Chapter 6
Financing Healthcare: A Gordian Knot Waiting to Be Cut

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Abstract The difficulties in financing healthcare in Sweden will increase in the future. Based on simulations with a dynamic micro-simulation model (SESIM), where individual healthcare expenditure is a function of *inter alia* health status, we expect a 30% increase between 2000 and 2040 in the total number of bed days for the whole population, due mainly to an increasing population of the oldest old. Hence, the ageing of the population is not just an issue of shifting the cost of dying to older ages. At the same time, the development of new technologies and the way these are disseminated across patient groups will continue to raise the cost of high-quality care. While there is likely to be some scope for greater efficiency on the supply side, changes in the institutional structure are unlikely to be drastic and even drastic policies may have relatively little to offer in practice. Explicitly giving low priority to elderly patients in the way implied by straightforward QALY calculations or the "fair innings" argument will hardly be accepted by Swedes in general. Hence, in the absence of politicians with the impact of someone like Alexander the Great, the future seems to have in store longer queues, greater reliance on private insurance, and political equivocation.

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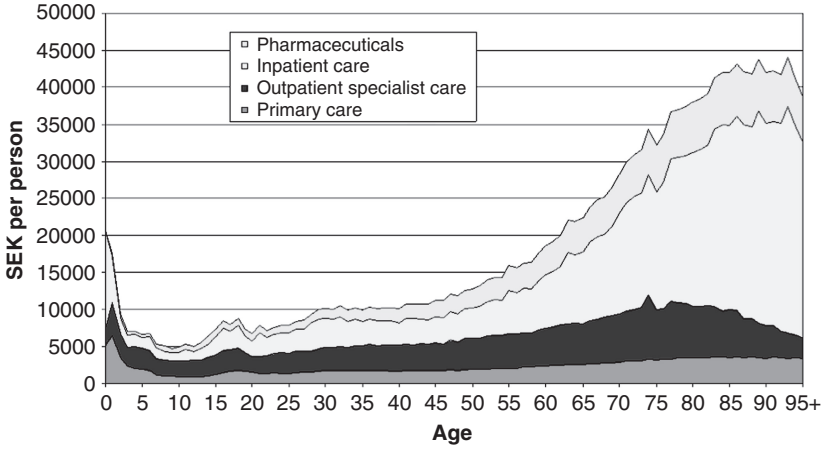

Fig. 6.1 Healthcare cost per person by age and type of healthcare, County Region of Skåne, Sweden 2004
Source: Pontus Johansson, Ministry of Health and Social Affairs. Calculations based on data from the County Region of Scania, Sweden

6.1 Introduction

The purpose of this chapter is to present the challenges that an ageing population poses for the financing of Swedish healthcare and to explore possible responses and solutions. The latter, we argue, mostly turn out to be non-solutions when critically and realistically examined. What we seem to need is a Swedish (democratic) Alexander, with the will, nerve and clout to introduce unprecedented policy measures.

The outline of this chapter is as follows: we will begin by providing some general characteristics of, and data on, the Swedish healthcare system with emphasis on elderly patients. The challenges of the ageing Swedish population will then be illustrated by presenting the results from micro-simulations of some future scenarios for the Swedish over-65 population. We will focus on inpatient care, because it is the dominant type of healthcare service in Sweden and since the annual cost for this care per person aged 65 and older increases faster than for other types of healthcare. Figure 6.1 shows the observed healthcare cost per capita in Sweden in 2004 by age (1-year age groups from 1 to 95) and by four types of healthcare (primary healthcare; specialist outpatient care provided in hospitals; pharmaceuticals; and inpatient care). It may be observed already here that the reason why we observe that healthcare costs per capita increase with age, and especially above 65 years of age, is not ageing per se even though old age may contribute, but mainly because of the fact that the probability for bad health increases with age and, hence, so does the demand for healthcare.[1]

[1]There is some literature showing that health status, i.e. ill health – maybe not totally surprisingly – is the most important factor determining the demand for inpatient care; see, for instance, Cameron et al.

6.2 The Swedish Healthcare System

The Swedish healthcare system is often characterised as a National Health Service (or Beveridge) model (Freeman 2000; Blank and Burau 2004). However, even though it is both financed by taxes and organised as a government responsibility, it has developed over time as a decentralised rather than a national system (Lindgren 1995). In Europe, only Finland has a more decentralised system (Häkkinen 2005). Most political decisions regarding health and healthcare are taken at the level of the (presently 20) county councils and 290 municipalities in Sweden. County councils and municipalities are local governments with high degrees of constitutional independence from central government and with the power to levy proportional income taxes on their residents in order to finance their activities.[2]

Central government has a more passive role in healthcare. Apart from supervising the fulfilment of the overall objectives of the healthcare legislation, which puts a strong emphasis on equity,[3] its influence is primarily manifested through indirect measures such as general and targeted subsidies. It can also impose ceilings on county council and municipality taxes, but only temporarily. Moreover, central government supervises healthcare personnel and performs evaluations of Swedish healthcare and related social issues through the National Board of Health and Welfare. Through the National Social Insurance Board, it administers the Swedish health insurance system. Although compulsory and financed through proportional payroll taxes, health insurance plays a minor role in the financing of healthcare in Sweden. Its primary purpose is to compensate individuals for income losses in periods of reduced capacity to work due to ill health. Until the early 2000s, health insurance also subsidised outpatients' expenditures on (prescription) pharmaceuticals. Finally, through the Pharmaceutical Benefits Board, central government controls which pharmaceuticals are available to patients at subsidised prices. Anell (2005) provides an updated account of the main characteristics of the Swedish healthcare system and how it has developed since the early 1990s.

(1988), Nolan (1993), Gerdtham (1997), Holly et al. (1998), Harmon and Nolan (2001), Gravelle et al. (2003), Iversen and Kopperud (2003), Höfter (2006), and Bolin et al. (2008b). There is a corresponding literature focusing on physician visits. Bolin et al. (2009), using individual data from ten European countries, show, for instance that individual health status explains 50% of the difference in the number of physician visits.

[2]As a matter of fact, most public services in Sweden, excluding defense, law and order, fall under the responsibility of either the county councils or the municipalities, whereas the central-government budget (including social insurance) includes most of the transfer payments. Healthcare accounts for ~85% of county council expenditures on average, the remaining 15% mainly being financial support to local theatres, concert halls, museums, and local public transport. Healthcare (for elderly suffering from long-standing illness) accounts for roughly 5 percent of municipality expenditures; main responsibilities are primary and secondary education and social services for all ages.

[3]The objective of the Swedish healthcare system is to "provide good health and healthcare on equal terms for the entire population regardless of where a person lives, and regardless of his or her income" (Swedish Healthcare Act 1982, SFS 1982, p. 763).

Out-of-pocket payments for patients are usually slightly higher in Sweden than in other European countries (Oliver et al. 2005). Moreover, since decisions concerning fees are made at the local level, they vary among the counties and municipalities (Sveriges kommuner och landsting 2007). For a regular primary-care visit, the lowest fee in 2007 was 100 SEK while the highest was 50% higher, i.e., 150 SEK. The fee for a visit to a specialist varied between 200 SEK and 300 SEK. Patient fees are subject to a cap, though, effectively limiting the maximum amount of out-of-pocket payments for services during a 12-month period to 900 SEK, which is the same for all counties. The maximum fee for inpatient care was 80 SEK per bed and day. Unlike many other countries in Europe, primary care does not serve as a gate-keeper. A referral from a primary care physician is normally not needed in order to visit a specialist at the hospital; the patient may have to pay a higher fee without a referral, though.

Regarding pharmaceuticals, patients pay the full amount for over-the-counter drugs, while pharmaceuticals prescribed to outpatients are subsidised at an increasing rate after the first 900 SEK. They are also subject to a cap, implying that the maximum amount of out-of-pocket payments for prescription drugs during a 12-month period is limited to 1,800 SEK. Pharmaceuticals consumed during inpatient care are free of charge. For dental care, patients pay the major part of treatment costs out of pocket.

Patients aged 65 and above pay lower fees for hospital care in most counties and lower fees for dental care in all counties (Sveriges kommuner och landsting 2007). Some counties apply reduced hospital fees for patients with low incomes while others do the same for patients with longer hospital stays, both being categories which include a large number of elderly. In one county, those aged 65 and above pay considerably lower fees for primary care and specialist visits. Another county applies lower fees for visits to geriatric specialists. Differences in fee schemes among counties result in that the elderly, often with long-standing illness, pay quite differently, depending on where in Sweden they live (National Board of Health and Welfare 2002).

In the 1990s, a few county councils tried paying providers according to predetermined rates based on the DRG (Diagnosis Related Groups) system. There were also attempts to introduce capitation payment systems in a family doctor-based primary care system.[4] Such systems are still used for paying private providers, but less so for public providers, the exception being public providers of family doctor services. County council block grants are currently the most common way of financing both inpatient and outpatient care. Publicly employed physicians and other personnel receive monthly salaries irrespective of performance. Performance-related remuneration is presently being tested, however, in order to improve performance, for instance, in the county of Stockholm.

[4]Capitation payment denotes a reimbursement system where a provider of healthcare (often a GP) is paid a fixed amount per person (often listed patients) for a given period (often one year), the important aspect being that the payment does not vary with the amount of services provided (e.g., patient visits).

The political responsibilities for financing and delivering healthcare are divided between the county councils and the municipalities.[5] While the municipalities have held the entire responsibility for old-age social care and assistance for centuries, they are also since 1992 responsible for taking care of elderly people with long-standing illness, both with reference to long-term care and, for instance, short-term recovery after an elderly patient is considered to be medically "discharge-ready" from hospital. Municipalities are then supposed to deliver the care and assistance that the discharge-ready patient may need. If a municipality cannot provide a bed in a nursing-home for a patient to recover, however, the prolonged stay in hospital will have to be paid for by the municipality. Since bed-days in hospital are much more expensive than in nursing-homes, there are certainly strong incentives for municipalities to plan for a sufficient capacity of nursing-home care.

Total national expenditures for healthcare are politically determined in all countries, either directly through closed budgets or through the legislation and rules governing healthcare (Zweifel and Breyer 1997). In Sweden, total budgets for healthcare are, to a very large degree, directly determined by political decisions; the exceptions are expenditures for dental care and for eyeglasses, etc, which are open systems and, as such, also expenditures determined by the reactions by consumers and producers to the rules set by government. In 2005, total expenditures on health accounted for 9.1% of the Swedish GDP, which is slightly above the reported OECD average of 8.9%.[6] That total spending on health is dependent on what a country can afford rather than what it may need was concluded already in 1949 by the late Swedish economist, Sven Rydenfelt (1949). Moreover, healthcare also appears to be a luxury good. Thus, there is a long-term trend that countries with a higher GDP per capita also spend a larger share on health. Hence, the USA by far spends the largest share; the Swedish share is roughly as expected, judging from its GDP level. Public funding is dominant in all OECD countries, the exceptions being the USA and Mexico. In Sweden, 85% of health expenditure was funded by public sources, somewhat above the OECD average of 73%. Approximately 70% of total Swedish healthcare expenditures is financed by county council and municipality taxes, about 15% by central government taxes (general and targeted subsidies), and around 15% by patients' out-of-pocket payments (National Board of Health and Welfare 2007).

Some 30 laws regulate the organisation, financing, and delivery of Swedish healthcare (Lindgren 2006). The most important, however, is the Swedish Healthcare Act (SFS 1982).[7] It should be noted that the Act does not award patients many rights. Instead, county councils and municipalities are legally and mandatorily

[5]There is one exception, however. The municipality of Gotland is responsible for all healthcare services within the municipality and serves in this capacity as a county council of its own.

[6]These figures relate to country definitions of healthcare expenditures, though, and are not strictly comparable. A System of Health Accounts with common definitions has been proposed by the OECD, and Sweden produced its first estimates in 2008, covering the years 2001–2006. According to these estimates, healthcare expenditures accounted for 9.2% of GDP in 2005.

[7]The Healthcare Act has been amended several times since 1982, sometimes back and forth, depending on changing political majorities in the Swedish Parliament.

responsible for providing the healthcare that residents in Sweden need. There are no sanctions stated in the Act against county councils or municipalities that do not follow the Healthcare Act, so there are few, if any, possibilities for individual patients or for central government to force county councils and municipalities to follow the Act. Evaluations carried out by the National Board of Health and Welfare show that county councils and municipalities – claiming their constitutional independence from central government – often act contrary to the Act and other central government regulations (National Board of Health and Welfare 2005).

The share of privately provided healthcare varies substantially among counties – from 2 to 23% (with 10% on average for Sweden as a whole). Private healthcare consists mostly of primary care; in 2007, there were only three privately operated hospitals. Most privately provided care is tax-financed through contracts with a county council or a municipality. Differences in the amount of private healthcare among counties reflect past and present local political majorities.

However, even though the share of privately provided healthcare in Sweden is fairly small compared with other European countries (Oliver et al. 2005), this certainly does not imply that the Healthcare Act or any other central government regulation forbids private provision of healthcare. As a matter of fact, a county council might, in principle, let private providers take over the delivery of all healthcare services within the county (including healthcare delivered by university hospitals).[8] In such a case, the county council or the municipality would become a kind of local healthcare insurance monopoly, with a flat, non-risk related, premium (tax rate) depending on annual income. As is obvious from the above, no county council (and no municipality) has chosen such a solution. According to the National Plan for Developing Healthcare in Sweden, the share of private provision was supposed to increase in order to introduce more alternatives for patients and more competition among providers (National Board of Health and Welfare 2005). There is no clear trend towards more private provision, though. At the time of writing (spring 2008), some county councils are introducing free entry for primary care physicians with a mixture of capitation payment and fee-for-service reimbursement for listed patients. Given the evidence from such initiatives in the past, though, they may very well be withdrawn after the next general election in 2010, depending on the political party/-ies in power.

6.3 Simulating the Development of Inpatient Care 2000–2040

In order to analyse the challenges posed by an ageing Swedish population to healthcare financing, we chose to focus on inpatient care. Even though it might be tempting and comparatively simple to make projections of future healthcare

[8]Between 1 January 2006 and 30 June 2007, however, an amendment to the Healthcare Act, passed by Parliament during a social democratic minority cabinet, introduced some exceptions to this paragraph. They were all abolished when the present (at the time of writing) right-centre majority coalition took over central government.

expenditures based on expected demographic changes and age-specific costs per capita alone, we did not pursue that line of investigation (this has been done before in various countries on a number of occasions),[9] preferring a completely different analytical approach. It is obvious, both from common sense and from a number of studies (some of which are referred to in the introduction of this chapter) that sick people of all ages are likely to incur relatively high healthcare costs, while healthy people in all age cohorts will incur relatively low costs. Thus, the most important determinant of inpatient healthcare utilization is not age *per se* but health status. There are also some other important individual characteristics to consider.

Our approach differs in two respects from the previous literature. First, rather than making some ad hoc estimates of the impact of age and/or nearness to death on healthcare expenditures, we based our projections on a firm theoretical foundation, namely the Grossman model of the individual-as-producer of his or her own health (Grossman 1972, 2000). In the theoretical Grossman model, extended in a number of ways, for instance, by Liljas (1998), Jacobson (2000), and Bolin et al. (2001, 2002a, b), individuals (or families in the extended models) invest in health by combining health promoting and preventive measures as well as curative measures with their own time in order to produce health. The trade-off between health and other commodities is determined by individual preferences.

The effects on health of (gross) investments in health are reduced, however, by the depreciation of health capital. The depreciation rate is assumed to increase with age and net investments will eventually become negative and health decline.[10] Whether this means that the demand for healthcare, which is one of the "market"-good inputs in the individual's production of his or her own health, and the use of the individual's own time decrease, increase, or remain the same is determined not only by demand but also by supply factors. A rise in the depreciation rate will reduce not

[9]In general, predictions of rapid growth in expenditures based on such projections have not been reflected in observed data; see, for instance, the overview by Payne et al. (2007). Based on retrospective studies that count individual healthcare expenditures backwards from time of death, it has been strongly argued that age is not an important determinant of expenditures and projections should be based on time-to-death rather than age (Zweifel et al. 1999). The empirical evidence seems to be mixed, however, and there is still no consensus in the literature (Payne et al. 2007). Moreover, while retrospective studies can be used to "explain" the impact of actual time to death, they have more limited value in predictions at the individual level, since actual time to death cannot be observed before death. One exception is a recent study, which does not study actual time to death retrospectively but rather predicts life expectancy (Shang and Goldman 2008). The authors found that age had little additional predictive power on healthcare expenditures after controlling for life expectancy. They also found that the predictive power of life expectancy itself diminished after the introduction of individual health variables. This should not come as much of a surprise, since there is firm evidence that health status, in particular self-assessed health, strongly predicts mortality; see, for instance, Mossey and Shapiro (1982), Idler and Benyamini (1997), Benyamini and Idler (1999), van Doorslaer and Gerdtham (2003), Helweg-Larsen et al. (2003), Baron-Epel et al. (2004) and Benjamins et al. (2004).

[10]It should be observed that an individual may also choose an unhealthy lifestyle that adds to the negative impact of depreciation and reduces the positive effects of healthcare and other inputs in the (gross) health investment production function of the individual.

only the amount of health demanded but also reduce the amount of health supplied by a given amount of gross investment. Under realistic assumptions, however, it is likely that the change in supply exceeds the change in demand, hence providing the individual with an incentive to close the gap by increasing gross investment (Grossman 2000, pp. 369–370). Gross investment and the depreciation rate will then be positively correlated over the life cycle, while gross investment and health will be negatively correlated. In other words, according to the Grossman model, it is likely that old (and unhealthy) people will make larger gross investments in health than young (and healthy) people. This also means that both age (due to the age-dependent depreciation rate) and health status (as the desired state) are important determinants for healthcare expenditures at the individual level.[11]

Second, rather than making projections directly regarding aggregate healthcare expenditures from a single equation, we use the results of micro-simulations where the behaviour, actions and interactions of individuals over their life-cycle are modelled. Certainly, a dynamic micro-simulation model does not provide forecasts, but it can answer some relevant "what . . . if"-questions. What will happen to total healthcare expenditures and the possibilities to finance them if the Swedish economy, the regulatory framework, technology, demography and so on develop in the future as they have in the past? What will happen if the health status of individuals develops in a better or worse direction than before? And so it continues. The answers will be provided by the sum of all actions and interactions taken by model individuals as responses to (new) circumstances included in the model. One way to look upon a micro-simulation model is as a kind of laboratory in which it is possible to evaluate alternative policies or other changing circumstances.

The simulation results that we report here were obtained from a dynamic micro-simulation model, SESIM from the Swedish Ministry of Finance. SESIM has recently been extended to include, inter alia, modules covering changes in health status and the use of inpatient care (Klevmarken and Lindgren 2008a). To assess the impact of the elderly on inpatient costs and the ability of society to provide for them, we will make use of some of the scenarios of this extended version of the SESIM model, presented in Chaps. 10, 12 and 13 of Klevmarken and Lindgren (2008a).

6.3.1 Some Characteristics of the Simulation Model

Events (variables) in SESIM are updated in a yearly sequence. The start year is 1999 and every individual included in the initial sample of about 100,000 individuals

[11]It does not follow from the Grossman model that the demand for healthcare as an input in the health investment production function for a given health status would be the same, irrespective of age. This seems to be a somewhat common misunderstanding in the literature; see, for instance, Payne et al. (2007, p. 245), and Shang and Goldman (2008).

goes through a large number of events, reflecting real life phenomena, like education, marriage, having children, working, retirement, and so on.[12]

The health status of an individual is simulated in the model.[13] The probability of a better health status is greater for an individual who has higher relative income, who has longer education and who has children. Being married or co-habiting, being born in Sweden, and being male also contribute to a better health status. Divorcees are less likely to be healthy than those who never have been married or cohabiting, and health decreases with age. The health status in the previous year is the most important factor for the current health of the individual.[14] The model simulates a decreasing health status for the elderly population over the years. This reflects observations made that the trend towards ever-healthier elderly seems to have been broken. The share of young and middle-aged Swedish men and women reporting a very good or good health status to the Swedish Survey of Living Conditions started to decline already in the early 1990s. As the cohorts are greying, the share of elderly people in good health has now started to decline, too (Klevmarken and Lindgren 2008b).

The health status of the individual together with, for example, age, education, relative income, gender, civil status (divorced), and foreign country of birth, determine the probability of the individual having an inpatient stay at hospital and, if so, the length of the stay.[15] The effect of health status is negative, i.e. people in bad health utilise more inpatient days. Being a man, being born in Sweden and being divorced all increase the expected number of days of inpatient care. Finally, the more inpatient care that was utilised in the previous year, the more inpatient care will be used in the current year.

6.3.2 Base-Case Scenario

We will now reproduce some results of the simulations. First, however, we re-emphasise that the simulations of the future should not be interpreted as predictions. Each scenario is based on a set of assumptions, and the model simulates the development over time following on from these assumptions. To some extent, all scenarios mirror the properties of the Swedish population, economy, rules and regulations from the 1990s and the first few years of the twenty-first century. The demographic changes in the simulation model correspond to the main projection from Statistics Sweden. In the base-case scenario, the expected lifespan is supposed

[12]For a presentation of the model, see Flood (2008).

[13]The indicator for health status is the health index, suggested by Statistics Sweden (1992). It has four levels, representing combinations of self-assessed health, etc as reported in the ULF data.

[14]The econometric estimations of the empirical version of the Grossman model on which the simulation module for health is based are reported in Bolin et al. (2008a).

[15]The econometric estimations on which the simulation module for inpatient care is based are reported in Bolin et al. (2008b).

to increase between year 2000 and 2040 from 78 to 83 years of age for a newborn boy and from 82 to 86 years of age for a newborn girl. Moreover, the macro-economic development is fed into the simulation model through a number of indicators such as the general growth in wage rates, the rate of inflation and the return on real and financial assets (Flood 2008).

Figures 6.2 and 6.3 show the simulated development of the total number of days of inpatient care for the populations aged 50–74 and 75 and above, respectively. The increase in the total number of days for both men and women in the population aged 50–74 are mainly due to increases in population size. That the female population aged 75+ has more days in inpatient care during 2000–2030 than the corresponding male population, despite the fact that a man on average spends more days in inpatient care, is explained by the fact that there are more women than men in these age groups. A relative increase in the total number of men explains why the male cohort appears to catch up towards 2040. The number of days of inpatient care increases by 80% for people aged 75 and above, and by 70% for those aged 65 and above.

6.3.3 *Improved Health Progression with and Without Decreased Risk of Death*

We will now turn out attention to some alternative scenarios. First, what would happen if, for some reason, health progression for the elderly were better than in the

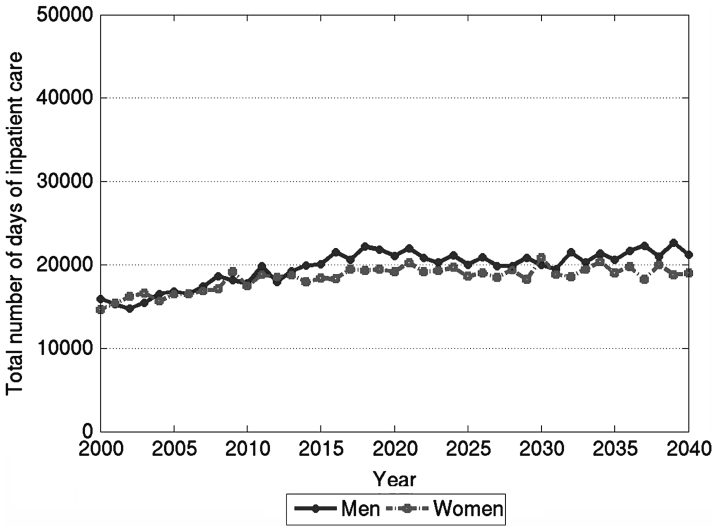

Fig. 6.2 Simulated development of total number of days of inpatient care for the population aged 50–74, men and women respectively
Source: Bolin et al. (2008b)

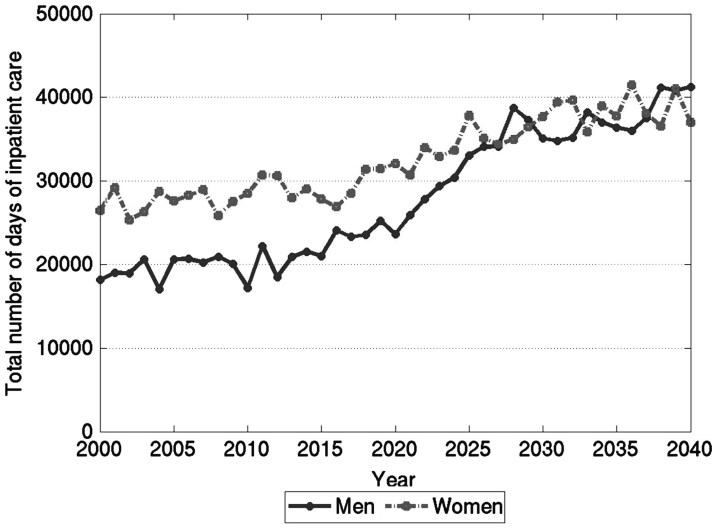

Fig. 6.3 Simulated development of total number of days of inpatient care for the population aged 75 and above, men and women respectively
Source: Bolin et al. (2008b)

base-case scenario?[16] To answer that question, the health index for those aged 40–90 was adjusted proportionally to their age minus 40 and the calendar year minus 2000 in such a way that a 90-year old person in 2040 will have the same health as an 80-year old in the base-case scenario. Since improved health status also should lead to a decreased risk of death and a longer life expectancy, an alternative simulation scenario lets each individual after year 2010 and after the age of 35–40 to enjoy the same risk of death as a person five years younger in the base case scenario.

Improvements in health as mentioned above would nevertheless not change the health status distribution of the entire population significantly. Compared to the base case scenario, the share of people with a severe health status would only reduce from 7.3 to 6.1% in 2040. Improved health per se should imply that the demand for healthcare decreases in comparison to the base-case scenario, and so it does, but only marginally for those aged 65+. On the other hand, if the improvement in health also led to more people surviving as above, the number of hospital days would increase by 150% for people 65 and above, due to the fact that there would be more elderly and the average age of the elderly would be higher. In the base-case scenario, the total number of days would increase by "only" 70% for the group aged 65+.

[16]Actually, the most recent ULF study reported that the health status of the Swedish population was higher in 2005 than in 2004. This is just one single observation, though, so it seems too early to conclude that the observed negative trend has been broken.

Increased utilisation per se implies higher costs for inpatient care. The cost increase would obviously be more pronounced if the unit cost of care also increased, as it certainly has in the past, due to demands for higher quality driven by increases in income. Assuming that the cost for a day in a hospital increases by the assumed real increases in the average wage rate and in the CPI, and that people also live longer as above, the total cost in 2040 would be six times of that in 2000. In scenarios without increases in life expectancy, total costs would increase by a factor of 3.6–3.7.

At least two caveats are in order. First, the SESIM simulation model still does not include a link between health status and mortality rate, even though there certainly is a strong association.[17] This means that the simulations probably overestimate the demand for inpatient care either because there would be fewer survivors among the elderly or because some of those individuals that have been simulated to have severe health problems would, in fact, have died. To include the link between health status and mortality at the individual level was left for future development work.[18]

Second, it should be emphasised that the simulations assume that the utilisation of healthcare follows the same pattern as in the 1990s, which generated the data that was used to estimate the model. If policy changes and these services become provided according to new principles or if the share of private services increases, the results would change, of course. The simulations should be seen as indicative of what might be needed, if public policy remained unchanged in these respects.

6.3.4 Incomes of People in Old Age

According to the simulation model, direct taxes paid by the household sector, using the tax system of 2005/2006, would increase at a much slower rate than the utilization and costs of healthcare. An indicator of the potential for increases in user charges is the poverty rate of the elderly.

In 2000, only 1–2% of those aged 65+ were poor. As the simulations proceed, the poverty rate would increase gradually. In the base-case scenario, the rate reached the high figures of 14–16% in 2040, and alternative scenarios gave the same general picture. There would, hence, be a rather large share of the elderly who would have great difficulties in paying higher out-of-pocket charges for healthcare.

[17]See footnote 9.

[18]Further developments of the model, including this association, is ongoing at the time of writing in a project led by one of the authors (Lindgren) and financed by the Swedish Ministry of Health and Social Affairs. The development work also includes modules for primary healthcare, outpatient specialist care at hospitals, and pharmaceuticals.

6.4 Not a Non-issue

It is obvious from a quick glance at healthcare statistics that per capita healthcare utilization increases with age, with dramatic increases among the oldest old (cf. Fig. 6.1). It is also a well-known argument in the health economics literature that this fact, based on cross-sectional data, does not necessarily imply that overall healthcare utilization will increase as life-expectancy increases. A pertinent fact (the "cost-of-dying" argument) is that healthcare utilization is very high in (roughly) the two last years of a person's life, irrespective of whether you die at 60 or at 90, so healthcare expenditure rises not with age but with proximity to death.[19]

Consequently, to clear the ground, it is important to emphasise once again that we use a different approach and base our view of the future level of expenditures on simulations, where individual healthcare expenditure is a function of *inter alia* health status. The estimated overall increase in the number of bed days in the population is largely an effect of a growing number of elderly (not of increasing life expectancy). The time-to-death effects are accounted for to the extent that they are reflected in the relationship between health status and utilisation of healthcare, which arguably ought to be the case (Shang and Goldman (2008) show that the predictive power of life expectancy for healthcare expenditure diminishes when individual health variables are introduced).

In other words, we are unfortunately confident that the effect of the ageing of the Swedish population on healthcare expenditure is not a non-issue. Based on the simulations and our reading of the literature, we would argue that healthcare expenditures per capita will increase as the proportion of elderly in the population increases in the coming decades.

Before proceeding, we also note that the relationship between age (and time-to-death) and expenditure is unlikely to be stable over time (Payne et al. 2007). As the proportion of elderly grows, their political influence as well as their influence as consumers will increase, likely increasing healthcare expenditure among the elderly due to more use of expensive treatments, less implicit age discrimination, and so on (Dozet et al. 2002). Furthermore, the relationship will change with shifts in the organisation of healthcare and medical technology. For such reasons, the relationships will to some extent be country specific.

The simulation results presented above suggest that the demand for inpatient care will increase substantially in Sweden over the coming decades, with roughly a 30% increase between 2000 and 2040 in the total number of bed days for the whole population, due mainly to an increasing population of oldest old. This suggests an

[19]Cf. Seshamani and Gray (2004) and Werblow et al. (2007), and footnote 9. A central question is whether, as mortality falls, there is a compression or expansion of the period of morbidity towards the end of life. Even if there is a compression of morbidity, it does not necessarily translate into reduced expenditure in the future, as the compression may in fact be the result of increasing healthcare expenditure (Payne et al. 2007, p. 245). We only deal with healthcare. Obviously, we expect that with increasing life-expectancy, there will be more years when the individual requires social assistance (see Edebalk, Chap. 5 in this volume).

increasing gap between the level of expenditure necessary to satisfy demand and the resources available, unless "something" changes. In Sweden, this "something" could be an increase in income taxation, but then again, probably not (see Chap. 3). The next question, which we will explore in the following sections, is whether changes *within* the healthcare sector offer a potential for closing the gap between available resources and the demand for healthcare.

The simulation model by necessity takes many factors as exogenously given. Most importantly, it takes as given the institutional structure and technology. These are two of the most important factors that shape the functioning of society (North 1981, 1990, 2005). Additionally, the simulation is based on factors that are assumed to affect the demand for inpatient care, whereas obviously utilisation is determined by both demand and supply side factors. This is particularly noteworthy in healthcare; here providers typically have huge informational advantages over consumers. "The noteworthy point is not simply that it is difficult for the consumer to judge quality before the purchase [. . .] but that it is difficult even after the purchase" (Weisbrod 1978, p. 52). There is a vast literature that focuses on how providers, especially doctors, may take advantage of the informational asymmetry to further their own interests (McGuire 2000).

Hence, the following investigation into possible ways to handle the prospect of a substantially increased demand for healthcare will begin by asking to what extent the upward pressure on healthcare expenditure can be mitigated by changes in technology or in the institutional structure, where we will focus in particular on the supply side.

6.5 Non-solution One: Technological Development

Technological change is – together with the emergence of democracy – the most outstanding characteristic of the last two centuries. It has fundamentally changed life in the industrialised world and provided the basis for an unprecedented increase in real incomes and living standards. Similarly, one of the outstanding characteristics of modern medicine is that it is a moving target. New technologies emerge continuously, information is rapidly disseminated through conferences, articles and so on, and the new technologies are gradually adopted all over the industrialised world.

The innovation process is however not random. On the contrary, whether there will be technological advances that reduce the cost of treatment of different diagnoses depends crucially on whether there are incentives to produce such new technologies. And the pertinent fact is that the incentives in the healthcare sector for long have been biased towards cost-increasing technologies (Weisbrod 1991).

Advances in technology are generally regarded as one of the main contributors to the rising healthcare costs during the last 50 years (Fuchs 1996, 1999; Newhouse 1992), together with rising real incomes. Even new technologies that on the face of it may look like cost-reducing innovations often lead to increases in expenditure because new patient groups are considered for treatment (Cutler and Huckman

2003). Evidence from the RAND health insurance experiment suggests that, of the sevenfold increase in healthcare expenditure between 1950 and 1984 in the US, only perhaps one fifth is due to the combination of an increase in the coverage of health insurance and the rise in real incomes, with technological change being a very good candidate for the other four fifths (Manning et al. 1987). In the context of the effect of ageing, Breyer and Felder (2006) suggest a substantial age-independent growth factor of 1% in per capita expenditure due to technological change, while Fuchs (1999) estimates a 4–5% increase in age-specific per capita expenditures among the elderly in the US over the period 1987–1995, due to both new technologies and to an increased use of existing ones.

Many years ago, Victor Fuchs (1968) coined the term "technological imperative" to describe decision making in healthcare: "always give the best care that is technically possible". One possible interpretation of this is that it is a "health imperative", which disqualifies the introduction of a new technology if it in practice would lead to a worse health outcome, even if using it would increase efficiency in health production by lowering costs. Cost-efficient technologies that lead to smaller health gains are even less likely to be contenders in medical practice if there also is a "professional imperative," implying a tendency to provide more healthcare as long as there is any positive contribution to health (Lyttkens 1999).

There are two important issues here. One is the propensity to use medical technologies with little regard to the cost side, as long as they promise to deliver a superior health outcome. The other is the disqualification of a potential category of cost-reducing innovations. The most important effect of this characteristic of *current* decision-making in medical practice is that it will have repercussions on R&D, i.e. on *future* technologies. Both factors bias the innovation process towards cost-increasing technologies. Efforts to find new medical treatments will normally be focussed on innovations that are likely to be utilised (obvious for private companies, but arguably also relevant for, e.g., altruistic doctors). Therefore, in the foreseeable future, we are likely to witness a continued predominance of cost-increasing new technologies. It is worth emphasising that it does not matter where in the world new technologies are developed, as they all quickly become available to, for instance, Swedish doctors. The largest markets have the strongest impact on technological change (in particular the US).

While the bias in terms of ignoring the cost side in the choice of treatments has been under attack across the OECD (with varying success) for several decades, the bias involved in disqualifying certain cost-reducing innovations is probably unaffected. Additionally, with a growing proportion of elderly in the populations, we can expect more innovations to be directed towards their health problems.

One factor behind the technological imperative is the ubiquitous presence of third party financing, which often is so structured as to leave both patient and doctor without incentive to consider the costs of treatment. For many years, retrospective cost reimbursement characterised much of the healthcare markets across countries. This typified both the US market with insurance companies that just picked up the bills, and public budgets with soft budget constraints (Kornai et al. 2003). The predominance of retrospective cost-reimbursement has abated, with Health

Maintenance Organization-type arrangements in the US, an increasing use of DRG payment schemes, and the introduction of capitation payment, financial incentives and quasi-markets in Europe.[20] However, in many settings, it is still the case that choosing the costlier option will have negligible negative effects on patient or doctor. This is arguably the best approximation of the situation in Sweden.

Furthermore, while several of these measures are aimed at restricting access to expensive treatments (gatekeeper systems) or attempting to ensure that they are used in a technically and allocatively efficient manner (DRG), they do not deal with the issue of whether a new expensive technology will be used at all. A more restrictive attitude could, however, be expected under capitation schemes (e.g., GP fund holders or global budgets with hard budget constraints).

It is obvious that individuals are willing to enter contracts which restrict their access to inpatient care (HMOs), and it seems possible that they would contemplate a contract that excludes them from some esoteric treatment for a rare disease. However, we find it unlikely that patients in industrialised countries would enter into contracts that entail a choice of treatments that are less likely to improve their health for a given diagnosis than other existing treatments (one may note that HMOs have suffered from declining popularity in the US (Folland et al. 2007, p. 245).[21]

It is often the case that a new technology is first tried on younger patients (probably on the presumption that the health gain is more uncertain for elderly patients, but also perhaps because younger patients are more active consumers, and in some cases due to an implicit prioritisation by age). However, this is often followed by a process of age diffusion, where utilisation of the technology is increasingly shifted towards the elderly (Dozet et al. 2002; Nystedt and Lyttkens 2003). For example, from 1982 to 1994 the mean age of patients undergoing bypass operations increased in Sweden by 1 year for each calendar year, from 54 years of age in 1982 to 65 years in 1994.

Furthermore, the speed with which information about new technologies spreads to consumers is increasing rapidly, in particular due to the internet. Hence, a Swedish patient who is not offered a particular treatment will quickly find that it is available in, for instance, Denmark or Germany. Despite current efforts to restrict the possibilities for Swedish patients to be reimbursed for elective treatments obtained in other countries (essentially it is required that the treatment is approved by the county council beforehand), we doubt that it will be politically feasible to maintain such restrictions, if access to significant technologies is not provided by

[20]A Health Maintenance Organization provides the entire healthcare needed in lieu of a yearly advance payment. This is also in principle a capitation system. DRG payments (Diagnostic Related Groups) represent a prospective reimbursement scheme in the sense that the amount a provider will be paid for a patient with a particular diagnosis is predetermined. However, the payment has come to vary with the intensity of treatment (McClellan 1997), making it less different from a fee-for-service system.

[21]In the important US market there is also a legal aspect. The provider is likely to be the object of liability suits unless the patient receives the best available technology (which again would mean the one that maximises health outcome, not the most cost-efficient one).

the Swedish healthcare sector. It would, for example, mean that more affluent patients could pay privately and thereby gain access to treatments that are unavailable to the majority of citizens.

Consequently, over time it would not be a politically feasible solution to provide less effective medical technologies in Sweden. Generally, this follows from the fact that current generations in Sweden have lived under the umbrella of the welfare state – with its emphasis on equity – for several decades, and it holds in particular as Sweden is a member of the EU with its declared goal of free movement of individuals and so on. Those who are entering into retirement from now on are also much more used to travelling abroad than previous generations.

We argued above that the ageing of the population will increase healthcare expenditure. In view of the importance of technological change for future healthcare costs, one could actually argue that the most important message from the literature on the effect of the ageing of the population is that it will *not reduce* healthcare expenditure and hence leaves us with the unmitigated consequences of technological change.

6.6 Non-solution Two: Institutional Change

In this section, we will discuss whether institutional change might serve to reduce the upward pressure on healthcare expenditure. We will assume that the aim of Swedish healthcare policy will continue to be to ensure good quality care for everybody, implying that healthcare should continue to be (mainly) publicly financed.[22]

Not wanting to sound unduly pessimistic, it is nevertheless worth noting that more or less "everybody" has been trying to achieve cost-containment in their healthcare systems over the past 25 years, and without much apparent success (though we do not know the counterfactual). Healthcare expenditure has continued to increase as a percentage of GDP; the apparent reduction in growth in the 1990s seems to have been temporary. So what is there to say that we would be more successful in the future? Furthermore, Sweden has relatively low healthcare costs as it stands – if we compare with OECD countries at similar income levels, eight of thirteen countries have higher per capita expenditure than Sweden (defining "similar income" as +/− 10% of GDP per capita, and adjusting expenditure levels on the assumption that the income elasticity is 1.0).[23] We also have to consider the fact that while healthcare in Sweden appears to be of high quality, it is not altogether easy to get access to it. There are

[22]Private financing would "solve" the problem with rising expenditures in the sense that private expenditures for healthcare can increase in a way that distortionary taxation cannot. The level of expenditure in, e.g., the US could still be seen as problematic, however, in the sense of representing considerable over-consumption at the margin (sometimes to the extent of being positively unhealthy). Cf. below on the distributional consequences.

[23]Data from *OECD in figures in* 2007.

substantial waiting times for seeing specialists, getting examined and receiving treatment; for example, waiting 90 days or more is common (Swedish Association of Local Authorities and Regions 2008). From this perspective, more healthcare is needed with current technology and demographical structure, not less.

When faced with excess demand for a heavily subsidised good, a natural reaction could be to increase the consumer price thus reducing the quantity demanded. The RAND Health Insurance Experiment showed that expenditure fell when patient fees went up, especially when comparing free care to a system of coinsurance, and that this only had minor consequences for the health of the insured (Manning et al. 1987; Newhouse 1993), though the latter point was not uncontested. It is important to note, however, that this was a cost reduction compared to the US fee-for-service system at that time. We do not know to what extent this experience is relevant for switching from not-insignificant to substantial patient fees in a healthcare system of the Swedish kind, where access is already rationed by queuing. Short run gains may also be overshadowed by belated, and therefore more expensive, treatments in the long run. We are similarly in the dark regarding the health consequences in a Swedish setting.

Any such measure is also likely to have distributional consequences that would be seen as problematic, as people with low incomes would be more prone to abstaining from seeking care. It is arguably politically unfeasible since most of the population have had their view of the world shaped by living in a welfare state (path dependency). To make the distributional consequences more acceptable, one could make the yearly cap on private healthcare expenditure proportional to income. In that case, however, it would add to the excess burden of taxation and therefore qualifies as a non-solution.

One could also consider excluding some treatments from public financing which are currently included in the public budget (Tinghög et al. 2010) or not including new high-cost treatments. This would lead to an increase in private financing (and private health insurance), and it would reduce the problem of excess burden. However, it is unlikely that this could be more than a partial and minor remedy, in particular in view of the fact that access to healthcare is in many cases already severely restricted in Sweden, as mentioned above. The same caveat with respect to distributional consequences as above also applies.

Turning to the supply side, an obvious question is whether incentives can be restructured and the situation saved by increasing efficiency in the production of healthcare. One could extend the use of private production, thus providing public producers with implicit yardstick competition. This would probably have beneficial effects (but cf. below on quality control). The effects may, however, be restricted to a one-time shift in cost level without affecting the long run trend in costs. Furthermore, in order to have full impact, such a system requires willingness to use real sanctions against badly performing public producers. The Swedish experience in this field is not altogether encouraging. There is a widespread reluctance to close down hospitals, and, for example, in the Stockholm area a substantial cost differential between the private and the public hospitals has been allowed to persist (Janlöv 2004). Studies on the efficiency of Swedish healthcare have failed to find an effect of the extent to which private production is used (Janlöv 2007; Gerdtham et al. 1999a, 1999b).

A policy of more general reliance on competitive markets in the production of healthcare would face several problems. Overall, countries that rely heavily on private production tend to have higher healthcare expenditures (although this could be due to other features that tend to go together with the use of competition among producers). The early US experience also showed that competition may focus on quality and thereby serve to increase overall costs, unless it is carefully managed from the buyer's side (Robinson and Luft 1987, 1988; Keeler et al. 1999). The Swedish market is small, and one might well end up with a mixture of local monopolies and oligopolies. It is also worth noting that the system of quality control is adjusted to a situation where producers have no direct financial incentives to skimp on quality. Fuchs (1999) is similarly pessimistic about the possibilities of achieving greater efficiency in the production of healthcare in the US.

A potentially more promising candidate would be to introduce an arrangement similar to the Dutch system. Starting off with a situation of local monopolies, competition among sickness funds was introduced, thus creating what on the face of it was relatively similar to Health Maintenance Organizations in the US. Once again, the RAND experiment showed that HMOs reduced costs (Manning et al. 1984); however, once again, this was in comparison with the fee-for-service system in the US. Alas, we do not know if it would reduce costs compared to a global budget system. The experience in the Netherlands also showed that this kind of competition does not necessarily have a major impact on the production of healthcare, at least in the short and medium term (Schut and Hassink 2002). Be this as it may, in any case we doubt that such a major institutional change will materialise.

It seems obvious that Sweden ought to attempt some experiments with institutional change on the supply side, in the direction discussed above, for example, more use of private alternatives and elements of competition. We believe, however, that these measures are unlikely to be given full force and that, even if they are successful, the impact will not be sufficient to solve the financial problems facing Swedish healthcare in the coming decades.

Overall, attitudes towards reforming the public healthcare branch of the welfare state in the direction of privatisation, market mechanisms, and private topping up of publicly provided services, have been mixed and varied, partly depending on political majorities in parliament and in the county councils. There have been a few attempts to privatise hospitals, but also a law (enacted and abolished) against privatisation of acute care hospitals. Free entry for GPs was introduced in the early 1990s, but was followed by a regulatory framework that enabled the county councils to decide on the establishment of private practices. At present, as mentioned above, the current majority in several county councils are contemplating free entry once again. The private insurance market exists as an alternative provision mechanism, focussed on shortening the time to treatment, rather than a topping-up feature (privately financed patients are normally not treated in public hospitals).

By and large, there is arguably no clear long-term trend in the healthcare sector towards fundamental organisational reform, nor any widespread conviction across political groupings that such reform is necessary (in contrast, minor organisational

reform is a ubiquitous phenomenon[24]). In this respect, the healthcare sector "lags behind" not only the pension system but also the provision of long-term care. In general, there are often considerable vested interests among decision makers in retaining the essentials of the institutional structure, and huge investments in the organisational set-up. If reform is even less likely in healthcare, one may speculate that this is due to a greater reluctance among decision makers in this area to take explicit responsibility for a major systems reform, possibly because at least some of those who utilise healthcare are more vocal in the political arena than those who consume, for example, long-term care.

6.7 Non-solution Three: Explicit Priority Setting (or Do We Believe in the QALY and Nothing but the QALY?)

It has long been noted that economic analyses of the cost-efficiency of different treatments have largely been ignored in public policy. This, however, is changing. Most notably in the area of pharmaceuticals, many countries (including Sweden) now require data on the cost-effectiveness before new pharmaceuticals are approved for public subsidies. Furthermore, the Swedish National Board of Health and Welfare is issuing guidelines for priority setting in the healthcare sector, based on three ethical principles, taken by the Swedish parliament in 1997. One of the principles is cost-effectiveness, but both the human dignity principle and the need or solidarity principle are ranked higher.

An important construct in health economic evaluations is the Quality Adjusted Life Year (QALY). This is a measure that combines effects on life expectancy and on quality of life. Quality of life is measured on a scale from 0 (death) to 1 (perfect health). The number of life years gained is multiplied with the relevant quality of life under those years so that, for example, 5 years with a quality of life of 0.8 would be equivalent to 4 QALYs gained (and equal to 4 years in perfect health). The guidelines of the National Board of Health and Welfare suggested, for example, a few years ago that a cost of 100 000 SEK per QALY is "low" while a cost of 500,000–1,000,000 SEK per QALY is "high" (Jönsson et al. 2004, p. 128).

It has been argued that it is an advantage with the QALY approach that a QALY is given the same value irrespective of who receives it. It has also been criticised for precisely this property, as it ignores distributional considerations such as the health status of different patient groups. With respect to healthcare for the elderly, the important point here is that the QALY approach clearly implies that, *ceteris paribus,* it is more cost-effective to save the life of someone who is 60 years old than someone who is 80 years old. Hence if such cost-effectiveness criteria are

[24]Among economists, this – though undoubtedly well-meant – is often viewed as a reflection of the fact that a politician, faced with dissatisfaction with queues etc, has to be seen to be doing *something*.

implemented, it is likely that diseases that typically appear among the elderly would receive lower priority than they do today.[25]

However, if need is interpreted as health status, which seems to be in line with the government report on priority setting (*Vårdens svåra val*, SOU 1995, p. 5), then the (higher ranked) needs-principle suggests that persons suffering from similar health problems should be given equal priority (irrespective of years left to live). Finally, whether different county councils actually will follow the recommendations of the National Board of Health and Welfare is an open question – experience shows that the county councils often ignore explicit or implicit agreements with the central government.

Furthermore, if we accept the Fair Innings argument proposed by Alan Williams (1997), we should give low priority to those who have aged past the average life-expectancy at birth (in the country of birth). In Sweden this would mean low priority for those aged above 79 (men) or above 82 years (women). However, we doubt that such a principle would be accepted in general and by the elderly in particular as a consistent policy.

Individuals adapt to having health problems and report a relatively high quality of life even if they suffer from, for instance, chronic diseases. From this point of view, one might think that it would be possible to ignore certain healthcare needs among the elderly. However, that would be a mistake. The literature on happiness suggests that happiness can be a relative thing and that it often is determined by your outcome *in relation* to your expectations/aspirations (Frey and Stutzer 2001). And people would arguably expect that all health problems are treated similarly and irrespective of the age of the patient; hence the elderly would become decidedly unhappy if their healthcare needs were ignored.

6.8 Towards a Non-non-solution (or Simulating to Have an Answer)

So, healthcare expenditures will continue to be high and continue rising, and the elderly will not be given low priority. This leaves us with the issue of financing these high expenditures. Above we have found some partial remedies, but these are hardly sufficient. Increasing distortionary taxes is a non-solution (as argued in Chap. 3).

In practice, countries like Sweden which rely on tax financing of the healthcare sector apply a PAYG system: the currently economically active population pay for the healthcare of those who have retired. In theory, one could switch to a funded system, which would mean that individuals would have to purchase health insurance when they are young to secure healthcare later in life. The minor problem here is that it is unlikely that this will be offered on the market given the uncertainty

[25]This is a conjecture, as we know very little about the incremental cost-effectiveness of current medical practices and its relationship with the current but mainly implicit priority-setting process.

surrounding future levels of expenditure as General Motors is finding out in the US. The major (political) problem is that it would only represent a solution if one generation can be persuaded or forced to pay twice. Reasonably, it is the 1940s generation that would have to pay twice, which is an unlikely political outcome, given the size of those cohorts.

Our guess, however, is that if the question was posed in a referendum, a majority of citizens would at the margin prefer more healthcare to several other publicly financed activities, and the same is probably also true of private consumption. The issue is whether it is possible to re-allocate resources in a way that meets with a reasonably high degree of political and individual approval.

In other words, it is not an issue of whether we can afford healthcare if we choose to. The issue is whether we can find an institutional structure that can allocate the resources to healthcare without unacceptable distributional consequences and without destroying other important mechanisms in society, such as the market economy, democracy and so on.

Any actual payment mechanism inevitably runs into the difficult trade-off between undesirable distributional consequences and the deadweight loss of distortionary taxation (fixed patient fees vs. varying with income, etc). Perhaps the best way would be to use relatively non-distortionary taxation, such as per capita taxes or taxes on real estate in Sweden.[26] In ancient Greece, it was considered a neat idea to levy per capita taxes on foreign residents, and let the citizens off (Lyttkens 1994), but today we may find it advantageous to use that kind of taxation on the citizens themselves instead. If this sounds difficult, it might perhaps serve as an incentive to identify some items in the public budget that could be tackled in order to re-allocate resources to healthcare.

The discussion above happily ignores one intriguing problem with Swedish healthcare, which is the fact that three levels of government – central, regional (county councils), and local – all are involved in financing and organising healthcare for the population, and without clearcut limits regarding their responsibilities and authority. Hence, an action taken at one level may trigger reactions at other levels that counteract the original intentions. Perhaps this is the feature of Swedish healthcare where the need for an Alexander is the greatest.

The perspective in this chapter is one of consciously trying to manipulate the future. Whatever we do (including doing nothing), we are likely to be surprised by the development. Unforeseen consequences are a ubiquitous feature of human life in general and well-meant public policy in particular.[27] Murphy's Law also springs to mind. Perhaps one should point out the obvious fact that there will always be a solution; healthcare will continue to be produced and consumed in huge quantities. If one was to hazard a guess on the likely development, it would be that it entails

[26]A per capita tax is less problematic the less people move to other countries (jurisdictions for tax purposes). Hence it will probably become more problematic over time in Sweden, in which case we may have to think in terms of a healthcare policy for the EU.

[27]Merton (1936), North (1990, p. 104), and Smith (1776/1976), III. IV.17 and IV. II.9 (pp. 422, 456).

muddling along, with obfuscation and equivocation (Coast 2001) as major guiding principles. Across border shopping will increase, with demands for public reimbursement, as will private health insurance. Social inequalities in health and healthcare consumption will increase, but the median voter (the middle class) and the more affluent will manage relatively well in view of their financial assets and human capital.

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