Austrian health expenditures exhibit an age profile

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Abstract

We compute an age profile for public expenditures on health by calculating separate spending profiles for inpatient care, physician services and pharmaceuticals for the year 2000. We further employ three demographic scenarios to project age-related expenditures between 2000 and 2050. The Austrian profile exhibits that expenditures rise noticeably with age. For instance, per capita expenses for the 85-89 age group are about five times as high as in the 35-39 one. This pattern is also found in other EU countries. At 2.9% of GDP, inpatient care accounts for more than half of the total Austrian public expenditures on health and thus the shape of age-related inpatient care expenditures dominates the age profile. As opposed to inpatient care, we find that the profile for physician services shows a roughly linear increase, indicating that expenditures here grow rather in proportion to increasing age. However, the age profile for expenses on medical drugs is even steeper than that for inpatient care, which corroborates observed growth patterns in pharmaceutical care and heightens the age profile for public expenditures. During the next decades the shift in the age structure will cause a shift of expenditure shares. The share of public expenditures on health spent on the 80+ population group will have more than doubled by 2050. At 4.9% of GDP in 2000, public expenditures on health are predicted to increase until 2050 to 6.4% in the central population scenario, to 6.0% in the high population scenario and to 6.7% in the high life expectancy scenario.

1 Introduction

In coming decades, the size and age profile of the European population will change substantially as the post-war baby-boom generation reaches retirement age, fertility rates remain low and life expectancy continues to increase. In Austria, the share of the population aged 80+ will more than double in the first half of the century, reaching 11% in 2050. Correspondingly, the share of people younger than 65 will decline from 84% in 2000 to 72% in 2050. Projections of age-related expenditures could usefully feed into the various policy processes on aging populations that are evolving at the European Union level on the whole.

The projections for Austria follow the methodology applied to EU Member States within the EU project *Forecasting the effects of ageing on health expenditure*, and make initial

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projections of expenditures for the first half of the current century (2000-2050). The expenditure projections were produced using commonly agreed macroeconomic assumptions. Projections of long-term care expenditures were run separately and are reported elsewhere (Riedel and Hofmarcher 2002, as well as Economic Policy Committee 2001).The aim of this research is to present projections of Austrian public expenditures on healthcare in view of aging populations. The projection results reflect the impact of future demographic changes on overall levels of healthcare expenditures – one way of interpreting the projections is to treat them as a picture of what expenditure levels would be today if we had the demographic composition of future years. As such, these numbers are subject to both upside and downside risks. Upside risks stem from the fact that key non-demographic drivers of healthcare expenditures are not yet explicitly modeled in the projections. Downside risks stem from the fact that the relationship between age and health status, and thus age and care needs, is likely to change over time[1]. In the mid-1980s, calculations were carried out to estimate age-specific expenditures in Austria. In this study it was found that per capita expenditures increase with age. However, using inpatient care day rates and the number of physician visits and relying on self-reported data, the estimations were exposed to various biases. Thus, expenditures per age group might be an underestimated figure. In this paper we could draw on higher-quality data. As a consequence we cannot directly compare the profiles and are therefore not entirely able to identify shifts in the expenditure profile (as yet).

We calculated three separate age profiles: public expenditures on (1) inpatient care, (2) physician services and equivalent primary care, and (3) pharmaceuticals. The health expenditures considered amount to approximately 4.9% of GDP in 2000, which differs from the 5.1% of GDP published by *Statistik Austria* (Austrian Statistical Office) for two reasons. Firstly, only expenditures involving a known age distribution could be considered. Secondly, we use a more comprehensive definition of inpatient care expenditures. However, both effects are of a similar magnitude. Consequently the GDP shares spent on publicly provided healthcare are roughly alike in both calculations.

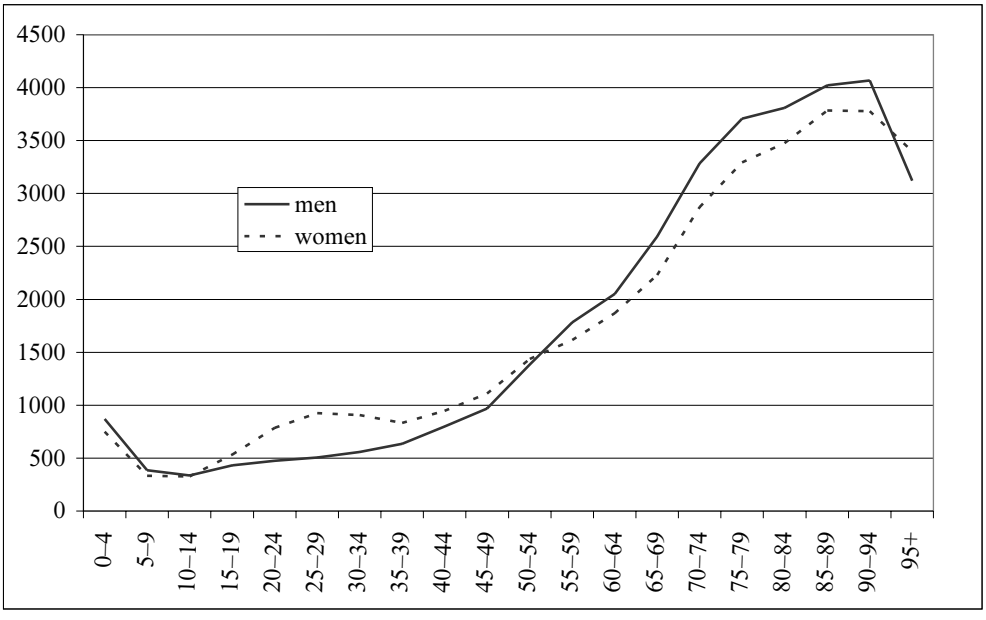
Followed by an overview of the aggregated age profile of age-related expenditures, Chapter three of the paper elaborates on sources used for calculating each of the expenditure profiles. Chapter four deals with projections of per capita health expenditures on each service category for the period 2000 to 2050. Preceded by demographic scenarios of the projections in Chapter five, Chapter six discusses the results of the estimations and projections of age-related per capita expenditures in Austria.

2 The Austrian age profile of public expenditures on health services

As expected, the aggregated Austrian per capita health expenditures increase with age. Per capita expenditures in the 85-89 age group, for example, are five times as high as in the 35-39 age group. Only the very youngest and the two oldest age groups deviate from the pattern of directly proportional growth rates for age and expenditures (cf. Figure 1). The

[1] Using a different type of forecasting model for Austria, both upside and downside risks are explicitly considered in Riedel and Hofmarcher (2002).

Figure 1: Per-capita public expenditures on health according to age groups in €, 2000



Source: IHS HealthEcon 2002

blip in the two oldest age groups can also be observed in other countries and might indicate that in this case the state's financial burden is shifted from (acute) healthcare to long-term care (cf. Economic Policy Committee 2001, p. 34). Another possible explanation is that particularly high health expenditures occur during the years and months immediately preceding death, and such "costs of dying" are usually lower for the oldest age groups compared to the middle aged[2].

Expenditures mainly associated with birth and pregnancy cause a difference in spending between young men and women. The age-related expenditure profile for men is slightly steeper than for women. From the 55-59 age group onwards, per capita expenditures for men are higher than those for women. The highest difference can be observed in the 70-74 and 75-79 age groups, amounting to €413 per capita and year. This turnaround of the sex difference in expenditures is not an Austrian peculiarity, for this has also been identified in calculations done for other EU countries.

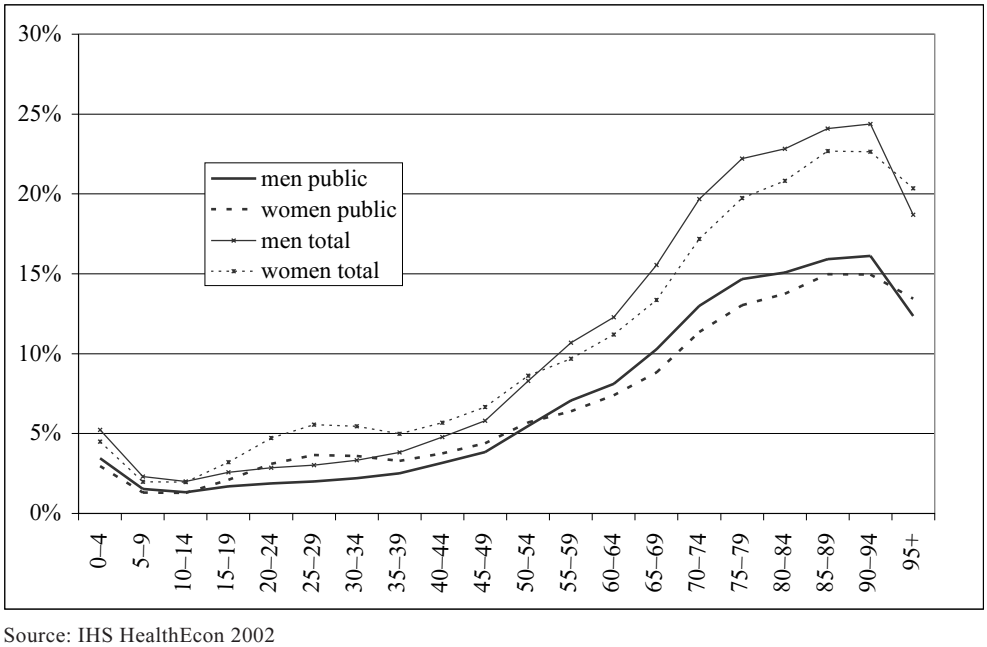
A possible explanation of the higher expenditures on male compared to female senior citizens is the different sex-specific life expectancy. "Costs of dying" contribute to explain the expenditures increasing with the age (Zweifel, Felder and Meiers 1999). This aspect suggests a comparison focusing on groups of equal life expectancy instead of groups of equal age, e.g. comparing the expenditures for women aged 70-75 with those for men aged 65-70. In this case the difference in expenditures is considerably lower (cf. Figure 1).

Unfortunately we do not know whether Austria's age-expenditure profiles have changed over the course of time, that is to say whether the elderly today cause relatively higher

2 E.g. compare Brockman (1998) for costs of dying in German hospitals.

expenditures compared to elderly people in the past[3]. A calculation of Austrian age profiles pursued in the late 1980s (Holzmann, Findl and Münz 1987) could use only less accurate data like hospitalization costs based on hospital days and physician costs based on the number of physician visits. As far as data from the Austrian microcensus were used for the older study, these were self-reported and thus subject to other biases. In this study the age profile calculated for 1986 was considerably flatter than an age profile calculated for Germany in the mid-1990s, and even more so compared to the Austrian age profiles for 2000 presented here. As the calculation methods of the three approaches differ substantially, we cannot say whether a true shift in the age profile occurred over the course of the years or whether the observed difference is due to data accuracy and calculation methods[4]. Though it is likely that relative expenditures for older age groups have been growing and will continue to do so, shifts would be possible in both directions. If the medical-technical progress concentrates on diseases of the elderly, more new (and therefore mostly more expensive) services could be developed, which would result in higher per capita expenditures for the elderly. For some countries, equivalent evidence is available (Jacobzone 2001). On the other hand, life expectancy has also risen for elderly people. A result confirmed in the Austrian microcensus is that elderly people seem to feel healthier than in previous periods (cf. Doblhammer and Kytir 2001). If this trend continues in the future, expenditure increases may be partly compensated by an increase in healthy life expectancy and thus lower than the predictions suggest.

Figure 2: Per capita total expenditures on health according to age groups in percent of GDP 2000



Source: IHS HealthEcon 2002

3 Comparing the results with older data is difficult, if not impossible, since in most cases the sources used here have been available only since recently.

4 For a discussion why Austrian and German age profiles may differ, cf. Riedel (1997).

As mentioned above, the underlying EU project focuses on public as opposed to total expenditures on health. Thus more than 30% of the total expenditures are neglected if we restrict our attention to public expenditures only. As we do not have any information about the distribution of private expenditures over age groups, we cannot estimate an age profile of the total expenditures on health using the available data on spending. However, to approximate a profile for total expenditures on health we assume that the age profile for private expenditures on health is proportional to the one for public expenditures and we thus get an age profile for total expenditures on health as in Figure 2.

3 Data and methods

For Austria, hardly any research has yet been conducted to calculate historical age-related expenditure profiles. However, the association between demographic shifts and future health expenditures has been the focus of recent research (Kytir 2002). An extrapolation of past expenditure trends including a change in the shape of the profiles is nonetheless infeasible. The present analysis is restricted to three main categories of public expenditures on health, namely expenditures on inpatient care, physician services, and pharmaceuticals.

Social health insurance is a key factor in the provision of almost all kinds of health services in Austria. Public expenditures on pharmaceuticals, physician services and related primary care services are almost entirely covered by social health insurance. Thus, comprehensive expenditure data for these categories could be provided by the Federation of Social Security Institutions (HVSV) and by a local social health insurance fund, cf. sections 3.2 and 3.3 below. Provision of inpatient services is in the responsibility of the nine states, and financing of these services is arranged in a highly complex system in which municipalities, states, the federal government and last but not least social health insurance funds participate, cf. section 3.1 below. Hospitals are required to report a defined set of data to the federal ministry (BMSG). This data set comprises accounting as well as service provision data. Thus, rather than the social health insurance funds, the ministry could provide most comprehensive inpatient information.

Age-related expenditure profiles for the base year 2000 were calculated for each of the three main categories as described below. Subsequently, expenditure profiles for inpatient care, physician services and pharmaceuticals were added and used for the projections. Calculations were made for 5-year age groups (0-4, 5-9, 10-14, ..., 85-89, 90-94, 95+) for males and females, based on data for 1.1.2000 to 31.12.2000. Expenditures on pharmaceuticals are only available for 10-year age groups. The pharmaceuticals database does not contain sex-specific data of the insured population. Table 1 provides an overview over data sources. All major data sources are not publicly available but were provided by the responsible authorities upon request.

Table 1: Overview of data sources

	Source	Data providing institution	Coverage
Inpatient care	Uberregionale Auswertung der Kostenrechnungs-ergebnisse	BMSG	Patients treated in public hospitals in Austria
Physician services and equivalent primary care	Folgekosten-abrechnung II	GKK Oberösterreich	Private employees in two states (Upper Austria, Burgenland) and their dependants, roughly 15% of the Austrian population
Pharmaceuticals	Heilmittelstatistik	HVSV	Enrollees in all Social Health Insurance Funds except one small fund

Source: IHS HealthEcon 2002

3.1 Inpatient care

Basically, inpatient care provision lies with the nine Austrian states (*Länder*). Fixed-term statutory agreements, negotiated between the federal government and the *Länder* enables federal authorities to coordinate, control and co-design policies. Apart from budgeted contributions to hospital financing based on current laws, the health insurance funds have no say in matters of provision of inpatient care facilities.

Inpatient care expenditures consist of expenditures on so-called "fund hospitals" and "non-fund hospitals". Essentially, fund hospitals include public and non-profit acute care hospitals, and they are financed from public budgets via the *Länder*. 45% of all hospitals in Austria are fund hospitals. These fund hospitals provided 72% of the total bed capacity in Austria in late 1998.

Containing mainly budgeted social health insurance expenses on inpatient care, the *Länder* funds basically finance about half of current operating costs. Investment, maintenance and part of the operating costs are borne by the hospital owners, mostly *Länder* or communities, but also religious congregations. Because it is basically public institutions that finance hospital costs (*Länder* funds, federal budget, community budgets etc.) we use aggregate cost from central accounting data as the starting point for public expenditure proxies.

Treated in fund hospitals, patients are required to pay a certain daily fee. Patients can buy private health insurance to cover cost for treatment in private hospitals or to receive special class care[5] in public hospitals. The amount of payments by private health insurance companies to public hospitals is not available, but estimates suggest that 90 percent of the total private health insurance payments to hospitals are allocated to public hospitals. Therefore, we apply this share to hospital costs in order to adjust for private health insurance flows in public hospitals.

[5] The benefits of these may be improvements in 'hotel services' such as bigger or single rooms, or better meal selection, but also the right to choose a specific doctor, which is not possible in the general class.

In order to obtain public hospital expenditures, we further subtracted cumulated co-payments, and additional costs (i.e. nursing costs, subsidies to employees' housing) from total fund hospital cost.

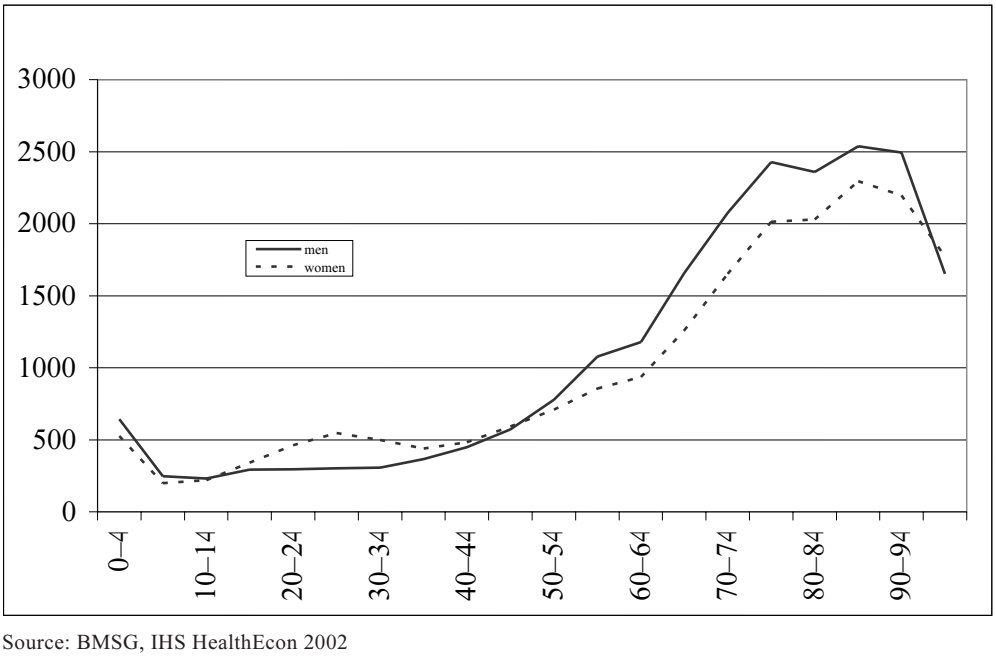
Calculated for males and females separately, the procedure to construct per capita hospital expenditures hhi for age group i (in €) is as follows:

$hh_i = hh_{i,inpatient} + hh_{outpatient}$
$hh_{i,inpatient} = \sum_j LKF_{ji} * (F / \sum_{j,i} LKF_{ji}) / P_i$
$hh_{outpatient} = N / \sum_i P_i$
with
j = 1, 2, ... for fund hospitals,
LKF_{ji}.....LKF (***L***eistungsorientierte ***K***rankenanstalten ***F***inanzierung) points for age i and fund hospital j
F ..... cost for total inpatient treatment in fund hospitals
N ..... cost for total outpatient treatment in fund hospitals
P_i ..... population in age group i

For treatment provided in hospital outpatient wards, no age-specific data are available. In addition, remuneration in outpatient wards is based on a flat rate per case. Thus, outpatient costs reflecting approximately 15 percent of adjusted inpatient care costs were allocated using a uniform per-capita rate.

In Austria expenditures on inpatient care account for almost half the entire healthcare expenditures (Hofmarcher, Lietz and Riedel 2002). Therefore the inpatient sector is particularly important when computing age-expenditure profiles. In the context of the calcu-

Figure 3: Per-capita public expenditures on inpatient care in €, 2000



Source: BMSG, IHS HealthEcon 2002

lations presented here, the impact of expenditures on inpatient care is even greater for two reasons: (1) the profiles are limited to public expenditures; private expenditures, however, have a stronger impact when it comes to physician services and pharmaceuticals; (2) the profiles do not comprise all kinds of expenditures, but only those with age-specific information. For the delimitation used here, expenditures on the inpatient sector amount to 2.9% of GDP, while total public healthcare expenditures were calculated to reach a level of 4.9% of GDP. Accordingly, the profile of healthcare expenditures was dominated by inpatient expenditures. Both profiles are highly similar (cf. Figure 1 and Figure 3).

3.2 Physician services

The social health insurance scheme is responsible for ensuring the provision of primary medical care to the population, including all non-medical primary care, i.e. qualified nursing care, physiotherapists, psychotherapists, midwives, and so on. Therefore, public expenditures on physician services are borne by health insurance funds, most of which are united in the Federation of Austrian Social Security Institutions (HVSV).

Data used in this exercise comprise expenditures for general practitioners and medical and non-medical specialists, but not for dentists.

In accordance with the general methodology, revenues from the general co-payment for doctor's visits are subtracted from public expenditures on physicians. As we do not have information on how co-payments are distributed over age groups, we subtract totals and then calculate age profiles. Thus we assume that co-payments do not bias the age distribution of public expenditures on physician services. This seems to be a reasonable assumption as upside and downside effects coexist. The main co-payment for physician services is the *Krankenscheingebühr*[6], which is a flat payment of €3.63 per quarter and each doctor who is seen at least once. As older people see doctors more frequently than younger persons, the calculated profile is perhaps too flat. On the other hand there are exemptions for co-payments for individuals with low income, among them many retired people. Those exemptions tend to make the profile steeper. As we have no quantitative information on the strength of each of these effects across age groups, our best guess is to assume the effect of co-payments to be proportional to un-adjusted expenditures.

The social health insurance funds of two Austrian states, Upper Austria and Burgenland, are recording primary care physician contacts in a way that allows the construction of age profiles.

The GKK Oberösterreich (Upper Austria) covers roughly 1.1 million insured persons, and GKK Burgenland roughly 125,000 (of a total 8.1 million Austrians). GKKs are the mandatory social health insurance schemes for private employees and their dependants. Thus, several population groups are neglected in the calculation of the age profile, which might bias the calculated profile to some degree. Civil servants, full-time farmers, self-employed persons and their dependants are not included in this scheme. However, being the second largest states in the country, Upper Austria's population is believed to be fairly representative.

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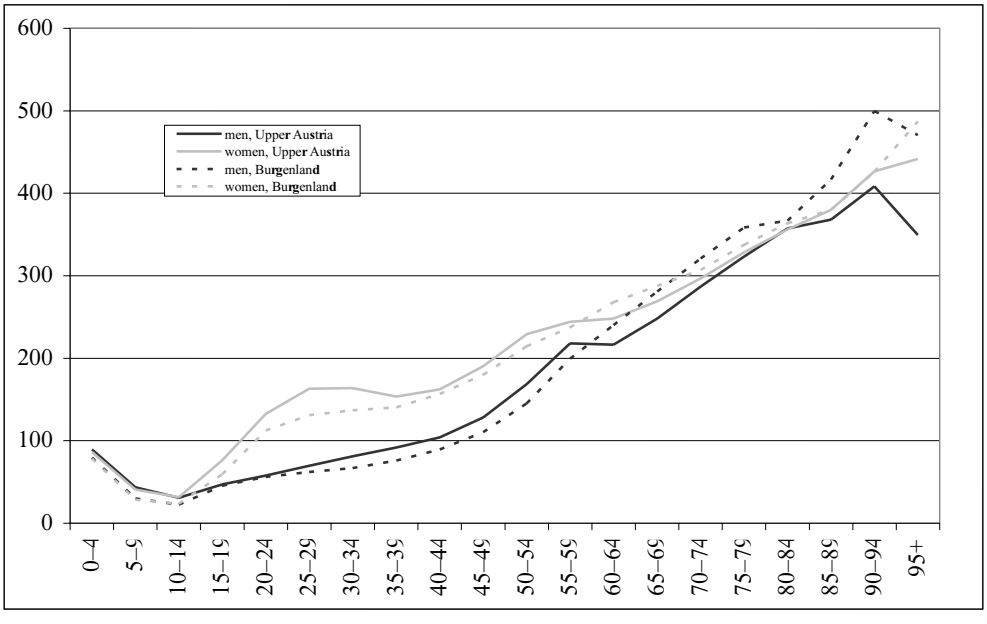
6 This is true for 80% of the insured population including private employees and their dependants, but not for some groups like civil servants or self-employed people and their dependants, who are subject to a 20% co-payment for every single physician expenditure.

The age-related increase in per capita expenditures on physician services including non-physician primary care services is much more continuous than that for expenditures on inpatient care. Other than for inpatient care, no particularly sharp increase of expenses at the onset of retirement could be observed. The profile is almost linear, both for women and especially for men. The age when women make increased use of physician services corresponds to the age most families are founded at.

Figure 4: Per-capita public expenditures on physician services in Upper Austria and in Burgenland, 2000, in €



Source: GKK Oberösterreich, IHS HealthEcon 2002

A comparison of the age-related expenditure profiles calculated for the two states indeed reveals some differences (cf. Figure 4). Basically, per capita expenditures in Burgenland are slightly lower than the corresponding figure in Upper Austria. In order to approximate the expenditures to the unknown "true" age-expenditure profile for Austria as closely as possible, the average of both profiles, weighted by the number of persons insured, was used for calculating the complete expenditure profile (cf. Figure 4).

3.3 Pharmaceuticals

As with primary care, the health insurance funds are responsible for providing drugs to patients. Expenditures on pharmaceuticals mainly cover pharmaceuticals that have been included in the *Positivliste*, an approved list maintained by the Federation of Austrian Social Security Institutions. Contract doctors (i.e. those doctors who have a contract with a health insurance fund) can prescribe drugs included in this list without any further approval. Costs are reimbursed automatically. Drugs necessary for treatment but not includ-

ed in the approved list are subject to prior approval by head doctors employed by the health insurance fund.

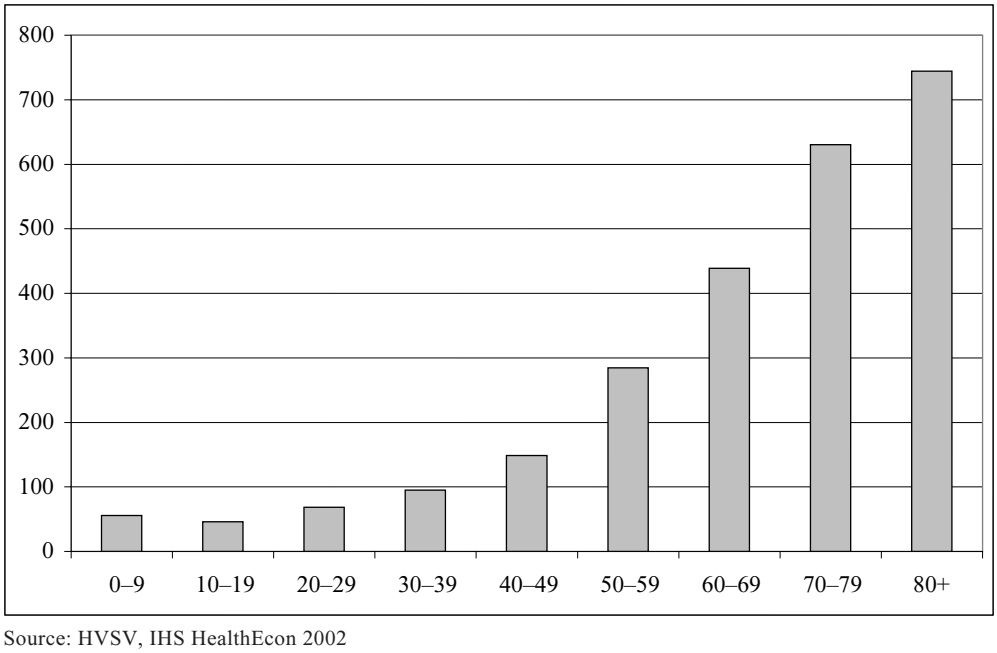
Excluding medical products and appliances, expenditure figures comprise total expenditures of social health insurance funds on pharmaceutical products dispensed to primary care patients. In certain cases pharmacies grant price reductions to social health insurance funds; these discounts were not subtracted from the expenditure figures used for this exercise. In general, prescriptions are subject to a fixed co-payment (*Rezeptgebühr*), though there are exemptions for low-income groups. As with expenditures on physician services we subtracted these co-payments from total expenditure figures. It should be noted, however, that prescriptions for drugs costing less than the co-payments are likely to be purchased out-of-pocket. Changes in the level of co-payments thus directly influence not only the level of social health insurance expenditures on pharmaceuticals, but also the average expenditures per prescription.

Per capita expenditures on pharmaceuticals can be derived from the prescription database administered by the Federation of Austrian Social Security Institutions (HVSV). The data set contains data from all social health insurance funds except those expenditures borne by the health insurance of the self-employed and their dependants. Thus, data were available for more than 95% of the Austrian residents.

The age profile in the pharmaceutical sector is sharper than that for inpatient care or physician services (cf. Figure 5). Per capita expenditures in the 80+ age group, for example, are seven times higher than in the 30-39 age group. In the field of physician services, however, the difference between the two groups is only half as pronounced.

Although age profiles are available for several years it is difficult to assess whether the profile for public spending on pharmaceuticals shows a shift over the course of time. While a comparison of the profiles for 1997 and 2000 indicates a slight shift towards higher

Figure 5: Per capita public expenditures on pharmaceuticals, 2000, in €



Source: HVSV, IHS HealthEcon 2002

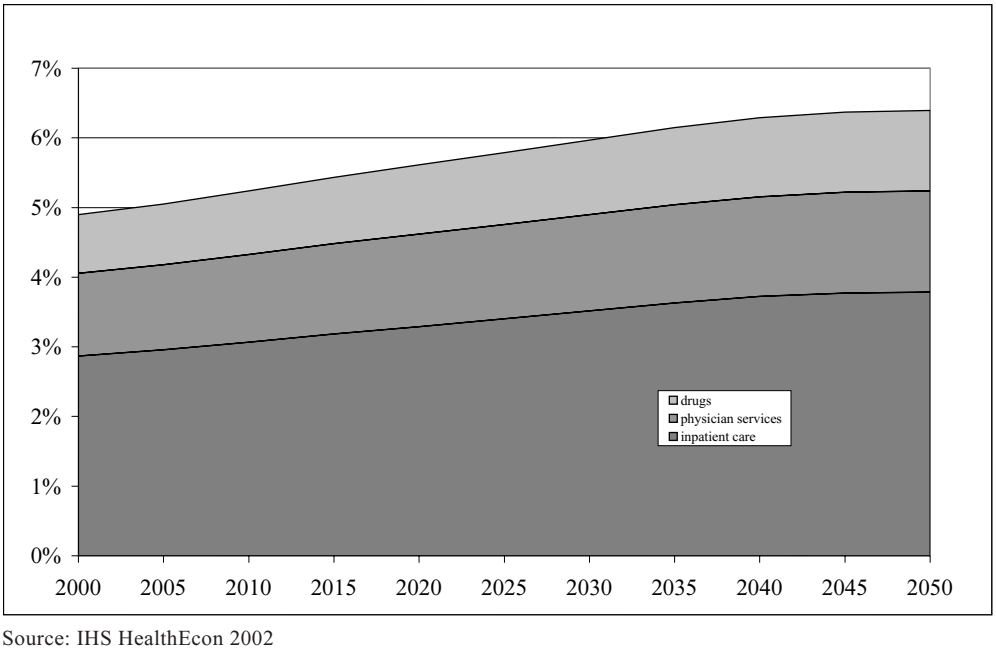
expenditures for elderly people, a similar conclusion cannot be drawn when comparing the data for 1990 and 2000. An assessment is further complicated by the increase of the co-payment rate for drugs, causing cheaper drugs to be no longer registered as public expenditures, since they are paid by the insured themselves if they are less expensive than the co-payment amount.

4 Selected projections of public expenditures on health

Comprising all expenditure categories and employing the central scenario according to population forecasts provided by *Statistik Austria*, public expenditures on health are projected to increase to 6.4% of GDP by 2050. Starting at a level of 4.9% in 2000, public expenditures on inpatient care account for 2.9%, social health insurance expenditures on physician services for 1.2% and on pharmaceuticals for 0.8% of GDP. Since these three expenditure categories have different age profiles, their share will slightly change in the future. As shown in Figure 6, the hospital sector will keep its dominant position as far as expenditures are concerned. NB, however, that our calculations assume a constant structure of healthcare. In particular, if inpatient treatment were to be substituted by outpatient treatment to a certain extent in the future, this would slow down the growth dynamics of the inpatient sector while accelerating that of the physician sector.

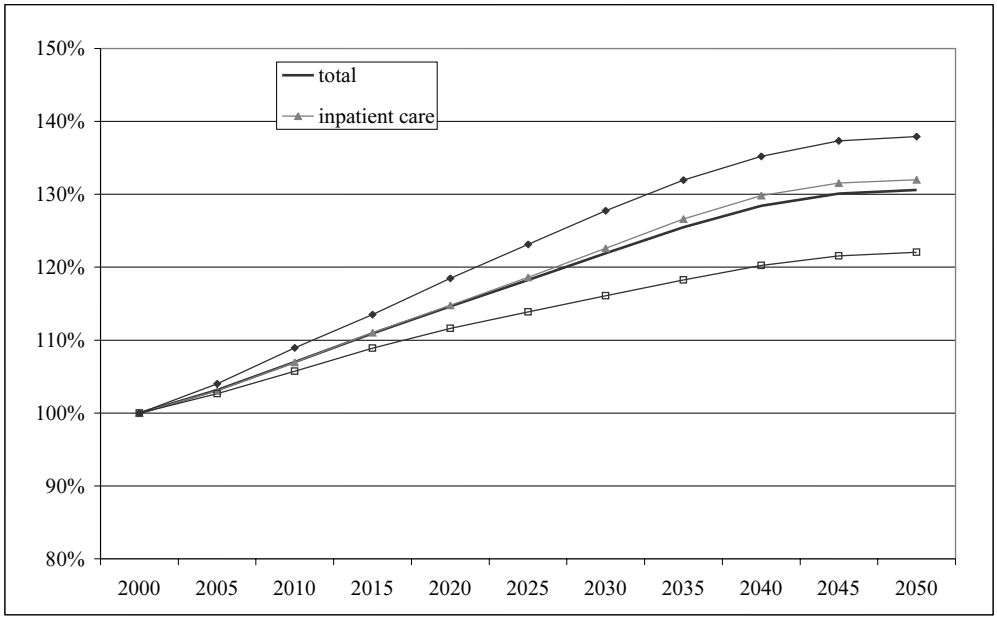
Since the age gradient observed with expenditures is higher for pharmaceuticals than for physician services or inpatient treatment, the increase in drug expenditures is likely to

Figure 6: Projection of public expenditures on health, in percent of GDP, central scenario



Source: IHS HealthEcon 2002

Figure 7: Development of public expenditures on health, central scenario, Index GDP 2000=100



Source: IHS HealthEcon 2002

be higher than for the two other sectors. The increase in expenditures for physician services will be below average, while the development of hospital expenditures dominates the development of the entire public health expenditures.

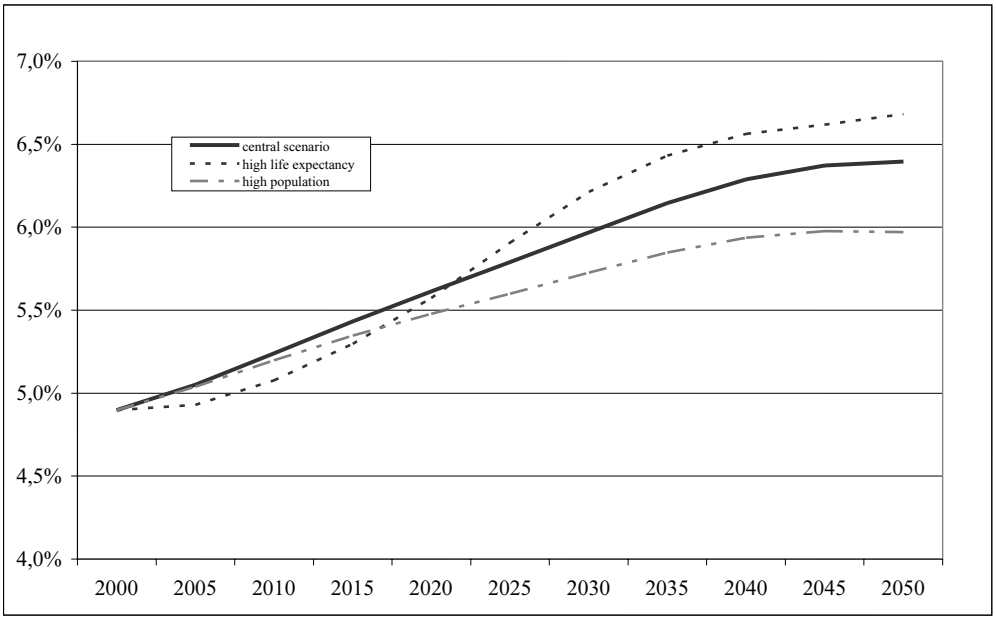
Figure 7 depicts this pattern. It must be pointed out that for this calculation identical price trends were assumed for all three sectors, with price increases corresponding to those of GDP per capita. The present calculations underestimate the share that individual sectors will occupy in the future to the same extent as their price development is stronger than the baseline inflation rate.

5 Demographic variations

Provided by Statistik Austria, we use three different population projections to forecast age-related public expenditures on health for the period 2000 to 2050. Assuming fertility levels in the order of 1.34 children per woman in 2000, Statistik Austria determines the total fertility rate to have increased to 1.5 children in 2015 in the *central scenario* and to 1.8 children from 2020 onwards in the *high population scenario*.

The *high life expectancy* scenario works with "high life expectancy" and average fertility and migration. Whereas in the central scenario life expectancy at birth will increase to 80.0 years for men (85.5 for women) in 2030 and to 82.0 (87.0) in 2050, the high life expectancy scenario for men is expected to increase the life span to 82.0 (87.0) in 2030 and to 86.0 (90.0) in 2050. With respect to migration a yearly flow of 80.000 people coming to Austria was taken up in the central scenario, and of 100.000 people in the high population scenario.

Figure 8: Projected per capita public expenditures on health in percent of GDP, demographic variants



Source: IHS HealthEcon 2002

By 2050, public expenditures on health in percent of GDP are predicted to increase to 6.40% in the central scenario, to 5.97% in the high population scenario, and to 6.65% in the high life expectancy scenario. Exhibiting a rather similar trend until 2020, gaps between scenarios show a noticeable increase beyond 2020. As the high population scenario assumes higher fertility and higher migration rates, the share of elderly people remains lower than in the other scenarios employed. Consequently, the old age dependency ratio is increasing more slowly. Boosting economic development, higher activity rates in the labor market would absorb increasing health expenditures for the elderly. Thus, health expenditure growth is likely to be subdued.

Generally, projections were run assuming growth rates in medical care expenditures and GDP to be the same as long as the age structure remains largely unchanged. This assumption was proposed by the EU methodology and could be supported by the observation that the health deflator is likely to be overestimated due to the current lack of adequately capturing quality improvements in medicine in the calculation of price indices (Triplett 1999). Even though cross-country analysis and evidence from the last decades suggest that prices in the health sector tend to exceed the general price level (Cutler et al. 1996, as well as Shapiro, Shapiro and Wilcox 1999), one could argue that applying GDP price development to health sector price growth is practical because it remains uncertain whether future price increases will show the same pattern as in the previous years. In fact, as most countries are concerned with cost containment in the health sector and there is a likelihood that the measurement of price indices will improve in the future, relative prices are expected to go down compared to previous years. On the other hand, the Technical Review Panel on the Medicare Trustees Report recently recommended for forecasts exceeding 25 years into the future to assume per capita health expenditures to grow at a rate

of 1 percentage point in excess of per capita GDP growth. This estimate was derived from a number of observations: (a) the primary long-run determinant of actual healthcare spending has been the development and diffusion of new medical technology; (b) about half the actual healthcare expenditure growth has been attributable to medical technology; (c) the historical median long-term growth in actual per capita healthcare expenditures in the US was 4.4%, thus the 50% share attributable to medical technology would amount to 2.2%. Real per capita GDP growth in the future was assumed to be 1.2%, and subtracting this GDP growth yields a differential of 1% (Technical Review Panel on the Medicare Trustees Report 2000). As there is little reason to doubt that a similar rationale is applicable to European countries as well, the EU assumption of price increases in the health sector equaling GDP price growth is rather optimistic.

Older age groups consume health expenditures to a greater extent than younger age groups. Currently people in the 80+ age group comprise 4% of the total population; the corresponding share of health expenditures spent on this group is more than twice as high (11%). The age group 0 to 64 utilizes 61% of health expenditures; their share on the total population was 84% in 2000. The expenditure share of this group will decrease to 42% in 2050 while the share spent on the 80+ group will increase considerably, reaching 26% in 2050 (cf. Table 2).

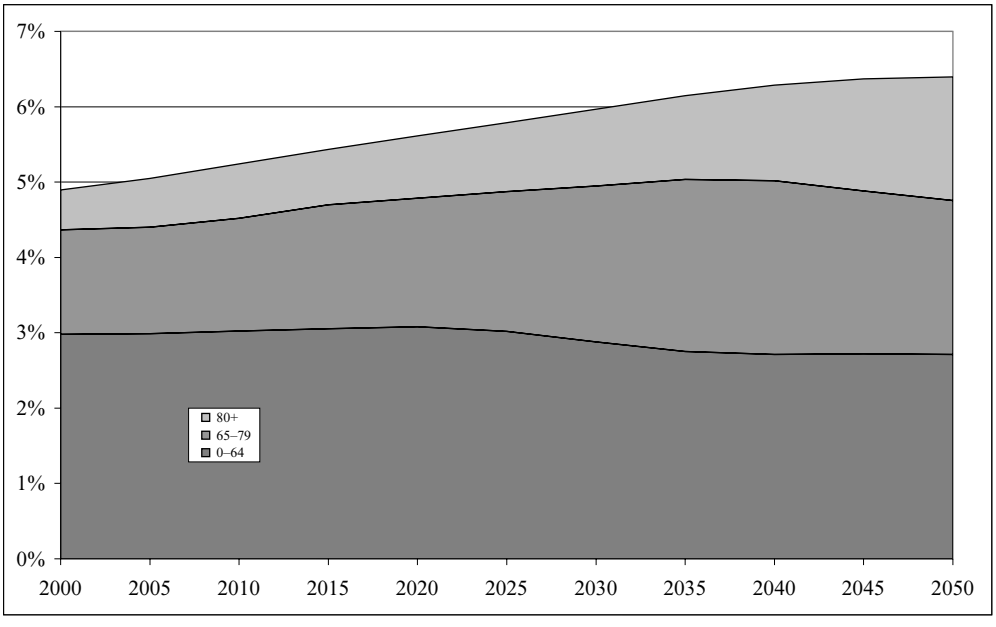
When looking at GDP shares spent on age groups, Figure 9 shows that in 2000 three percentage points of the 4.9 % total public expenditures on health were consumed in the 0-64 age group, while only half a percentage point was spent on persons aged 80+. According to the projected shifts in the age structure of the population based on the central scenario, the 80+ group will already consume 1.6% of GDP in 2050, with the 0-64 age group going down to 2.7% of GDP. As the share of people in the younger age groups slightly decreases, expenditures for the 65+ grow even at a faster pace than total public expenditures on health.

Table 2: Population shares and health expenditure shares 2000, 2025, 2050, central scenario

Age group	Health Expenditures	Population	Health Expenditures	Population	Health Expenditures	Population
	2000	2000	2025	2025	2050	2050
0 to 64	61%	84%	52%	78%	42%	72%
65 to 79	28%	12%	32%	16%	32%	17%
80+	11%	4%	16%	6%	26%	11%
Total	100%	100%	100%	100%	100%	100%

Source: IHS HealthEcon 2002

Figure 9: Projected per capita public expenditures on health according to age groups, central scenario, in percent of GDP



Source: IHS HealthEcon 2002

6 Discussion

In preparation for the EU model forecast, a new age profile for expenditures on health in Austria had to be developed. This profile deviates considerably from a previous approach, as more detailed databases have become available since. But there are still some shortcomings in the current computation of the age profile. First of all, it is limited to the public sector. Being the focal point of the underlying EU project, public budgets and their expected shifts are important since in most developed countries the health sector is mainly public. However, with about 30% of total expenditures on health, the private sector in the Austrian healthcare system is rather large and even likely to grow in the future. Therefore, the omission of private expenditures is critical in terms of the overall development in the health sector.

Secondly, the computation of age-related public expenditures on health only contains those age-specific data that are currently available. We thus underestimate the GDP share spent on health in the public sector. The underestimation arises mainly from missing age-related expenditure information in the fields of primary care, rehabilitation and prevention. In spite of these critical points, we think that the current age profile provides a sound starting point for estimating future health expenditures. The calculated profile relies on comparatively detailed information about the three main categories of health expenditures. Thus we can use this information in future research to simulate probable expenditure growth paths which would arise e.g. from shifts in service provision between inpatient and outpatient sectors or from high relative prices in the health sector.

At the moment, the EU model is a rather mechanistic application of demographic forecasts. Thus, neither upside nor downside risks regarding the future development of health expenditures are taken into account. In particular, the potentials of technological change, structural reforms and changes in service provision are omitted in the calculations. Contrasting the EU model with an alternative approach suggests that projected health expenditures will register a less pronounced increase when such factors are integrated into a forecast model (Riedel and Hofmarcher 2002).

Another aspect that might dampen expenditure growth rates is the improvement of the health status of the elderly. In particular and as evidence suggests, the onset of disease in the future is likely to be delayed to later life years. Thus, the "compression of morbidity" may go along with slower growth of health expenditures in later life years.

Though most of these factors have not yet been integrated into the EU model for Austria, first evidence suggests that simulating the effects of "compression of morbidity" (Hofmarcher and Riedel 2002) and of the "costs of dying" (Riedel and Hofmarcher 2002) may considerably dampen expenditure growth in the future. Such simulations rely on assumptions about other driving forces in the evolution of the health sector which have to be derived with care and which are also subject to considerable uncertainties. Similar approaches can be pursued with regard to other factors related to the demand for health services, and are under way to capture also non-age-related factors of health expenditure growth in the future. The application of sound methods, but also detailed databases, will make projections in the future more reliable. Improved methods and databases will enhance the policy relevance of such forecasting exercises considerably. Last but not least, the application of a common methodology in all EU countries provides a basis for comparisons and benchmarking procedures in the participating countries, which hopefully will lead to improved understanding of the differences between national health systems and how well they are prepared for the challenges ahead.

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8 Abbrevations

BMSG	Bundesministerium für Soziale Sicherheit und Generationen (Ministry for Social Security and Generations)
EU	European Union
GDP	Gross Domestic Product
GKK	Gebietskrankenkasse (a social health insurance fund for private employees and their dependants in one of Austria's states)
HVSV	Hauptverband der Sozialversicherungsträger (Federation of Social Security Institutions)
OECD	Organization for Economic Cooperation and Development