) consumers, acting on their own and relying on their own resources, will not buy a large enough quantity of such goods (Rice 2003). The risk of underconsumption is higher for low-income individuals, because high-income people have higher opportunity costs of sickness (higher time price) and lower marginal utility of money. In the case of a positive externality, a straightforward way to overcome underconsumption is to introduce subsidies.¹⁶ If a large number of people benefits from the subsidies, as it appears to be the case for immunisations, it is very likely that most individuals would also be willing to participate in a system of cross-subsidies.

Another consumption externality in health care is the presence of individuals' concern about their own treatment opportunities relative to others. Therefore, individuals' utility depends not so much on what care they have access to in absolute terms but relative to others (Rice 2003). Most plausible, perhaps, would be that people want those who have less access than they have to have more (altruistic preferences) and, at the same time, want to have as much access to services as those who have more (concern about status or rank). Although economists usually assume that utility is a function of an individual's endowment, independent of his relative position, the importance of relative standing, or positional externalities, has a long history in economic theoretical (Galbraith 1958; Duesenberry 1949; Veblen 1899) and empirical analysis (Easterlin 1995; Neumark and Postlewaite 1993; Kapteyn and Wansbeek 1985; Duncan 1976). Positional externalities occur when "one person's action alters an important frame of reference for others" (Frank 1991). People care about their relative position in society for many reasons. One of these reasons might be that people feel envy when others have things that they themselves do not possess. Envy may change individuals' utility functions and its presence raises important policy questions (Choi 1993; Elster 1991; Bannerjee 1990; Frank 1985).¹⁷ For example, the use of cosmetic treatments such as facelift by some individuals may result in a reduction of the utility for the others since their look may be no longer as appealing. Then society's marginal utility from the consumption of cosmetic treatments will be lower than the individual marginal utility of the facelift users. Society's marginal utility may be realigned with the marginal utility of individuals consuming cosmetic services either by introducing cross-subsidies or taxation. A system of

¹⁶For instance, governments may enforce a system of earmarked income-related (from high to low income groups) cross-subsidies, or subsidise the provision of immunisations, even providing them free of charge.

¹⁷The term "positional" has not been applied uniformly in the literature. For instance, positional goods were initially defined by Hirsch (1976) as those that are in fixed supply or subject to congestion with increased use. Solnick and Hemenway (1998) attempt to identify what things create positional externalities and when people may find themselves on a positional treadmill. In other words, they try to answer the question: to what extent are positional externalities imposed when I have e.g. cosmetic surgery? They found that positional concerns are extremely important for physical attractiveness and stronger for goods than for bads.

cross-subsidies may be introduced with the purpose of increasing the financial accessibility to cosmetic care for those individuals who are willing but not able to pay for it. Moreover, the concern for great relative physical attractiveness can lead everyone to expand resources simply to remain in the same relative position (Wolf 1991). On the other hand, cross-subsidising cosmetic surgery (or similar services) lowers the costs borne by individuals, and thereby it may increase the quantity of services consumed (i.e. moral hazard) and the deadweight loss. In order to increase social welfare and correct for this moral hazard, governments could introduce taxation on the consumption of these services or leave these benefits out of the basic basket (Frank 1999). So, to the extent that positional externalities are present in the consumption of health care services the introduction of cross-subsidisation leads to a trade-off between the satisfaction of this type of egoistic preferences, on the one hand, and moral hazard, on the other hand.

2.2.2 *The Financial Risk of Becoming a High Risk*

The individuals' risk of incurring high medical costs for future health problems may constitute a second main argument for governments to establish a system of cross-subsidies. In particular, the occurrence of catastrophic risks or chronic illnesses, such as AIDS, cancer, senile dementia, heart disease, or organ failure may cause dramatic increases in health expenditures, which are likely to be unbearable by most individuals. The problem faced by consumers, in particular low-income individuals, is that of obtaining lifetime insurance for this type of risks/illnesses (Cochrane 1995; Pauly 1992; Diamond 1992; Newhouse 1984). From a dynamic perspective, there is a missing market problem. If contracts covered the whole lifecycle, the individual probability of being sick in each period would be low, and premiums per period would be low as well. However, insurance contracts are not signed once and for all, and individuals are exposed to the risk of incurring in events that increase their future expected expenditures. In this case, when the contract is renewed, insurers will adjust premiums to the new risk category, and access to coverage may become problematic. This happens because in real-world markets insurance against the financial risk of becoming a high risk is incomplete. Therefore, individuals lose welfare *ex ante*, since they want insurance against the risk of falling into a worse risk class but they cannot obtain it. More precisely, the welfare loss derives from a missing market for insurance against the chance of being discovered to be high risk. This problem has been termed the problem of renewable insurance or the problem of inter-temporal insurance (Cutler and Zeckhauser 2000).

In order to correct for this market failure, government intervention may be required.¹⁸ In particular, by establishing a system of cross-subsidies that increases

¹⁸In theory, markets might develop to deal with the problem posed by lifetime insurance. For a careful review of the main reasons suggesting that market solutions (e.g. long-term insurance, time-consistent insurance contracts) may be poor vehicles for insuring long-term health risks, we refer to Cutler and Zeckhauser (2000).

the financial access for high-risk and/or low-income groups to health care services, governments guarantee that risk-averse consumers are insured against long-term health risks (i.e. dramatic and unforeseen future changes in health status).¹⁹ In this sense a cross-subsidy system also provides insurance against the financial risk of becoming a high risk in the future (van de Ven et al. 2000).

2.2.3 *Moral Hazard*

Moral hazard may arise along several dimensions.²⁰ In general, moral hazard problems refer to adverse behaviours encouraged by the guarantee of financial protection (i.e. subsidies) against losses caused by the occurrence of adverse events (Gruber 2005). Since subsidies may reduce the marginal cost of insurance coverage for health care services borne by the individual, they may result in excessive consumption of these services (“consumer-initiated moral hazard”).²¹ Providers may also be inclined to induce additional demand for services for which they know that the costs are covered by subsidies (“supplier-induced moral hazard”).

The problem of moral hazard or subsidies-induced overconsumption is not uniform across health care services. In particular, the extent to which subsidies induce moral hazard depends on the services’ demand price-elasticity. The higher is a service’s demand price-elasticity the greater is the subsidies-induced overconsumption. For instance, the moral hazard effect of subsidising (the coverage of) lung-transplants may be much smaller than that of subsidising (the coverage of) Viagra, because the demand price-elasticity of lung-transplants is likely to be smaller than Viagra’s. *Ceteris paribus*, the smaller the moral hazard effect of subsidising (the coverage of) a specific service, the stronger may be the governments’ arguments to enforce a system of cross-subsidies that guarantees the financial coverage for accessing that service.

¹⁹After all, the traditional function of insurance is to protect against an adverse event that has not yet occurred (Arrow 1963).

²⁰Moral hazard problems are particularly relevant to the health care sector as contrasted with other sectors, because they emerge from the unequal distribution of information between the parties involved. Insurers and governments have highly imperfect information about the appropriateness of medical diagnoses and treatments. Hence, it is very difficult for them to value the damage caused by a disease and to appraise the costs of treatment. Moreover, they cannot judge whether or not subscribers have taken action to prevent diseases from occurring, which make it hard to relate premiums and subsidies to subscribers’ preventive activities (Schut 1995).

²¹Moreover, individuals may reduce preventive activities to protect health status if they are (to some extent) financially protected against adverse events.

Cross-subsidisation may induce moral hazard problems, which consist of excessive and thereby suboptimal levels of coverage. Moral hazard may also lead to health care cost inflation.²² So, to the extent that a system of cross-subsidies increases the incentives for excessive consumption of health care services, there is a trade-off between access to care and moral hazard. Therefore, when deciding whether to cross-subsidise (coverage for) specific services policymakers have to be aware of the financial consequences of subsidies-induced over-consumption.

2.2.4 Summary

The following summary Table 2.1 presents an overview in which each economic argument is related to its positive or negative effect on the decision to organise cross-subsidies between risk/income groups.

Table 2.1 Economic arguments for mandatory cross-subsidies

		Effect on the decision to organise cross-subsidies between risk/income groups
Economic arguments		
<i>Altruistic externalities</i>	CE ratio	–
	Initial Health Status of beneficiaries	–
	Expected cost per consumer	+
	Consumers' responsibility for the incidence of the disease	–
<i>Egoistic externalities</i>	Positive	+
	Negative	–
<i>Individual risk of becoming a bad risk</i>		+
<i>Moral Hazard</i>	Demand price-elasticity	–
	Cheap substitutes	+

²²In particular, subsidies-induced overconsumption by increasing the costs of a specific service may negatively affect the cost-effectiveness ratio of that service. In many countries (e.g. France, The Netherlands, Norway, United Kingdom, etc.), policy-makers have in some circumstances taken into account the ex-post cost-effectiveness ratio in deciding whether or not to subsidise a service. For instance, cost-effective treatments with a high ex-post cost-effective ratio (e.g. selective serotonin reuptake (SSRIs), sildenafil (Viagra) etc.) were (partially) removed from the basic basket. On the other hand, treatments not considered cost-effective ex-ante (e.g. ultra-orphan drugs) were subsidised because of their low ex-post impact on the budget available for cross-subsidies (Hughes et al. 2005; Kooijman 2003; Harris et al. 2001).

2.3 Mandatory Coverage

Coverage, that provides financial access to predefined health care services, may be particularly beneficial for those at the lower end of the income distribution (Nyman 2003). However, it is those at the lower end of the income distribution who are most likely not to take out coverage voluntarily (Feldstein 1999). Governments may stimulate the voluntary purchase of coverage by subsidising it. In addition or in alternative, governments may impose on consumers a legal obligation to obtain coverage. In Sect. 2.3.1, the following economic rationales for governments to enforce mandatory coverage are discussed: free riding (Sect. 2.3.1.1), lack of foresight (Sect. 2.3.1.2) and transaction costs of organising a system of cross-subsidies (Sect. 2.3.1.3).²³ In Sect. 2.3.2, we propose two alternatives for the fine-tuning of mandatory coverage.

2.3.1 *Economic Rationales for Mandatory Coverage*

2.3.1.1 Free Riding

The first alleged argument to enforce mandatory coverage is free riding. People may have incentives to hide their true preferences for some goods or services (e.g. public or merit goods) and let other people pay while enjoying the benefits themselves. This phenomenon is known as free riding and its presence may lead to inefficient allocations of resources. In general, any investment in goods or services that has a personal cost but a common benefit may provide incentives for individuals to underinvest, or to invest less than is socially optimal (free rider problem) (Gruber 2005).²⁴

In the context of health insurance and financing, free riders are individuals who purposely do not purchase coverage for their own health care entitlements because they expect not to be denied access to medical treatments in case of need or others

²³In the literature, adverse selection is often advocated as another argument for governments to introduce mandatory coverage (Nyman 2003). The government can avoid the adverse selection induced welfare loss from inadequate protection by making coverage compulsory. In the presence of mandatory coverage low-risk individuals are prevented from opting out of a pooling equilibrium. But MC may generate other welfare losses, i.e. moral hazard. Alternative and less invasive measures can deal with adverse selection while maintaining adequate risk protection for all risk groups. The central idea is to require insurers to offer adequate coverage to all applicants, irrespective of risk, while keeping premiums affordable by means of some system to redistribute purchasing power for medical care (Schut 1995). For instance, governments may introduce a system of (risk-related) cross-subsidies financed via mandatory solidarity contributions that may increase the affordability and sustainability of coverage for high risks.

²⁴See Rosen (2005) for a comprehensive analysis of the consequences for efficiency of free riding, and for a review of the literature that investigates the empirical relevance of the free rider problem.

in society are willing to pay for them if they really need health care. Empirical studies show that the presence of last resort safety nets, such as charity, reduces the demand for coverage, because they remove the health and the financial consequences (i.e. disutility) of being uncovered (Johnson and Crystal 2000; Dubay and Kenny 1997; Holahan 1997; Cutler and Gruber 1996; Thomas 1994).

An individual's incentives and opportunities to free ride may change in relation to the type of health care services and across different income groups. In general, an economically rational individual has incentives to abuse others' altruistic preferences if the average expected costs of different health care services exceed his or her own available income. Without a mandatory coverage provision, the risk that an individual does not cover for certain services and prefers to free ride is greater the higher the average expected costs of care are. In addition, incentives to free ride are smaller the higher an individual's available income, because the higher the income the lower the marginal utility of money (Nyman 2003). Hence, low-income individuals could purposely not cover for health care services because others in society are willing to pay for them if they really need health care. For high-income people this argument is less relevant because they can (and therefore will have to) pay most health care services themselves.

For services or treatments with very high average expected costs (e.g. liver failure requiring a liver transplant or routine dialysis, diabetes, asthma, or other chronic diseases that would require periodic physician visits and regular use of pharmaceuticals etc.) mandatory coverage may be necessary to prevent free riding even for high-income groups, excluding those individuals belonging to the high end of that distribution. For those at the very low end of the income distribution, the coverage of (most) health care services, including those with a low average expected cost, would represent a relatively high financial burden, and thereby increase the incentives and the opportunities for free riding. Therefore, for low-income groups a mandatory coverage provision for a broad set of services may be necessary to prevent free riding and thereby increase welfare. For middle/high income groups mandatory coverage may be limited to services with high average expected costs.

Ceteris paribus, the effectiveness of a mandatory coverage provision to prevent individuals from free riding, and thereby to increase welfare, diminishes as the average expected costs of care decrease and increases as an individual's available income decreases.

2.3.1.2 Lack of Foresight

Governments may also enforce mandatory coverage in the presence of individuals' myopic behaviour (i.e. lack of foresight), implying that individuals do not appropriately cover themselves against health risks. In other words, individuals may fail to maximise their (life-time) utility (Rosen 2005). For instance, this may mean that consumers feel healthy and underestimate health risks, i.e. young and healthy individuals do not always know what is in their best interest. Individuals' lack of

foresight may have serious consequences for individuals and society. In fact, the immediate financial advantage of not paying for coverage may lead to high future expenses, which may be nearly or totally impossible to afford by individuals. In order to prevent individuals from becoming uninsurable and having unaffordable high health expenditures, government intervention may be required in the form of mandatory coverage.

Individuals' lack of foresight is not homogeneous across income groups and types of health risks. Firstly, different income groups may have heterogeneous preferences towards health care coverage, since the marginal value of money is different across income groups. An important difference between different income groups is that particularly for those at the low end of the distribution the voluntary purchase of coverage represents a loss of income that would otherwise be used to purchase necessities, like shelter, food and clothing. Thus, at the low end of the income distribution, the utility cost of purchasing coverage is greater vis-à-vis the value of the other goods and services forgone, compared to those at the high range of the distribution. Forgoing these necessities could have consequences for health similar to those of forgoing medical care when ill (Nyman 2003). Another important difference across income groups is that on average high-income individuals are better educated than low-income people and may afford high health care costs. Therefore, the lack of foresight argument for governments to introduce mandatory coverage is less relevant (although not irrelevant for catastrophic health risks) for high-income than for low-income groups.

Secondly, myopic behaviour is not uniform across different types of health risks. Individuals' forecasting ability may be weaker for health risks that may occur in a "far future" than for health risks that may occur "at any time". In addition, individuals may not correctly appreciate how much certain health care services may contribute to their own health or for the health status of their dependents in the future. We refer, for example, to psycho-geriatric care, to long-term psychiatric care, to the use of dental care by children, to the contraceptive pill for girls under 18 years old, to obstetric care, to long-term nursing home care and to care for persons addicted to alcohol and drugs (van de Ven 1995). A theoretical explanation to this phenomenon is that individuals' aversion towards risk is not symmetric, since they appear to prefer certain to uncertain gains but prefer uncertain to certain losses (Kahneman and Tversky 1979). Therefore, the stronger the individual's asymmetry with respect to uncertainty, the less likely the person will voluntarily demand for insurance coverage. Moreover, the more catastrophic health risks are, the greater the impact of an individual's lack of foresight may be on future health care expenditures, and thereby the stronger the rationale for governments to introduce a mandatory coverage provision. For other types of health risks, variations in an individual's available income may affect his or her willingness to voluntarily demand for coverage. Low-income people are more exposed to the financial consequences of short-sightedness than high-income groups, due to a relatively lower ability to pay. A mandatory coverage provision for a broad set of services, including those with low future costs, may be necessary for low-income groups to prevent (the consequences of) myopic behaviour and thereby increase welfare.

Extending the mandatory coverage provision for non-catastrophic risks to high-income groups may not be necessary to prevent that high-income groups behave myopically.

Ceteris paribus, the more serious health risks are, the greater the impact of individuals’ lack of foresight may be on health expenditures, and thereby the stronger the rationale for governments to introduce a mandatory coverage provision.

2.3.1.3 Transaction Costs of Organising a System of Cross-Subsidies

A third economic rationale to introduce mandatory coverage can be the transaction costs of organising a system of mandatory cross-subsidies. If without universal mandatory coverage these costs are much higher than with universal mandatory coverage, governments may make the coverage for cross-subsidised services mandatory for everyone (i.e. including high-income people). On the other hand, universal mandatory coverage may induce moral hazard and increase total health care costs, and thereby constitute a welfare loss for society as a whole. So to the extent that the organisation of an alternative system of cross-subsidies generates high transaction costs, Society may face a trade-off between moral hazard and transaction costs of organising cross-subsidies.

2.3.1.4 Summary

Table 2.2 summarises the main economic arguments for governments to introduce mandatory coverage and their positive or negative impact on the choice to enforce a mandatory coverage provision.

The introduction of mandatory coverage may be an effective welfare increasing provision so far as it prevents free riding and myopic behaviour. However, these economic arguments are not equally relevant for *different groups of individuals* and for *different types of services or health risks*. Therefore, the introduction of *universal* mandatory coverage for a *uniform* comprehensive package of services (e.g. including the coverage of services with low average expected costs) may be *unnecessary* to prevent free riding and lack of foresight. *Universal* mandatory

Table 2.2 Economic arguments for mandatory coverage

		Effect on the decision to enforce mandatory coverage
Economic arguments		
<i>Free riding</i>	Income	–
	Cost of illness	+
<i>Lack of foresight</i>	Income	–
	Cost of illness	+
<i>Transaction costs of alternative ways to organise cross-subsidies</i>		+

coverage for a *uniform* set of services may also be *disproportionate* because it may reduce the responsiveness to consumers' preferences, induce moral hazard and increase total health care costs, and thereby constitute a welfare loss for society.

2.3.2 *Fine-Tuning Mandatory Coverage*

In order to avoid the welfare decreasing consequences of moral hazard, mandatory coverage could be fine-tuned according to the individuals' available income and the type of service. An important precondition for fine-tuning mandatory coverage to different income groups is to maintain the desired level of cross-subsidies between risk groups. Therefore, the fine-tuning of mandatory coverage should be accompanied with a (not too costly) system of cross-subsidies between risk groups.

The fine-tuning of mandatory coverage for different income groups may occur in two ways: by transferring *in toto* certain services from mandatory to voluntary coverage; or by increasing the extent of cost sharing (e.g. deductibles). Hence, consumers may opt-out from mandatory coverage and voluntarily pay out-of-pocket (or seek for coverage) for certain services; or they may opt for a deductible, which means that they can choose to pay the costs up to a certain amount themselves. In both cases they receive a premium rebate.

High-income groups may be allowed to opt-out from mandatory coverage for a wider range of services (e.g. GP, prescription drugs etc.) or to take a higher deductible than low-income groups, for which a mandatory coverage provision is necessary also for services with low average expected costs and for non-catastrophic health risks. Therefore, fine-tuning mandatory coverage according to the individuals' available income and to the type of service effectively prevents free riding and myopic behaviour, and it also reduces moral hazard and thereby increases welfare compared to *universal* mandatory health insurance for a *uniform* set of services, provided that organising cross-subsidies is not too costly.

The drawback of fine-tuning mandatory coverage is that it may imply high transaction costs. In particular, the more mandatory coverage is fine-tuned to the individuals' available income the higher are the consumers' search costs and the transaction costs of fine-tuning involved in the definition of the several mandatory packages of services, in adjusting the packages to variations in individuals' incomes (e.g. due to changes in employment status, promotion etc.) or to health care services' technological innovations.

So, the fine-tuning of mandatory coverage by type of service and income groups confronts governments with a trade-off between moral hazard, on the one hand, and the transaction costs of fine-tuning coverage and organising cross-subsidies, on the other hand. In the next subsections we discuss two types of schemes that aim at smoothing this trade-off by limiting the extent to which mandatory coverage can be fine-tuned: the two-option scheme (Sect. 2.3.2.1) and the single-option scheme with income-related deductibles (Sect. 2.3.2.2). Both schemes may be relevant for both NHS-countries and for countries with a competitive (social) health insurance market.

2.3.2.1 High and Low Option Schemes

Governments may make a clear distinction between two schemes, a *low-option scheme* for the high-income groups and a *high-option scheme* for the low-income groups, rather than having a large variety of mandatory packages of services fine-tuned according to the individuals' income.²⁵ The low-option scheme primarily includes health care services with high expected costs for which mandatory coverage is necessary also for high-income groups (e.g. to prevent myopic behaviour). The high-option scheme envisages a mandatory coverage provision for a comprehensive package of services (e.g. including low-cost care) for low-income groups. By choosing the low-option scheme (high-income) individuals may reduce the mandatory package and benefit from a reduction of the mandatory contribution (i.e. premium rebate). In order to guarantee an affordable access to the (broader) high-option scheme for high-risk or low-income individuals, the premium rebate should not affect the viability of the system of mandatory cross-subsidies.²⁶ In case of an unregulated competitive health insurance market the premium reduction should be risk-rated. In other words, the premium rebate for the low-option scheme is higher for the high-risk individuals than for the low-risk individuals. If the difference in contribution per risk group between the two schemes would reflect the difference in expected costs of the two schemes per risk group, then cross-subsidies are maintained. Moreover, if the premium rebate does not affect the system of cross-subsidies, the financial access to the high-option scheme for the high-risk or low-income people is subsidised by the low-risk or high-income individuals. In addition to the high-option there might be all kind of voluntary supplementary health insurance, i.e. not-subsidised.

Compared with allowing consumers to choose from several levels of mandatory coverage, the distinction between a high-option and a low-option scheme is more effective in containing the consumers' search costs and the transaction costs of fine-tuning mandatory coverage. On the other hand, it is less responsive to consumers' preferences (i.e. consumers' choice of coverage is limited to two schemes) and also less effective in reducing moral hazard (but more effective than universal mandatory coverage).

²⁵Contours of the Basic Health Care Benefit Package, Publication no. 2003/021; downloadable from: <http://www.gezondheidsraad.nl/>.

²⁶Although in theory the arguments for mandatory coverage differ from the arguments for mandatory cross-subsidies, in most countries the package of cross-subsidised services coincides with, or contains, the package of services for which a mandatory coverage provision is enforced. For example, there are packages of cross-subsidised services for which there is no mandate to purchase coverage (e.g. GP care for the high-income people in Ireland) but not vice versa. This is true for health care but not for other types of insurance (e.g. car). In car insurance often the purchase of insurance is compulsory but not subsidised. Therefore, we plausibly assume that high-option plans coincide with the package of cross-subsidised services.

2.3.2.2 Single-Option Scheme with Income-Related Deductibles

An alternative to the two-option scheme is to have mandatory coverage for a uniform package of services with the option for consumers to choose an income-related deductible with a premium rebate. On average, the higher the income the higher the maximum deductible level. The *no-deductible scheme* can then be considered as the high-option scheme and the *high-deductible scheme* as the low-option scheme. By taking a deductible, high-income individuals may reduce the mandatory package. The costs on which the mandatory cross-subsidies can be based on are the costs of the no-deductible scheme (i.e. high-option scheme). The premium reduction in case consumers choose to take a deductible could be unregulated and it would most likely be risk-rated in a competitive market, i.e. a low premium reduction for low risks and a high premium reduction for high-risk individuals. If the premium reduction is equal to the expected out of pocket expenditures (i.e. it does not reduce the cross-subsidies) solidarity is maintained.

The single-option scheme with voluntary income-related deductibles effectively prevents free riding and myopic behaviour; it avoids the transaction costs of fine-tuning mandatory coverage by type of service and income group and it enhances the responsiveness to consumers' preferences and it reduces moral hazard and total health care expenditures compared to universal mandatory health insurance for a uniform package of services.

2.4 Summary and Conclusions

This chapter investigates the economic rationales for the design of health care financing arrangements. It proposes a categorisation of financing schemes based on a distinction between mandatory cross-subsidies and mandatory coverage. The most important economic arguments for governments (not) to enforce a system of mandatory cross-subsidies that guarantees the financial access to a predefined set of basic services to high-risk or low-income individuals are related to: the presence of externalities in health care services consumption; the individuals' risk of becoming bad risks; and the moral hazard effects induced by cross-subsidisation. Conversely, the rationales for (not) enforcing mandatory coverage are based on considerations of free riding behaviour, individuals' lack of foresight and too high transaction costs of alternative ways to organise cross-subsidies.

From our analysis we also conclude that the introduction of *universal* mandatory coverage for a *uniform* set of services is unnecessary to prevent free riding and myopic behaviour and also disproportionate because it induces moral hazard. In line with the objective of preventing free riding and myopic behaviour, mandatory coverage could be fine-tuned according to the individuals' available income. In particular, the choice between enforcing *universal* mandatory coverage for a *uniform* package of basic services and fine-tuning mandatory coverage confronts governments with a trade-off between moral hazard, on the one hand, and the

transaction costs of fine-tuning and of organising a system of mandatory cross-subsidies, on the other hand.

To smooth this trade-off, the following two types of schemes can be considered as pragmatic alternatives: the two-option scheme and the single-option scheme with voluntary income-related deductibles.

Although they both represent potentially attractive alternatives to *universal* mandatory coverage, the single-option scheme with income-related deductibles is preferable on several grounds. Firstly, the distinction between two packages (i.e. two-option scheme) may result practically unfeasible, because it may generate difficulties in the identification of the criteria to find the services that clearly make the difference between the two packages. Secondly, under the two-option scheme the transaction costs of fine-tuning are likely to be higher compared to the single-option scheme with income-related deductibles. Thirdly, the single-option scheme with voluntary income-related deductibles provides a wider choice than the two-option scheme, and thereby it increases the responsiveness to consumers' preferences.



<http://www.springer.com/978-3-642-10793-1>

Health Care Financing and Insurance
Options for Design

Paolucci, F.

2011, XI, 115 p., Hardcover

ISBN: 978-3-642-10793-1