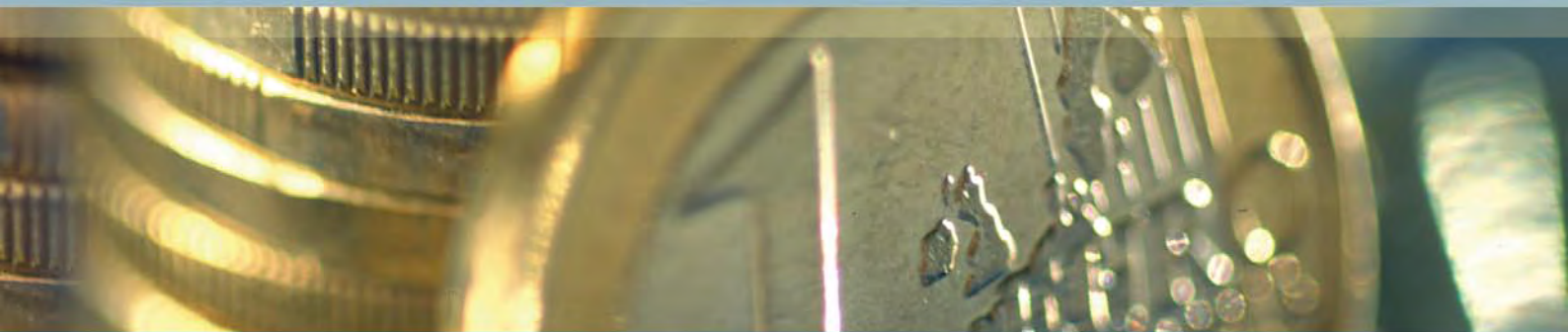


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Joint Report on Health Systems

prepared by the European Commission and the Economic Policy Committee (AWG)

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Directorate-General for Economic and Financial Affairs

Joint Report on Health Systems

**prepared by
the European Commission and
the Economic Policy Committee (AWG)**

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Glossary

BE	Belgium
BG	Bulgaria
CZ	the Czech Republic
DK	Denmark
DE	Germany
EE	Estonia
IE	Ireland
EL	Greece
ES	Spain
FR	France
IT	Italy
CY	Cyprus
LV	Latvia
LT	Lithuania
LU	Luxembourg
HU	Hungary
MT	Malta
NL	the Netherlands
AT	Austria
PL	Poland
PT	Portugal
RO	Romania
SI	Slovenia
SK	Slovakia
FI	Finland
SE	Sweden
UK	the United Kingdom

EU	European Union
EU15	EU Member States prior to 2004
EU25	EU Member States prior to 2007
EU27	EU Member States after 2007 i.e. all current EU Member States
EA	Euro Area
RAMS12	Recently Acceded Member States
EEA	European Economic Area
EFTA	European Free Trade Association
EC	European Commission
EPC	Economic Policy Committee
AWG	Ageing Working Group (of the EPC)
SPC	Social Protection Committee

AHEAD	AHEAD 2007
COFOG	Classification of expenditure according to the functions of government (EUROSTAT)
CTS	Computed Tomography Scanners
DEA	Data Envelopment Analysis
DG ECFIN	Directorate General for Economic and Financial Affairs, European Commission
DG EMPL	Directorate General for Employment, Social Affairs and Equal Opportunities, European Commission
DG ENTR	Directorate General Enterprise and Industry, European Commission

DG SANCO	Directorate General for Health and Consumer Protection, European Commission
DG COMP	Directorate General Competition, European Commission
DRGs	Diagnosis Related Groups
EIP	European Innovation Partnership (on Active and Healthy Ageing)
EUnetHTA	EUnetHTA Collaboration process The EUnetHTA Collaboration process was launched in 2008 and joins together government-appointed organisations from EU Member States, EEA and EFTA countries and a large number of relevant regional agencies and non-for-profit organisations that produce or contribute to HTA.
EUROPOP	EUROSTAT Population projections
EUROSTAT	Directorate General for European Statistics, European Commission
EU-KLEMS	EU database for growth and productivity accounts. The EU KLEMS project aims to create a database on measures of economic growth, productivity, employment creation, capital formation and technological change at the industry level for all European Union member states from 1970 onwards.
EU-SILC	European Survey on Income and Living Conditions
FFS	Fee for Services
GDP	Gross Domestic Product
GP	General Practitioner
HC	Health Care
HiT	Health Care Systems in Transition, European Observatory on Health Systems and Policies: http://www.euro.who.int/en/home/projects/observatory
HIV/AIDS	Human immunodeficiency virus /Acquired immune deficiency syndrome
HTA	Health Technology Assessment: Health Technology Assessment is a multi-disciplinary field of policy analysis that examines and summarises information about the medical, economic, social and ethical implications related to the use of a health technology – taken broadly to mean medicines, equipment and interventions - in a systematic, transparent, unbiased, robust manner. Its aim is to inform the formulation of safe, effective health policies that are patient focused and seek to achieve best value for money.
ICT	Information and Communication Technology
IOM	Institute of Medicine
LFS	Eurostat LFS – Labour Force Survey
MRI	Magnetic Resonance Imaging Units
NHS	National Health Service
OECD	Organisation for Economic Co-operation and Development: www.oecd.org
OOP	Out-of-Pocket (expenditure or payments)
PET	Positron emission tomography scanner
PPPs	the so-called multilateral Purchasing Power Parities (PPPs). A PPP is defined as the ratio of the price of a bundle of products between two countries, with prices expressed in each country's own currency.
PPS	Purchasing Power Standards
pps	percentage points
SFA	Stochastic Frontier Analysis
SHA	System of Health Accounts developed by the OECD to classify types of health expenditure
SHARE	Survey of Health, Ageing and Retirement in Europe: www.share-project.org
TCHE	Total Current Health Expenditure
USA (or US)	United States of America
VAT	Value Added Tax
WHO	World Health Organization: www.who.int

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Executive Summary

This Joint EPC/EC Report aims to understand the drivers of health expenditure and therefore expenditure differences across EU Member States. It does so by looking not just at demographic influences, as past reports by the EPC/EC have done, but going beyond that and looking at organisational features of health systems. The Report aims to identify good practices that may lead to greater cost-effectiveness of health systems (i.e. getting more value for money out of the resources allocated to the sector) no matter what future burden demographic developments may hold. It identifies a number of challenges facing health systems across the EU. **Understanding what may explain the performance of countries' health systems can help find the right policies** to strengthen the financial sustainability and access to quality health services in a rapidly ageing world. **Rising demand and constrained resources enhanced by the recent economic crisis** make cost-effectiveness one of the most important goals in this area. **Cost-effectiveness is crucial** if countries are to ensure universal access and equity in health, health financing and utilisation.

The need to increase effectiveness and efficiency in health care....

A larger share and more equitable distribution of resources devoted to health care systems has been associated with large improvements in the health of the EU population. Good health contributes to economic prosperity through improving labour market participation and productivity and will be crucial in the context of an ageing society and longer working lives.

Total spending on health absorbs a **significant and growing share of resources** (EU average of 9.6% of GDP in 2008, up from 8.5% of GDP in 1998). **Public spending on health** constitutes a **significant share of total government expenditure** (14.7% in 2008, up from 12% in 1998) **and of GDP** (EU average of 7.4% of GDP in 2008, up from 6.6% of GDP in 1998). As highlighted in various Joint Commission and Council works, including the EPC/EC 2009 Ageing Report and the 2010 Joint Report on Social Protection and Social Inclusion, all EU Member States face growing and strong pressures on their health systems.

Member States will have to **balance the need to provide access for all with an increasing demand for quality health services in the context of constrained resources**. A growing demand is related to: a) an ageing population, b) technological development, c) growing patient expectations, d) health behaviour, e) climate change and f) globalisation. According to the 2009 EPC/EC Ageing Report, public spending on health is projected to further increase within the range of 0.7 to 2.2% of GDP as a result of some of these factors.

Against this background, increasing effectiveness and efficiency of health care and long-term care and getting more value for money out of the resources allocated to the sector are likely to become one of the most important challenges in the coming years.

...is made more urgent as the economic crisis places serious constraints on the capacity of financing the health sector in the short to medium term

Health expenditure has **risen over time**, often at a faster rate than GDP growth. This trend may have been **reinforced in the short term with the recent economic downturn** when: a) GDP growth rates turned negative, and b) a number of Member States increased spending in the sector as part of their economic recovery programme.

However, the current financial and economic crisis will bring about, in the short to medium term, a period of budgetary constraints associated with the need to reduce large government deficits and put public finances back on the right track. Slow recovery and unemployment rates that remain high in many parts of the EU place serious constraints on the capacity of financing the health sector in the short to medium term. As a result, the recent economic crisis has rendered more pressing the need to improve cost-effectiveness of health systems and has turned it into a main policy priority that is likely to remain for many years to come. However, in doing so, the economic crisis also provides a window of opportunity to reflect on the role and performance of health systems and implement sound and needed reforms.

Levels of health spending are the result of the interaction between demand side factors and supply side factors and the way health services are funded and delivered i.e. the organisational features of health systems.

The supply side factors are manifold and include regulation and monitoring as well as financial and non-financial incentives faced by service providers and users of health services. The Report shows the organisational complexity of health systems. Such complexity and changing socio-economic and technological conditions imply the need for continuous adjustment of existing structures. When supply and demand are to meet, as always, the important role that competition can play in the efficient provision of health care services needs to be considered, too.

The goal to ensure universal and equitable access to health services resulted in an overtime increase in the health insurance coverage which is publicly funded...

Health insurance coverage is universal or almost universal in all Member States through compulsory social health insurance or national/local health service provision. **Service coverage under public funding is comprehensive.** Also, all countries apply a system of cost-sharing exemptions to ensure access to services by more vulnerable groups. As a result, the **share of public expenditure in total health expenditure is high** in the EU (77% in 2008). Recent efforts to improve access to health services help explain an increase in public expenditure on health and a reduction in the share of out-of-pocket expenditure observed in those countries since 1998. In general, private health insurance remains a small though growing share of total health expenditure. **The share of out-of-pocket expenditure in total health expenditure is relatively low on average** (EU average of 14% in 2008).

but improvements can be made in relation to the role of private expenditure vis-à-vis public expenditure...

As its importance grows, it may be necessary **to clarify the role of** duplicative and complementary **private health insurance vis-à-vis publicly funded provision**, to avoid raising inefficiencies in the public sector and to ensure a cost-effective use of services. Moreover, while ensuring that private financing remains limited, countries **can improve existing cost-sharing schemes to signal preferred behaviour and encourage a cost-effective use of health services**. These are identified through the use of health technology assessment (HTA), including clinical effectiveness and cost-effectiveness information.

Countries could define a fully publicly subsidised high quality health basket based on clinical- and cost-effectiveness criteria. From that initial basket charges would be paid for not so cost-effective interventions at different degrees and up to 100% of the costs depending on the degree of cost-effectiveness, the potential burden for the patient and other ethical or socio-economic considerations. Some small charges should not be covered by complementary insurance to signal preferred behaviour. A system of exemptions should be used to ensure access by those at higher risk of ill-health and the less well-off.

and some countries report limited financial resources to the sector vis-à-vis the population demand.

Limited resources have meant high out-of-pocket expenditure and long waiting times for treatment. Some of these countries are indeed 1) considering additional sources of funds to the sector such as excise and indirect taxes, 2) increasing contribution rates and the revenue base by reducing the number of groups exempted from contributions or cost-sharing and 3) fighting contribution and tax evasion.

Member States differ in the ways they collect, pool, and allocate financial resources...

Under social health insurance, contribution collection may be done by either insurers in the case of multiple insurers, or sub-national branches of the national insurance fund or by a central office under the tax authority. Under national and local health services it is either the central or regional or local tax offices that collect the taxes used to finance health services. Taxes can be direct or indirect and may be of a central, regional or local nature.

In most cases, all or part of the funding collected is redistributed among the various purchasers of care, sub-national branches of the national insurance fund, sub-national authorities in charge of health service provision or health insurers. The resource allocation is based on **formulas** that take into account the number, age-gender structure, morbidity patterns and other socio-economic characteristics of the individuals under each purchaser of care. This mechanism **compensates for geographic disparities** in socio-economic and demographic variables, **avoids patient selection** and ensures **funding is adjusted to need**.

All countries define an overall budget constraint for public spending on health. In some, the budget is strict or revenue and expenditure in the health sector must match in each financial year. However, in many cases, the budget constraint is not stringent and overshooting is possible. Overshooting has led to an increase in contribution rates, user charges or a delisting of services from insurance coverage. **Some countries use more complex macro-level mechanisms** to control the growth of public expenditure on health. These are **coupled with strong monitoring mechanisms** and trigger policy plans when expenditure is above target.

and improvement may be needed to reduce administrative costs and ensure equity of access.

Where relevant, Member States may wish to **consider whether to strengthen revenue collection, including through a centralisation of the collection function**. The rationale is twofold: a) to address weaknesses in contribution collection (i.e. reduce contribution evasion) and collection costs and b) to reduce disparities in the availability and use of services due to inadequate resource availability and redistribution across sub-national purchasers.

Adequate resource allocation mechanisms supported with **the definition of a minimum basket of services** to be provided by all purchasers and the implementation of **national clinical/treatment guidelines can reduce variations in the availability and quality of services across patients**. These systems need now to mature and be fine-tuned to best achieve equity in benefit packages, the fulfilment of the public insurance principles, the coherence of system governance and health system goals.

Public expenditure on health administration and insurance is a small share of GDP and of total current health expenditure (TCHE) but streamlining and clarifying responsibilities may help control costs.

Public expenditure on health administration and insurance is on average 0.3% of GDP and 3.1% of TCHE. There are differences across countries: from less or equal to 0.1% to 0.5 % of GDP and from 0.6% to 6% of TCHE. Higher costs may be associated with **monitoring of the sector** (costs, prices, contracts, activity, quality and market developments), notably in the presence of competition between health insurers. However, higher costs may be related to **complex and bureaucratic decision-making structures** involving a high number of actors and unclear responsibilities. This leads to **decision-making incoherence**. Member States should explore if they can **streamline** as well as **clarify responsibilities** in decision-making across various levels of government, between central and regional/district health authorities, between ministries and between institutions/agencies involved in health policy. The goal is to **avoid task duplication and excessive administrative costs**. Yet, the achievement of this goal has to be well counterbalanced with the goal to foster fair and transparent competition between various actors, also as an instrument to increase efficiency in the system.

Many EU health systems have seen a decentralisation trend but reaping the benefits of decentralisation requires the implementation of a number of crucial policy elements.

Countries have decentralised a number of health functions albeit to different degrees and in different ways in the last two decades. To benefit from decentralisation requires: 1) adequate and clear financing mechanisms, 2) minimum provision requirements and national standards, 3) managerial capacity and experience, 4) proper budgeting and accounting procedures, 5) transparency and accountability mechanisms and 6) good information flows across levels of decision-making. Those countries which have been successful in their decentralisation reforms are those who have implemented a combination of these essential elements.

Health systems are still highly labour-intensive but staff numbers vary across and within Member States and there are also large country differences in the skill-mix of staff...

Health professionals are vital to the provision of health services. They typically work along non-standard working patterns (e.g. shift work, night hours). As a result, improving the cost-effectiveness of health systems implies creating and maintaining an efficient and motivated workforce. **The number** of practising physicians, the number of general practitioners (GPs) and the number of practising nurses and midwives per 100 000 inhabitants have **increased for the whole of the EU** since the 1970s. However, the number of practising physicians goes from 222 in RO to 374.2 in AT, the number of GPs from 17 in PL to 153 in AT and the number of practising nurses and midwives varies from 364 in EL to more than 1500 nurses in LU and IE. The share of GPs as a percentage of all practising physicians varies from 49% in FR down to 7% in EL. So does the ratio of practising nurses and midwives to practising physicians: from 5.7 in FI down to 0.6 in EL. While almost all EU Member States regulate the number of students in medical schools, they do not regulate the location of physicians. Geographical location is regulated or financially encouraged in about a dozen Member States.

The health workforce is ageing. On average in the EU, **more than 60% of physicians have more than 45 years of age**, a proportion that **has increased over time**: from 44.4% in 1995 to more than 60% in 2008. The **share of physicians aged 55-64** has increased by about 10 pps: from around 10% in 1995 to about or **more than 20% in the large majority of Member States**. In some countries, **staff migration** to countries in need of staff and offering higher wages can become a problem for the country of origin. Lack and inadequately trained and practising staff, migration, uneven geographical distribution and unbalanced skill-mix place difficulties in ensuring a cost-effective delivery or an equitable access to services.

Member States need to improve data availability and comparability regarding the health workforce to understand the current and future situation and implement a more proactive and long-term human resources strategy in view of their situation.

There are a number of countries for which there is no comprehensive and routine information on the number of physicians and nurses across medical specialties, on practising and licensed physicians and nurses, or on the number of graduating physicians and nurses. There is still some inconsistency

across international databases and across countries. However, accurate and comprehensive information is key to ensure sufficient numbers and an adequate skill-mix.

A more **proactive use of existing regulation** is necessary to address current and future challenges. For example, a *numerus clausus* may be adjusted more regularly as a planning device to ensure sufficient supply across specialties over time. Some countries with a relatively low number of practising and licensed physicians including GPs have **increased the intake of students in medical schools**. Those countries with a relatively large number of licensed physicians but low number of practising physicians need to **understand why many licensed physicians and nurses do not go on to practice or leave the sector** after a number of years. Then a **combination of policies** associated with career development opportunities, the attribution of responsibilities and monetary and non-monetary incentives (wages, working conditions) should be implemented **to retain and attract staff back into the sector**.

The number of acute care beds per 100 000 inhabitants has gone down during the last 20 years but there are large differences across EU Member States.

The number of acute care beds per 100 000 inhabitants in the EU has gone down from 554.4 in 1988 and 491 in 1998 to 383 in 2008. The number varies from less than 200 beds per 100 000 inhabitants in FI to more than 500 beds per 100 000 inhabitants in BG, CZ, DE, LV, LT and AT. High numbers of acute care beds reflect a tradition of using hospital care as the main care setting. This is a tradition that most Member States are now trying to mitigate.

Primary, specialist and hospital care provided under public coverage varies across the EU.

Physicians can be: individual self-employed primary care physicians or arranged in private group primary care practices or working in public health centres; they can be self-employed outpatient specialists or work in private group specialist clinics or in public outpatient departments in public hospitals. In terms of acute care hospital beds, in general the vast majority of beds are in publicly owned hospitals or in not-for-profit privately owned hospitals. Only a very small number of countries have a large share of acute care beds in private for-profit hospitals. Most countries have private provision for privately paying patients: private individual or group practices and private hospitals.

Encouraging the use of primary care, referral systems, care coordination and patient choice of provider are some of the current policy emphasis in the EU...

A country's primary care system is associated with improved population health outcomes, lower costs and increased patient satisfaction. To encourage the use of primary health care, almost all Member States are **implementing a "referral system"**. A family doctor providing primary care is the first point of contact with the health system when not in need of emergency care. This family doctor is very often a GP, although in some countries other specialties provide primary care. The family doctor acts as a gatekeeper to other types of care (specialist and hospital). **In some countries**

it is compulsory while in others it is financially encouraged (i.e. the level of reimbursement is higher if a referral takes place).

The choice of provider (GP, specialist, hospital) is seen **as a way to** encourage providers to **improve their performance** (reducing prices or improving quality to attract patients). The aim is to allow choice to play a role while still controlling the consumption of health services. An additional way to improve quality of health services through primary care is that **family doctors can act as care coordinators**. This means that the family doctor actively defines an appropriate path of care together with the patient, particularly when dealing with chronic patients, takes care of patients' health promotion and disease prevention and ensures patient's follow-up care after secondary care events. The role of care coordinator may not just limit itself to health services but family doctors could also be the link to social care.

The growing emphasis on primary care has been accompanied by a small but steady increase in the number of GPs. In addition, a number of countries have increased opening hours in primary care centres. Many have now counselling phone lines and websites. Some countries are using more nurses in primary care settings to pursue health promotion and disease prevention activities to compensate for GP shortages. In a number of countries, primary care is evolving into multidisciplinary teams working in a well-equipped group practice.

...but the referral system may be ineffective and choice and care coordination are still limited.

In some countries, referral systems are in the early stages of development. Shortages, uneven distribution of primary care physicians and nurses, lack of primary care services after office hours and population expectations can render referral systems from primary to secondary care less effective. **Patients bypass the referral system** and go straight to specialists' or emergency consultations when not necessary. This **has cost consequences for the system and the patient**, as a result of unnecessary consultations and medical tests.

Choice is **increasing but it is still limited** in a number of countries notably in primary care. **Weaknesses in primary care provision limit patient choice** of family doctor, which Member States wish to combine with referral systems. Moreover, patients or purchasers **require information on** providers including **prices, activity and quality to exercise choice**. However, such information is **used in a limited number of countries**. **Coordination** between health services (from primary to specialist, from specialist to hospital, from hospital back to primary care) and between health and social care **remains weak** in most countries.

Sufficient numbers of primary care physicians and nurses, their improved distribution and after-hours access can encourage the use of primary care vis-à-vis specialist and emergency care when these are not necessary. This needs to be coupled with cost-sharing mechanisms and effective referral systems. In addition, rewarding primary care physicians for their role of care coordinators and implementing a number of e-health solutions (e.g. electronic medical record, e-prescribing) can support referral systems and care coordination.

Provider payment schemes vary across countries, across types of staff and across private or public provision. The combination of available resources (staff and beds), the method used to pay physicians and the method used to pay hospital can impact on activity...

In a labour intensive sector, remuneration is important to attract, retain and motivate sufficient numbers of staff. However, payments for health professionals are one of the largest costs in the provision of health services. Similarly, hospital funding mechanisms are key in health systems, as hospital care typically represents the largest share of health expenditure. The most common modes of paying physicians are: a salary, a capitation and a fee-for-service. The most common payment methods for hospitals are: prospective global budgets, activity-based payments, per diem (per day) payments and line-item payment.

Each method of payment affects physician and hospital behaviour in a different way. This may help explain the large variation in the number of per capita physician consultations (from more than 11 in SK, HU and CZ to less than 3 in SE), in the number of inpatient discharges (from more than 22000 in DE to less than 8000 in CY) and day case discharges (from more than 17000 in IE to less than 600 in DE and LV), in the share of day case discharges (from more than 50% in IE, NL and UK to less than 10% in LV and 5% in DE) and the average length of hospital stay (from more than 10 days in CZ and DE to about 5 days and less in DK and MT).

and therefore, it is crucial to understand the incentives associated with different payment mechanisms and ensure they are used to achieve policy objectives.

Several countries use a mix of payment modes to balance strong but often contradictory incentives. A number of countries are now using a mix of capitation and fee-for-services (FFS) or a mix of salary, capitation and FFS to pay both primary care physicians and outpatient specialists. Some have introduced a performance related payment. Similarly, several countries use now a combination of hospital payment methods. The choice of method depends on the goals of the health system, the weaknesses to address (e.g. containing cost or improving access) and the resources available to the health sector. Importantly, payment systems should be supported by good monitoring and accountability mechanisms and national clinical/treatment guidelines.

Total and public expenditure on pharmaceuticals is a relatively small but growing share of GDP and of total current health expenditure (TCHE) and is strongly publicly financed. Areas for improvement exist...

While a small share of GDP or TCHE, there are differences across countries in terms of spending on pharmaceuticals and, in some, expenditure has increased more significantly. **Differences in expenditure** relate to differences in income levels, in health system organisation and in health policies and priorities. Pharmaceutical expenditure is affected by **policies regulating prices, reimbursement levels, prescription and consumption behaviour, pharmacies, agreements with pharmaceutical companies, the availability of generics and the importance of the pharmaceutical sector and related industry policy.**

Many countries have implemented a variety of demand and supply side policies. Each has its own unique mix of policies and there is significant variation. **Generic medicines** are **gaining interest** as a powerful means to ensure cost-containment while improving access. But areas for improvement include also: a) generating and providing **better access to quality information** to patients, physicians and insurers, b) **improving pricing and reimbursement practices** through a package of supply and demand side policies including price regulation, cost-sharing schemes and **generic prescription**, and c) **improving relative effectiveness assessment**, through the use of agreed definitions, good practice principles and information exchange to improve data transferability and availability.

Considerable progress has been made to implement health information systems to improve health data collection, notably through the widespread use of ICT but some countries still lag behind in their ability to collect routine relevant data.

ICT in health has allowed for better accounting systems, better patient follow-up, better recording of providers' activity or prescribing behaviour and patients' consumption of care. However, some countries still lack information on many aspects of health services provision, such as health staff or equipment, categories of health expenditure, hospital discharges, clinical outcomes or patient satisfaction with services, for example. Moreover, many are just starting to use the information available to improve their system performance. Some e-health arrangements such as e-prescribing and electronic patient medical records are far from widespread, although they can greatly contribute to cost-saving in the medium run, while implying short-term additional cost.

In a context of constrained resources health technology assessment (HTA) can help identifying cost-effective health interventions and defining clinical guidelines. HTA, though growing in importance, is still not commonly used in the EU. To gradually increase the use of HTA to help defining the benefit package, the extent of cost-sharing, the number of high-cost equipment units, or clinical guidelines, as well as monitoring its compliance across providers remains a major challenge for most of the EU Member States. The EUnetHTA Collaboration process, joining together government-appointed organisations from EU, EEA and EFTA countries and a large number of relevant regional agencies and non-for-profit organisations that produce or contribute to HTA, aims to encourage a wider and more systematic use of HTA.

While health status has improved remarkably over the last decades, thanks to living conditions and medical progress, one can observe some worrying trends in life-styles and expenditure on promotion and prevention remains a low part of total expenditure.

Life expectancy at birth for the whole population has increased in the past decade. However, there are still large differences between countries: a 13-year gap for men between SE and LT, and an 8-year gap for women between FR and BG. The increase in life expectancy has been accompanied in general by an increase in the number of years spent in good health but a large gap between life expectancy and healthy-life years at birth remains. High rates of obesity, diet, alcohol consumption, smoking and lack of exercise persist and are associated with the main causes of mortality and morbidity in the EU (cardiovascular disease, cancer and dementia). Additional risk-factors are

emerging such as the over-consumption of certain medicines (e.g. antibiotics) or treatment non-compliance, which have resulted in bacterial resistance and have become a risk for health. Data shows that there is room to improve life-styles and tackle some risk factors to induce healthier as well as long lives in the EU.

Total and public expenditure on "prevention and public health services" constitutes a very low share of TCHE (respectively, 2.7% and 2.1% in 2008) and as a percentage of GDP (respectively, 0.3% and 0.2% in 2008). Member States who appear to have been more successful in improving life-styles have also given more priority to health promotion and disease prevention, spending relatively more on prevention and public health services as a percentage of their TCHE. They have set public health priorities more explicitly, both nationally and sub-nationally. Some have introduced a number of health targets, implemented regular monitoring mechanisms and attributed more clearly the responsibility for the attainment of priorities and targets.

Health services influence the likelihood of overcoming disease and avoiding mortality but there are many socio-economic factors that determine health.

These include a whole range of living and working conditions which can affect health through direct and indirect physical and psychological mechanisms. In addition, education and income levels are other important determinants of health. Some factors operate over long periods. As ill-health may be the result of factors outside the health sector, to improve health systems financial sustainability also means to act upon the sources of ill-health and reduce the need for curative health services. This implies the implementation of cost-effective policies outside the health sector that can generate better health and reduce the demand for health services.

To conclude, there is ample room to improve the cost-effectiveness of health systems and this has become even more pressing as a result of the need for fiscal consolidation.

From 2010, many Member States will have adopted or will adopt measures that place restrictions on public expenditure including on the growth of public expenditure on health. Complex and difficult choices may lay ahead for policy makers. Each Member State needs to assess the way its health system functions and find areas for improvement, possibly looking at its peers to find solutions that can be adapted to each national context.

In general, macro-type controls on resources and budgets and aggregate cost-containment measures need to be associated to micro-type incentive-based reforms, aimed at improving incentives for efficient resource use. Measures introduced in the last two decades aimed at improving value for money and slowing down the growth of health spending will likely need to be intensified or adopted by Member States in the immediate future and if the consolidation of public finances is to be achieved.

As a result of the wide analysis of the strengths and weaknesses of the health systems in the EU, ***the report points to several policy challenges to be addressed resolutely in the coming years. In particular, Member States need to:***

1. ensure a sustainable financing basis and an adequate pooling and distribution of funds;
2. encourage a cost-effective provision and use of health services through adequate incentives;
3. ensure a balanced mix of staff skills and prepare for staff needs due to ageing;
4. reduce the unnecessary use of specialist and hospital care while improving primary health care services;
5. ensure a cost-effective use of medicines while allowing for innovation;
6. improve the general governance (decision-making and management) of the health system;
7. improve existing data to support performance improvement;
8. use health-technology assessment more systematically for decision-making processes;
9. improve health through more effective health promotion and disease prevention in and outside the health sector.

1. Introduction

This Joint EC/EPC Report on health systems attempts to better understand the main features of health systems across the European Union (EU). In doing so the Report aims to understand the drivers (beyond demographics) of health expenditure and differences in expenditure observed across Member States. The Report also aims to identify good practices that may lead to greater efficiency and effectiveness of health systems, while taking into account country-specific circumstances. Finally, the Report identifies a number of main challenges facing health systems across the EU taking into account the degree of development and specific features of each national system.

Against a background of rising demand and constrained resources, increasing efficiency (seen here as cost-effectiveness) of health systems, i.e. getting more value for money out of the resources allocated to the sector, has become one of the most important policy goals in this area. The current economic situation has further emphasised that goal. Indeed, increasing cost-effectiveness is crucial in a context of constrained resources if EU Member States are to ensure universal access to good quality care and equity and solidarity in health, health financing and utilisation. These are the common values and principles as adopted by the Council in 2006 (2006/C 146/01)¹ and by EU Member States under the 2008 Tallinn Charter (WHO/Europe, 2008).² In this context, understanding what may explain the performance of countries' health systems, in their ever growing complexity, can help find the right policies to increase cost-effectiveness and ensure access to quality health services in a sustainable manner.

Health systems³ play an important role in promoting, protecting and restoring population health. Most societies attach a value of its own to the existence of an organised health system that is easily accessible and of high quality. A larger share and more equitable distribution of resources devoted to health systems in recent decades has led to large improvements in the health status of the EU population. Good health is an important aspiration of EU populations as part of their general wellbeing.⁴ "Citizens draw satisfaction from living longer and healthier lives and value health

¹ In 2006, EU Member States have also committed to ensuring accessible, high quality and sustainable health care under the Open Method of Coordination on Social Protection and Social Inclusion. The common EU principles of equal opportunities, access and solidarity were also reiterated in the 2008 Commission Communication "Renewed social agenda: Opportunities, access and solidarity in 21st century Europe at <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2008:0412:FIN:EN:PDF>.

² See http://www.euro.who.int/_data/assets/pdf_file/0008/88613/E91438.pdf.

³ According to the WHO, a health system is the formal structure to deliver health services in defined settings to a defined population, and whose finance, management, scope and content is defined by law and regulations. In that sense this report looks at health systems. Within health systems, this report focuses on the health services and goods associated with health education and promotion, disease prevention, curative care and rehabilitation, except where it is stated otherwise. We exclude from the report a detailed analysis of long-term nursing and support care, which we take to mean long-term care, and which we have agreed to leave for future work, acknowledging that the perspective of integrated care is somewhat lost as a result. The reason is a pragmatic one: it would be too long a report. Note, however, that the definition of health expenditure (also called expenditure on health or health spending) used in the first part of chapter 3 includes expenditure on "long-term nursing care", an element of long-term care. Nonetheless, we have chosen to use expenditure on health throughout the report (except where otherwise indicated) to ensure greater time series and cross-country comparability when looking at expenditure trends, notably in the presence of methodological changes.

⁴ In various Eurobarometers (e.g. special barometer 308 "The Europeans in 2009") health and health care services rank high in the list of main concerns of the EU population. Throughout the 2008-2010 National Strategy Reports on Social Protection and Social Inclusion good health is seen as a goal and part of each individual's well-being.

regardless of whether or not they are economically productive".⁵ The importance given to health by all population groups made the availability of good health services a political priority in EU Member States.

In addition, good health contributes to economic prosperity through, for example, improving education attainment, labour market participation and productivity. Therefore, it will be crucial in the context of an ageing society and longer working lives. Health systems, by protecting and improving population health, support healthier and more economically active societies.⁶ They employ a significant and growing number of people of diverse skills and qualifications and create demand for a number of medical goods and industries (e.g. pharmaceuticals, ICT, diagnostic and imaging equipment, biotechnology, etc.). These industries are often associated with frontline knowledge, research and innovation and the development of high-tech products.

Total spending on health goods and services absorbs a significant and growing share of total resources in the economy (about 9.6% of GDP on average in the EU in 2008 up from 8.5% of GDP in 1998). Health goods and services also constitute a significant share of public expenditure (public expenditure on health constitutes 12.3% of total government expenditure). Indeed, a large proportion of total expenditure on health is public expenditure (about 77.6% on average in the EU in 2008) and health expenditure is the second biggest component of social protection expenditure in public budgets. Total and public expenditure on health as a share of GDP have increased over time and continue to grow as EU Member States face growing pressures on their health systems. As a result, health systems' financing - and not just pension expenditure - is at the centre of the debate on the long-term sustainability of public finances.

In the coming decades, Member States will have to balance the need to provide access for all with an increasing demand for quality health services and goods in a context of limited resources. This growing demand is associated with a number of factors that include (in no particular order of relevance i.e. extent of impact on expenditure): an ageing population, technological developments, growing patient expectations, health behaviour, climate change and globalisation. For example, according to the EPC/EC 2009 Ageing Report (EPC/EC, 2009), as a result of only demographic developments, public expenditure on health care⁷ in the EU is projected to increase by 1.7% of GDP by 2060, up from 6.7% of GDP in 2007, although, depending on the Member State, the increase varies between 0.7 and 3.8% of GDP.⁸

Ageing population

An ageing population brings along new patterns of morbidity and multi-morbidity (multiple chronic diseases, disability and dependency) affecting individuals over a long period of time. This increases

⁵ See Figueras, J., et al., (2008)

⁶ See Figueras, J., et al. (2008)

⁷ In this paragraph public expenditure refers to expenditure on a specific and limited set of medical services and goods which excludes expenditure items such as "services of long-term nursing care" and "expenditure on services not allocated by function". Therefore, the term health care is used.

⁸ Using the pure demographic ageing scenario of the EPC/EC 2009 Ageing Report at http://ec.europa.eu/economy_finance/publications/publication14992_en.pdf.

the pressure to provide more and substantially different care than under a younger population structure. While the demand for medical care is likely to increase as a result of ageing, there may be a reduction in the supply of health personnel as the retirement of baby boomers is also felt in the health sector. This trend may lead to a chronic shortage of staff, if not counteracted by the adequate change in the policies of education and recruitment of young professionals. As the health sector is a labour intensive sector, depending heavily on human resources, such developments may have consequences on wages (wage increases in excess of productivity growth), one of the key components of health expenditure.

Technological developments

Advances in medical-related technology create a potential set of new interventions associated with improved diagnosis and treatment. In so doing, technology changes the methods to deliver and organise the provision of health services and goods. Technological development can change the input balance as relative prices of inputs change and the efficient mix of resources changes as a consequence. When looking at price and licensing of new medical-related technology, it can be seen that while the price of inputs such as human resources is mostly determined nationally, the price of certain medical goods such as patented drugs is determined by both internal and external factors. Standards and licensing requirements imply that private producers of medical equipment sometimes have substantial market power. In addition, some medical technology is expensive to buy and operate and health staff needs to be trained to use it.

To add to this complexity, technological development can make existing health interventions less invasive, less long or cheaper or with fewer side effects. This type of changes can produce gains in productivity and lower unit costs of production while provide a better quality of life for patients.⁹ Information and communication technology (ICT), despite the substantial short-run investment, allows for the collection of large amounts of detailed and accurate information on inputs, processes, outputs and outcomes. As a consequence, ICT allows for performance measurement and evidence-based management and decision-making. It may also free health staff from administrative procedures.

Acknowledging methodological difficulties, several studies indicate that new technology and medical progress may have accounted for 27% to 75% of the historical increase in expenditure.¹⁰ They suggest that technology (in broad terms) may be associated with further expenditure increases in the future. The OECD projects an average 1 pp of GDP increase from 2005 to 2050 (OECD, 2006). The EPC/EC 2009 Ageing Report indicates that when the impact of technological development is considered the projected increase in public expenditure on health care could reach 4.1 pps of GDP from 2007 to 2060. This is higher than the 1.7 pps of GDP due to demographic

⁹ Although this in itself could still add to health expenditure as more doctors and patients can have more treatments at their disposable. In other words, price goes down and volume goes up and depending on which effect dominates the other we have a negative or positive impact on expenditure.

¹⁰ See 2009 EPC/EC Ageing Report and Figueras, J., et al., (2008), for a list of references. Smith, S., et al. (2009) suggest that medical technology expands as a result of rising incomes and insurance coverage so that controlling for that medical technology explains 27-48% of the spending growth compared to higher estimates.

developments only. Note, though, that depending on the country the increase ranges from 1.4 pps to 6 pps of GDP.

The reason is that medical technological change entails two basic mechanisms: i) the substitution of old treatments by new, and ii) the extension of new treatments.¹¹ The substitution may lead to gains in productivity and lower unit costs of production, in accordance with the standard view of the impact of technological progress.¹² Indeed, we observe a reduction in the unit costs of several medical interventions. However, technological development more generally appears not to have helped reducing overall costs in the sector although it certainly has contributed to increasing the length and quality of life of patients. Therefore, it is argued that the rising costs in health spending associated with technological developments are mainly due to the treatment expansion effect, i.e. an increase in demand for new and better health goods and services not previously available to treat certain medical conditions. In other words, the supply of new products meets demand needs that were not previously satisfied through an increase in the amount of people diagnosed and treated for those conditions.^{13,14}

A number of related explanations are put forward. One is that many technological innovations in the health sector have not been labour-saving as in many other sectors (and which resulted in reduced overall costs in those sectors).¹⁵ Another is the fact that new interventions have been used in areas with no significant monetary gain to society, but judged necessary from the society point of view. Yet another is that inappropriate or cost-ineffective use of technology is associated with perverse economic incentives faced by those in the health sector (physicians, patients and producers of medical technology). These incentives can lead to supply-induced demand and increased expenditure beyond the necessary. Such considerations explain the intense interest in the impact of technological developments in this sector and in the way technology can be used to increase value-for money in the health system.

¹¹ See Dormont B., et al., (forthcoming 2011).

¹² In general, technological change is identified as the primary driving force behind improved productivity and economic growth (Dormont et al., forthcoming 2011).

¹³ Dormont et al., (2007) give the example of angioplasty for treating a heart attack. Angioplasty appeared more recently than bypass surgery, which was developed in the late 1960s. It is an alternative, less invasive procedure for improving blood flow in a blocked artery. This innovative procedure is less costly and more respectful of patients' quality of life than bypass surgery. Angioplasty can replace bypass surgery in some cases. However, the use of angioplasty is spreading above and beyond this type of substitution. Since the mid-1990s, it has increasingly been performed with the implantation of one or more stents (small mesh tubes that hold open the coronary artery) to improve outcomes.

¹⁴ Although an increase in the demand of existing treatments that have become cheaper and thereby more accessible could add to additional expenditure if volume outweighs prices. As cited in Dormont et al., (forthcoming 2011), for cataracts, the substitution of older technologies led to obvious gains in efficiency. There is no increase in the cost of a cataract operation between the late 1960s and the late 1990s, while health outcomes have increased: better visual quality and a reduction in complication rates. As operations are safer and more effective, a larger number of patients are operated, including those with a less severe visual acuity problem.

¹⁵ In general, it is put forward that one of the most decisive effects of technological change is that it makes it possible to produce a given volume of output with a smaller volume of inputs.

Growing patients' expectations

The pace of economic and technological progress is matched by the rate at which populations seek the benefits of newer, more effective and possibly expensive health technology. As national income rises the population place a greater demand on health systems. They demand more information, accountability and transparency regarding the services they consume and require evidence of value-for-money in their role as taxpayers. Citizens surf the web for information on all aspects of health and health interventions and desire greater choice of provider, care setting and tailor-made treatments. They are becoming more important participants in the decision-making process in a system that they see is ultimately there to serve them.

Moreover, citizens have become more aware of medical errors, and are more prone to complain and litigate when they and their relatives are the victims of negligence or miscommunication, or even minor departures from the outcomes apparently achievable by leading practitioners in leading centres (OECD, 2002). Interestingly, this fact, coupled with societal changes towards a more risk-free society, has resulted in an increase in the so-called "defensive medicine", the practice of diagnostic or therapeutic measures (tests, prescriptions, hospitalisations) conducted primarily as a safeguard against possible malpractice liability. While particularly important in the USA, where defensive medicines may account for about 25% of total health expenditure¹⁶, this phenomenon is also growing in the EU.

Cultural factors (e.g. self-care) may reinforce or moderate such expectations. In general, while better informed consumers can improve their life-styles and encourage providers to improve service delivery, societies will have to balance their wish to increase resources for health spending with their willingness to pay for this increase.

Life-styles/health behaviour

The impact of the above factors can be mitigated through an improvement in population health status, notably via an improvement in life-styles. It can also be reinforced through emerging risky and unhealthy behaviour such as lack of exercise, poor diet, excessive drinking and smoking or the outbreaks of communicable diseases such as tuberculosis or HIV/AIDS. A healthier ageing population can reduce the impact of demographic change and, therefore, help control health expenditure growth. Good health allows for public and private savings (reduced expenditure), releasing resources for investment in other areas. According to the EPC/EC 2009 Ageing Report, in the presence of an improvement in the number of years spent in good health, the projected increase in public expenditure on health care in the EU can be reduced by 50 per cent.

¹⁶ See: <http://www.jacksonhealthcare.com/online-media-room/press-releases/gallup-defensive-medicine-release.aspx>. In the survey conducted by Gallup, 73% of the physicians surveyed in the USA agreed that they had practiced some form of defensive medicine in the past 12 months. 23% of practicing physicians estimate that defensive medicine constitutes less than 10% of their practice while 29% estimate the percentage to be between 10% and 25%.

Climate change and globalisation

Climate change is also seen as an additional and growing element of pressure in that it may generate new and uncommon disease patterns in the EU. Globalisation has implications for health as ill health can travel fast across countries and health systems have to be prepared to respond to pandemic situations.

Supply side factors

Levels of health spending are the result of the interaction between demand side factors above and supply side factors associated with the funding and delivery of health services i.e. the organisational features of health systems. These supply side factors are many and include sector regulation and monitoring and financial and non-financial incentives faced by both service providers and users of health services and goods. For example, Gerdtham and Jonsson (2000) suggest that the absence of gatekeeping, payment schemes requiring patients to make payments before reimbursement, fee-for-service instead of capitation in physician remuneration, a higher ratio of inpatient to outpatient care, private sector provision of care, and a higher number of physicians per capita tend to increase healthcare expenditures.¹⁷

Economic crisis

The current financial and economic crisis will bring about, in the short to medium term, a period of budgetary constraints associated with the need to reduce large government deficits and put public finances back on the right track. Slow recovery and unemployment rates that remain high in many parts of the EU place serious constraints on the capacity of financing the health sector in the short to medium term. As a result, the recent economic crisis has rendered more pressing the need to improve cost-effectiveness of health systems and has turned it into a main policy priority that is likely to remain for many years to come. However, in doing so, the economic crisis also provides a window of opportunity to reflect on the role and performance of health systems and implement sound and needed reforms.

The need for reform has recently been illustrated in a number of areas and documents. The recent OECD work on health systems efficiency (Joumard, I., et al., 2008, OECD; Joumard, I., et al., 2010, OECD)¹⁸ shows that, while health spending is associated with better health, there is room for improvement in the way countries use the resources allocated to the health sector. The work shows that a better use of resources (higher efficiency) can lead to a better quality of health services and equity of health. In broad terms, countries can do more, i.e. improve health outcomes, while keeping the level of resources currently allocated to the system. Else, they can achieve the same health outcomes while saving resources.

¹⁷ Gerdtham, U.G. and Jonsson, B. (2000). Also Smith, S., et al., (2009) suggest for example the combination between certain providers' payments and larger insurance coverage can have an impact on spending.

¹⁸ Joumard, I., et al., (2010, OECD).

The need for reform is also reflected in the recent work regarding health inequalities in the EU.¹⁹ This work shows that the average level of health in the EU has continued to improve over the last decades, in part due to more widespread quality medical care. However, differences in health between people living in different parts of the EU and between socio-economic groups of the population remain substantial and in some instances have increased. This suggests in turn that the increase in health expenditure may not have benefited all groups of the population in the same way. Consequently, this should encourage the search for more effective and cost-effective policies in the health sector. Avoidable health inequalities can represent large costs for the health system and put unnecessary pressure on public budgets. Recent analysis estimates a minimum gain of 1.4% of GDP with an estimate for the overall value of gain of around 9.5% of GDP if death and disease rates of those with lower educational attainment were the same as those with higher education.²⁰

Governments face complex choices in delineating publicly funded care provision. They have to face the trade-off between stronger solidarity and less willingness to pay between high/low income individuals and between the healthy and the sick: as they get richer, people may be less inclined to pay for others when they have to forfeit larger shares of their income in the future. With higher public spending may come deadweight losses due to increased mandatory contributions; higher premiums and taxes required for funding and public health spending may crowd out alternative public spending in for example education, although these negative effects of higher public spending on healthcare may be at least partly offset by the benefits of better health through, for instance, improved participation. Alternatively private healthcare spending may increase; this puts pressure on equal access and may cause health damage.

The remaining of this Report is organised as follows. Chapter 2 describes the economic importance of the sector in terms of contribution to growth and employment. Chapter 3 looks at past and recent trends in health expenditure and the potential impact of the economic crisis. It also provides an overview of the 2009 expenditure projections and the impacts of some factors (demographic change, changes in health status, national income). Chapter 4 provides a brief literature review of the concepts of health systems efficiency and effectiveness. It reviews a set of issues that can provide guidance in assessing health systems and identifying challenges and good practices. Chapter 5 looks at possible determinants of health expenditure by looking at how health systems are financed and services and goods are delivered i.e. the institutional features of health systems. Chapter 6 concludes the Report by highlighting a number of challenges that EU Member States face in relation to their health systems. A comprehensive set of country-specific fiches describing the main features of health system organisation and financing mechanisms accompanies the Report.

¹⁹ See the 2009 Commission Communication "Solidarity in health: reducing health inequalities in the EU" and related work at http://ec.europa.eu/health/ph_determinants/socio_economics/cons_inequalities_en.htm. In this Communication the European Commission announces a series of actions to help Member States and other actors tackle the gaps in health which exist between and within countries in the EU. Note that reducing health inequalities has been stressed by the European Council of June 2008 which underlined the importance of closing the gap in health and in life expectancy between and within Member States. See also Mackenbach, J.P. (2006), for the UK Presidency; WHO's Commission on Social Determinants of Health (CSDH), 2008; de Looper, M. and Lafortune, G., (2009, OECD).

²⁰ This is the result of an increase in the number of workers, the number of days worked, productivity of work and income levels and the reduction in premature death before retirement and chronic disease. See Mackenbach, J.P. et al., (2007) for European Commission, DG Health and Consumer Protection, 2007.

2. The economic importance of the health sector

2.1. Impact of health on economic growth

In recent years, health gained considerable attention in the economic literature as one of the drivers of economic welfare, both at micro and macroeconomic level. It has been argued that health status of the individuals and of the entire population affects not only their social and physical well-being but also their economic situation. A large number of available studies²¹ find a statistically significant relationship between health and many variables characterising labour market participation and productivity.

The analysis of the linkages between health and economy typically differs between the group of developing and developed countries. This is related to a basic distinction in disease patterns and the forces driving the economic growth between the two groups of countries. In developing countries, the greatest burden of disease is attributable to communicable diseases, maternal and perinatal conditions and nutritional deficiencies, which need to be treated pharmacologically or prevented by ensuring better living conditions. In the developed countries, the pattern is different: the greatest burden is linked to non-communicable diseases (such as cancer, cardiovascular diseases, diabetes, injuries, mental health problems), which are seen to require multi-disciplinary policies to prevent and treat them. Furthermore, the two groups of countries differ in the main production techniques, which are dominated by agriculture and industry that are mainly manual labour-based in the developing countries and by technology-based and services-oriented production in the high income countries.

Good health is an essential determinant of economic performance and individual welfare in the developing countries, where ill people are in general more constrained in executing the professional activities than in the developed areas. Also in the high-income countries like those of the EU, a number of arguments, supported by empirical evidence, are put forward in favour of the existence of a positive relationship between health and economic growth. These describe mainly relationships at the micro level as, in the past, a lack of aggregate and comparable indicators of health status, made it often more difficult to find a clear statistical correlation between the general health status of the population (measured typically by life expectancy) and the economic growth of a country.²²

Health can affect economic growth through a number of channels. A mechanism which is most widely discussed and quantified in the literature²³ is the impact of health status on public and private expenditure on health and long-term care and other areas of social protection (including disability pensions, sickness benefits etc.). Higher spending on health items narrows the range of other financing options, including investment in research, education and other productivity-enhancing areas. In other words, poor health limits investment in other areas that can create growth.

²¹ See Suhrcke et al., (2005, 2006a, 2006b) for a comprehensive overview of existing academic literature and Figueras et al., (2008). See also the report of the WHO Commission on Macroeconomics and Health (2001), chaired by Prof. Jeffrey D. Sachs at <http://whqlibdoc.who.int/publications/2001/924154550X.pdf>.

²² This may be for statistical reasons, that is, the fact that differences in life expectancy in the high income countries used in the analysis varied relatively little.

The fiscal channel is, however, not the only way in which health affects economy. The relationship works through a number of other channels: poor health reduces labour productivity, labour force participation, education attainment or savings.

At an individual level, better health has an obvious impact on his/her ability to work, increasing individual and aggregate labour productivity, either when measured per capita (by reducing absenteeism) or per hour (by allowing workers to execute the tasks more effectively). This has an impact on wages and earnings and, in aggregate terms, on GDP per capita. Furthermore, good health increases the probability of participating in the labour force, through higher ability to work and earn living from wages rather than social benefits and through lower propensity to retire from the labour force (e.g. SHARE, 2008). In this latter case, improvements in health that can contribute to increase labour market participation at older ages and that accompany changes in retirement ages can have a substantial impact on the general economy.

Health affects not only the labour supply of the ill and disabled but also of those who live with and take care of them. Informal care is widely spread in Europe, often provided by adult female children. Studies (e.g. SHARE, 2008) show that labour market participation can be significantly reduced when individuals have to care for their parents. More specifically, informal elderly care decreases women's labour force participation especially in their middle ages and until retirement in many EU countries. The strength of the relationship depends on the size of the family, availability of formal care, the possibility to use flexible work arrangements and cultural factors.

Health affects economic and social situation of individuals and societies also through its effect on the education attainment of children and young people. Good health during childhood normally improves cognitive functions and decreases school absenteeism and early drop-out rates. The educational attainment of healthy individuals is therefore statistically higher, not only because of better health in early ages. The education attainment, in turn, is positively correlated with both individual and aggregate revenues and welfare, through better jobs. Higher levels of education induce higher productivity and economic growth.

A similar argument is also presented in relation to the individual and aggregate amount of savings in an economy, which appear to be correlated with health status, and in particular with life expectancy, as people who expect a long life have higher propensity to save for retirement.

Lack of comparable aggregate indicators has prevented researchers from establishing a clear quantifiable link between population health status and economic growth. In several studies health status was typically measured by life expectancy, which either did not vary much between the countries chosen in a particular study, or did not proxy well the quality of life/morbidity aspect of longevity. More recently, a large number of country-, sector- and disease-specific studies provide us with evidence that good health does affect positively the welfare of both individuals and entire

²³ For details see: EPC/EC 2009 Ageing Report and Przywara (2010).

societies.²⁴ This has been put forward as an argument for having expenditure on health, both from private and public sources, considered as a long-term investment, rather than current consumption of available resources. It is important to note that the relationship between health and economic growth is not simple and linear and that there are circular links: education, labour market participation and economic growth can also contribute to the health of individuals.

In addition, the health sector employs a significant and growing number of people of diverse skills and qualifications (see next section) and creates demand for a number of industries (e.g. pharmaceuticals, ICT, diagnostic and imaging equipment, biotechnology, etc.). These industries are often associated with frontline knowledge, research and innovation and the development of high-tech products. The pharmaceutical sector shows the importance of some of these industries to EU production and trade. With an estimated share in 2008 of 31.1% of world pharmaceutical output, a global output of nearly €196 billion, and sales of €133 billion the EU pharmaceutical industry is one of EU's best-performing sectors. The pharmaceutical industry is the 5th largest sector in the EU, accounting for 3.5% of total manufacturing production. Pharmaceutical companies in the EU employ approximately 633,000 employees. EU's trade surplus in pharmaceuticals increased from €33 billion in 2008, to €35 billion in 2009.

2.2. The health sector as a productive sector

According to EU-KLEMS data, the contribution of the health and social work sector to the overall output in the economy has been fairly constant since 1997 at about 5% of gross output at current basic prices (Table 1) and at 7% of the gross value added at current basic prices (Table 2). This indicates that gross output and gross value added in the sector have increased over the decade (in volume indices from 106.6 in 1997 to 146.1 in 2007 and from 105 in 1997 to 133.5 in 2007 respectively), very closely in line with the overall economy. Nevertheless, some cross-country differences can be observed. For example, CY, ES, EL, IE, MT, NL, PT and UK show a clear increase in the share of gross output of the health and social sector from 1998 to 2007. SE and FI also show an overall increase, although the 2006 and 2007 values are lower than those from 2002 to 2005. Some of these countries have indeed the highest share of employment in the health and social work sector (NL, FI, SE, UK, IE) and/or have seen a significant increase in the share of employment in the sector (ES, CY, UK and NL followed by EL, PT, MT and FI) as shown in section 2.3.

Some cross-country differences can also be observed in terms of the share of gross value added. For example, ES, EL, IE, MT, NL, PT and UK but also FR, LU, IT, DE, CZ, BE and AT show an increase from 1998 to 2007, albeit to different extents. SE and FI also show an overall increase although 2006-2007 values are lower than those in 2002-2005. Again, some of these countries have the highest share of employment in the health and social work sector (NL, FI, SE, UK and IE as well as BE, FR, DE, LU) and/or have seen a significant increase share of employment in the health and social work sector (ES, UK and NL as well as AT, followed by EL, PT, MT and FI, as well as BE and DE followed by LU) as shown in section 2.3.

²⁴ As Figueras et al. (2008) report, some authors including Suhrcke and Urban (2006, published 2010) have used measures of health status other than life expectancy such as cardiovascular disease mortality, and have found that health has a substantial impact on economic growth in high-income countries.

**Table 1 - Gross output of the health and social work sector
as a share of total gross output of the economy**

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
AT	4.7	4.7	4.5	4.6	4.7	4.7	4.6	4.6	4.5	4.5
BE	4.3	4.5	4.4	4.5	4.7	4.9	4.8	4.7	4.5	4.5
CY	2.7	2.7	2.7	2.7	2.8	3.5	3.4	3.5	3.4	3.3
CZ	2.3	2.4	2.3	2.3	2.5	2.5	2.4	2.4	2.3	2.3
DE	5.1	5.1	5.0	5.0	5.2	5.3	5.2	5.1	5.0	4.9
DK	7.3	7.4	7.1	7.2	7.5	7.7	7.7	7.4	7.2	7.3
EE	2.1	2.3	2.1	1.9	2.0	2.1	2.1	2.1	2.1	2.2
ES	3.6	3.7	3.7	3.6	3.9	4.1	4.5	4.7	4.6	4.7
FI	5.2	5.2	4.9	5.2	5.4	5.7	5.7	5.8	5.7	5.6
FR	5.3	5.2	5.0	5.0	5.2	5.4	5.5	5.5	5.5	5.5
GR	4.2	4.2	4.1	4.3	4.1	4.2	4.1	4.4	4.5	4.6
HU	2.8	2.8	2.7	2.7	3.0	3.2	3.1	3.1	2.8	2.7
IE	3.9	3.5	3.8	4.2	4.7	5.6	6.2	6.3	6.3	6.2
IT	3.7	3.6	3.6	3.7	3.8	3.8	3.9	4.0	4.1	3.9
LT	3.0	3.5	3.2	2.8	2.5	2.5	2.4	2.5	2.5	2.5
LU	2.4	2.3	2.0	2.3	2.4	2.6	2.7	2.5	2.2	2.1
LV	2.8	2.9	2.7	2.6	2.6	2.5	2.5	2.2	2.0	2.0
MT	3.0	3.0	2.9	3.2	3.3	3.4	3.7	3.7	3.6	3.7
NL	4.8	4.8	4.7	4.9	5.4	5.7	5.7	5.6	5.6	5.5
PL	2.5	2.3	2.3	2.6	2.8	2.8	2.4	2.5	2.5	:
PT	4.2	4.3	4.4	4.6	4.9	5.1	5.2	5.3	5.4	:
SE	6.4	6.4	6.4	6.8	7.2	7.4	7.2	7.1	6.9	6.9
SI	3.5	3.5	3.5	3.6	3.6	3.6	3.5	3.5	3.3	:
SK	2.3	2.3	2.1	2.2	2.2	2.1	2.1	2.1	1.9	1.9
UK	5.3	5.5	5.6	5.8	6.0	6.3	6.5	6.6	6.7	6.7
EU25	4.9	4.8	4.7	4.8	4.9	5.0	5.0	5.0	4.9	4.8

Source: EU-KLEMS and Commission services calculations. EU25 average is provided by EU-KLEMS. To aggregate across countries in the EU-KLEMS use is made of Purchasing Power Parities (PPPs).

**Table 2 - Gross value added of the health and social work sector
as a share of total value added of the economy**

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
AT	5.4	5.3	5.2	5.4	5.5	5.6	5.7	5.8	5.8	5.7
BE	6.2	6.5	6.5	6.7	6.8	6.9	6.9	7.0	6.9	7.0
CY	3.5	3.5	3.6	3.5	3.7	4.0	3.9	3.9	3.8	3.7
CZ	3.5	3.5	3.5	3.7	4.1	4.1	4.1	4.1	4.0	3.8
DE	6.6	6.6	6.7	6.8	7.1	7.2	7.1	7.3	7.2	7.0
DK	10.5	10.6	10.3	10.5	10.7	11.0	11.0	10.8	10.5	10.6
EE	3.0	3.2	3.0	2.9	2.8	2.9	3.0	3.1	3.0	3.2
ES	5.0	5.1	5.1	5.0	5.1	5.3	5.4	5.5	5.5	5.6
FI	8.1	8.0	7.7	7.8	8.0	8.4	8.5	8.7	8.6	8.4
FR	7.8	7.7	7.5	7.6	7.9	8.1	8.4	8.4	8.5	8.5
GR	5.4	5.4	5.3	5.2	5.4	5.4	5.2	5.9	6.1	6.2
HU	4.1	4.2	4.3	4.2	4.5	5.0	4.7	4.7	4.4	4.2
IE	5.3	5.3	5.5	5.7	6.0	6.8	7.6	7.7	7.8	7.7
IT	5.2	5.2	5.4	5.4	5.4	5.4	5.6	5.8	5.9	5.6
LT	3.9	4.0	3.7	3.4	3.2	2.9	2.9	2.9	3.2	3.3
LU	4.3	4.2	3.8	4.5	4.5	4.7	5.1	4.9	4.8	4.9
LV	3.9	3.7	3.4	3.2	3.0	3.0	2.9	3.0	2.9	2.8
MT	4.6	4.7	4.6	5.2	5.4	5.6	6.1	6.0	5.9	5.9
NL	7.3	7.3	7.3	7.6	8.4	8.8	8.9	8.8	8.7	8.7
PL	3.5	3.2	3.3	3.7	4.2	4.4	3.6	3.6	3.7	:
PT	5.0	5.2	5.4	5.8	6.0	6.1	6.3	6.7	6.8	:
SE	9.6	9.8	9.9	10.4	11.0	11.1	11.0	11.0	10.8	10.7
SI	4.9	5.0	5.2	5.2	5.1	5.1	5.1	5.2	5.0	:
SK	4.2	4.1	3.6	3.6	3.6	3.6	2.9	3.2	2.9	3.0
UK	6.4	6.4	6.5	6.7	6.9	7.1	7.2	7.3	7.3	7.3
EU25	6.6	6.5	6.5	6.6	6.7	6.8	6.8	6.8	6.8	6.6

Source: EU-KLEMS and Commission services calculations. EU25 average is provided by EU-KLEMS. To aggregate across countries in the EU-KLEMS use is made of Purchasing Power Parities (PPPs).

It is also interesting to look at the productivity of the health and social sector vis-à-vis the overall economy. Labour productivity of the health and social work sector is measured here as the ratio of value added to total hours worked and in comparison with the overall economy (see Table 3). It can be seen that labour productivity of the health and social sector for the EU25 is about 79% of the labour productivity of all industries aggregated.²⁵ However, there are important differences across countries. In EL, IT and PT productivity is actually above that of the overall economy and above the EU average. In CY, ES and SI it is about or close to labour productivity in the overall economy and above the EU average. Interestingly, when looking at the most recently acceded Member States labour productivity in the health and social work sector is overall higher in these countries than it is in the EU25, when adjusting to purchasing power standards. This is perhaps associated with a lower share of employment in the sector in the more recently acceded countries compared to the share in older Member States (section 2.3).

Table 3 - Labour productivity of the health and social work sector (measured as value added/total hours worked) in comparison with the overall economy

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
AT	68.2	64.7	62.3	63.8	63.5	64.5	63.4	63.7	63.0	60.3
BE	70.4	73.7	72.8	73.9	72.7	71.7	71.4	71.3	70.8	71.5
CY	86.8	85.7	86.1	90.2	93.7	106.3	106.1	105.6	100.9	98.9
CZ	67.6	66.8	66.0	72.3	78.5	78.2	78.8	78.0	76.0	72.9
DE	76.1	75.9	75.9	75.6	76.9	75.3	73.5	73.5	72.6	71.2
DK	70.2	70.0	69.7	71.5	71.6	70.5	69.9	68.4	64.6	70.1
EE	56.1	61.9	63.6	56.5	54.2	50.5	48.8	55.0	53.5	59.1
ES	96.2	96.9	96.5	96.7	95.4	96.6	96.3	94.2	91.0	92.2
FI	67.7	67.6	64.4	62.9	63.3	64.8	64.4	65.7	64.9	63.3
FR	72.2	71.1	71.9	74.1	76.8	76.1	77.4	76.7	75.3	73.9
GR	118.4	114.0	116.1	117.3	120.4	125.5	101.9	118.0	120.9	117.3
HU	65.4	67.4	69.9	69.6	73.1	74.9	69.7	70.6	64.8	64.3
IE	78.4	78.6	76.7	76.2	74.5	80.7	88.0	87.8	86.7	83.1
IT	96.0	97.4	98.7	98.8	99.6	99.6	101.1	104.4	106.7	102.2
LT	60.4	56.8	53.2	46.3	46.7	42.0	42.6	44.5	46.5	49.4
LU	82.1	84.4	71.2	80.7	76.4	75.2	79.0	73.5	72.1	73.3
LV	59.7	58.8	52.7	57.7	49.0	51.1	55.0	54.0	63.0	62.8
MT	73.8	72.6	72.1	78.8	81.2	82.8	83.8	92.2	86.6	86.5
NL	76.9	77.1	77.4	77.7	79.9	79.2	77.6	75.9	74.7	74.2
PL	54.7	50.3	52.8	63.0	73.2	79.5	73.6	75.1	77.2	:
PT	115.6	116.5	119.6	126.4	126.3	127.2	130.5	134.3	138.2	:
SE	69.4	70.1	70.6	72.9	73.7	74.1	72.4	72.1	73.0	73.8
SI	109.1	107.0	110.3	108.9	103.5	99.3	97.2	95.4	91.4	:
SK	65.5	61.8	52.5	52.9	55.0	58.5	48.5	57.5	54.6	51.9
UK	74.0	76.1	75.6	76.4	76.7	78.4	76.7	78.8	76.8	77.0
EU25	85.6	83.9	84.1	84.9	85.1	84.1	82.8	83.0	81.3	79.3
EU15	80.4	79.5	79.9	80.2	79.9	79.1	77.8	78.1	76.5	74.7
EU10	127.0	116.9	115.4	123.9	129.6	127.4	124.7	124.9	121.5	:

Source: EU-KLEMS and Commission services calculations. EU averages are provided by EU-KLEMS. To aggregate across countries in the EU-KLEMS use is made of Purchasing Power Parities (PPPs).

Note that the measurement of volumes of health services constitutes a challenge for national accountants and price statisticians. In the past, such services have typically been measured by the inputs used to provide them. This was because the product offered is not a standardised one and the production process is a complex one. However, such an approach neglects any productivity changes in service provision. Moreover, governments and citizens are interested in knowing whether the

²⁵ Given the fact that the health sector is labour intensive, more than many other sectors, and that labour, in general, is relatively expensive in the EU compared to capital inputs, a minor nuance might be in place in light of the labour-intensity of health services.

financial resources allocated to the health sector are well spent and whether they do indeed improve people's health. Policy makers need this information for providing, funding and regulating such services.²⁶

Eurostat has deemed the method of using inputs as a measure of outputs as unacceptable and recommends for purposes of national accounts to measure outputs rather than activities (prescriptions or number of operations). Therefore, an increasing number of countries are now working towards output-based measures of the volume of these services. This means measuring the quantity of health services provided to individuals with an adjustment for new products or services and quality change.²⁷

2.3. The health sector – a potential for high-skilled and flexible employment

The health sector contributes significantly to the employment in the EU as it employs a significant and increasing number of individuals. In 2009, health and social work activities²⁸ accounted for about 10% (Labour Force Survey – LFS – data) of total employment in the 27 Member States. The share varies considerably across Member States, ranging from 4%-5% in CY, RO, BG, EE, EL and LV to 16% in NL, FI and SE and 18% in DK (see Table 4). In very general terms, Member States with a higher share of health and social work employment also have higher total health expenditure as a percentage of GDP and have seen a higher growth in total health expenditure between 2000 and 2008.²⁹ This share has increased from 9% in 2000.³⁰ Between 2000 and 2009 the number of people employed in health and social services in EU27 has increased by 24.3% (from 17285 in 2000 to 21483.1 people in 2009), faster than employment in the overall economy (8.9%), making it one of the fastest growing sub-sector of services.³¹ However, the change in employment differed across countries. It was negative in six countries -9.3% in SE, -6.6% in PL, -4.6% in LV, -2.4% in BG -

²⁶ See Schreyer, P., (2010, OECD) and Castelli A., et al., (2007).

²⁷ This approach is very useful when analysing the outcome or the output of healthcare. It is not as straightforward when dealing with prevention, since the output is by definition postponed in time. So, even when prevention is highly effective we risk miss this finding when adopting standard methods of measuring outputs. To have a model on how to measure effectiveness and efficiency of prevention activities refer to the very recent findings of the OECD (2010b) "Economic of prevention" projects

(http://www.oecd.org/document/31/0,3343,en_2649_33929_45999775_1_1_1_1,00.html)

²⁸ The NACE classification (rev.2 from 2008) groups health care activities together with social services under the heading Q 'Human health and social work activities'. In the previous version (NACE rev.1.1 from 2005) the corresponding heading was N 'Health and social work'. Distinction between the two components is not available.

²⁹ There are some exceptions: EL and SI have a lower share of health and social work employment but have a total health expenditure which is higher than 8% of GDP. MT, which has a 7.5% share of GDP is quite high. It is important to note that the statistics used in this section regard two sectors – health and social work – which may differ in terms of gender distribution, level of remuneration and labour intensiveness. In many countries the health employment is a very large share of total employment on health and social work. However, in other countries (e.g. DK, FI, SE, NL) employment in social work represents a more significant share of total health and social work employment. This may partly explain the large cross-country differences observed. For example, the fact that PT, IT and ES have a total health expenditure which is higher than 8% of GDP and are half way through the table, while DK, FI, SE and NL are higher up with a similar level of total health expenditure as a percentage of GDP. In these countries, the gender distribution, level of remuneration and labour intensiveness of social workers may have a larger influence in the overall employment features shown in this section.

³⁰ See also EU- KLEMS.

³¹ Within services, activities of households grew 42.3% and hotel and restaurants grew 25.9% but financial and insurance activities grew only 6.6%.

2.2% in LT and -1.2% in HU. It was positive in all other countries, reaching a very high growth of 71.1% in IE, 62.3% in ES, 51.7% in LU and 48.1% in CY (see Table 4).

Table 4 – Share and growth of total employment in the health and social work sector, 2009

	Share of the health and social work sector (% of total employment)	Growth in employment in the health and social work sector 2000-2009	Share of female employment in the health and social work sector (%)	Share of part time employment in the health and social work sector (%)
Cyprus	4.3%	48.1%	68.1%	6.2%
Romania	4.5%	24.6%	78.8%	:
Latvia	5.0%	-4.6%	85.7%	10.1%
Bulgaria	5.0%	-2.4%	80.4%	:
Greece	5.2%	22.7%	68.1%	3.1%
Estonia	5.5%	17.1%	91.7%	:
Poland	5.5%	-6.6%	82.3%	9.3%
Slovenia	5.6%	15.6%	77.7%	6.9%
Slovakia	6.3%	1.4%	83.7%	3.5%
Lithuania	6.4%	-2.2%	88.0%	5.9%
Hungary	6.5%	-1.2%	78.5%	4.4%
Czech Republic	6.6%	14.2%	81.6%	7.7%
Portugal	6.7%	24.7%	85.0%	4.6%
Spain	7.0%	62.3%	76.8%	13.2%
Italy	7.2%	30.0%	69.9%	19.4%
Malta	7.7%	18.3%	56.9%	20.0%
Austria	9.6%	32.4%	78.7%	41.8%
Luxembourg	10.2%	51.7%	70.0%	32.0%
Germany	11.9%	26.3%	77.4%	39.4%
Ireland	12.0%	71.1%	82.4%	32.3%
France	12.8%	35.6%	79.2%	27.1%
United Kingdom	13.0%	24.8%	78.4%	35.6%
Belgium	13.4%	20.3%	78.1%	44.7%
Sweden	15.6%	-9.3%	82.6%	47.1%
Finland	15.9%	18.3%	89.0%	14.3%
Netherlands	16.1%	28.8%	82.0%	77.5%
Denmark	18.4%	6.4%	82.5%	41.7%
EU 27	10%	24.3%	78.5%	31.6%

Source: Eurostat LFS and Commission services computations.

The increase in the share of the sector in the overall economy employment was particularly strong during the economic slowdown periods (see Table 5). Over the years 2002-2004, when overall economic growth was weak, it has increased from 8.9% to 9.5%, while in a period of economic boom between 2005 and 2007 it remained broadly constant at 9.6%.³²

³² This is broadly in line with the general perception that during economic slowdown the level of health spending relative to GDP increases, and then remains constant after, during economic booms. The OECD Ministerial Committee

Table 5 - Annual growth rates in employment in the health and social sector (in percentages), 1998-2009

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
BE	0.2	7.8	8.9	-2.1	4.6	3.9	-3.7	3.1	2.2	1.1	6.1	4.0
BG	:	:	:	-3.3	1.1	-2.8	-6.2	7.6	2.8	-1.8	-2.9	3.7
CZ	-2.2	0.7	7.1	3.6	-1.2	1.1	6.0	4.9	0.1	2.2	-4.5	1.6
DK	2.8	3.6	-0.1	-1.1	6.3	-1.6	-0.1	-3.0	2.7	2.7	2.6	-1.9
DE	3.4	4.6	1.7	1.9	1.9	4.4	2.8	2.1	2.5	2.6	1.8	3.5
EE	0.0	2.5	-17.5	17.8	-8.2	13.1	-1.5	2.5	4.8	-1.1	-15.7	8.6
IE	-3.4	5.9	10.6	8.4	10.7	6.1	4.4	6.8	8.0	5.2	2.6	3.5
EL	10.0	0.8	0.5	-2.0	2.6	-0.7	16.4	0.1	3.3	5.9	-3.2	-0.6
ES	1.0	2.7	6.4	1.2	9.1	10.8	1.9	11.7	4.1	4.1	2.5	4.9
FR	1.2	1.6	1.7	2.7	1.8	12.6	3.6	3.4	0.6	2.5	1.8	2.3
IT	3.3	0.5	-1.6	2.4	1.4	0.3	12.3	4.1	1.7	0.0	4.2	0.8
CY	:	:	-3.6	13.9	2.4	13.5	3.5	-0.7	-4.1	18.4	-7.8	3.9
LV	:	1.0	-10.6	3.3	44.9	-9.4	-19.3	9.6	-13.2	-2.5	5.6	-11.1
LT	:	4.3	-4.5	12.6	-5.3	-2.6	10.8	-7.6	7.3	-5.2	-8.0	-1.8
LU	1.7	15.4	2.1	1.4	0.7	6.1	1.9	17.5	4.8	3.0	0.0	8.4
HU	5.8	1.3	2.1	-2.6	0.3	11.9	0.3	-3.1	3.4	-3.4	-4.0	-2.9
MT	:	:	:	-1.0	6.8	-12.7	7.3	9.7	-0.9	0.9	7.1	1.7
NL	1.9	2.1	5.1	6.7	-1.6	8.3	0.9	1.7	2.9	4.2	1.4	1.4
AT	2.8	0.6	0.1	3.4	4.2	1.2	-1.4	11.1	-0.5	-0.6	3.7	8.1
PL	:	:	:	-2.0	-1.0	-10.9	-1.8	2.9	6.1	0.3	-1.6	2.3
PT	-2.2	15.5	10.5	0.8	-3.8	18.2	4.6	6.1	0.6	3.2	-10.7	5.8
RO	-6.3	-1.7	-5.8	5.6	13.9	-0.9	-1.1	-5.5	7.0	-0.7	1.4	3.8
SI	-0.2	8.2	3.1	1.1	7.9	-7.6	3.2	6.3	10.0	-1.2	-0.9	-2.9
SK	:	8.4	-5.8	-0.4	-5.3	5.8	2.9	-0.9	3.3	0.0	-2.4	-1.1
FI	-0.8	6.9	-0.2	6.8	-0.8	2.0	1.6	1.6	1.3	0.4	2.5	1.8
SE	-1.1	4.1	-3.5	3.3	1.8	-13.1	-1.1	3.5	-0.8	1.8	-1.8	-2.1
UK	1.2	0.2	0.5	3.3	0.6	3.4	4.9	3.9	1.6	-2.2	3.0	4.1
EU27	:	:	:	2.4	1.9	3.7	3.1	3.3	2.1	1.3	1.5	2.6

Source: Eurostat LFS and Commission services computations.

The sector is highly dominated by the female labour force (see Table 4): in 2009, 78.5% of all those employed in the health and social work sector were women, while only 21.5% were men, in clear opposition to the overall economy where only 45.4% of posts are occupied by women and 54.6% by men. Over the last decade, a similar trend of expansion of female employment has been visible both in health and social services sector (up from 77.7% in 2000) and in overall economy (up from 43.4%). The differences in gender-specific employment figures vary across countries, however, with 92% of female employment in EE, 89% in FI, 88% in LT on the one hand and 57% in MT, 68% in CY and GR and 70% in IT and LU.

Older workers are over-represented in the health and social sector, while younger workers are under-represented. The same report indicates that the largest increase in employment for older workers has indeed occurred within the "health and social work" sector. Also, the absolute number of recent migrants (non-EU born) employed in the health and social work sectors is sizeable but the relative contribution to the employment expansion in this sector was much more limited than in other sectors such as private households activities, wholesale and retail trade, hotels and restaurants, transport, storage and communication and financial intermediation sectors. Nevertheless, in SE and

on the 7 and 8 October 2010 (OECD, 2010c) shared almost unanimously the position that the health sector acts as a

DK, 20% of third-country migrants' employment is to be found in health and social work sector. The health and social sector also employs an important share of mobile EU citizens (see Table 6). For more detailed information see the Employment in Europe Report 2007 and 2008.

Table 6 - Employment of total resident populations and recently mobile citizens by economic activity, 2007 (% of total employment by group)

Economic activity (Nace Rev.1)	EU-15		EU-10		EU-2	
	Total resident population	Mobile EU-15 citizens	Total resident population	Mobile EU-10 citizens	Total resident population	Mobile EU-2 citizens
A Agriculture	3.1	:	9.4	2.3	20.8	7.1
B Fishing	0.1	:	0.1	:	(0.1)	0.0
C Mining and quarrying	0.2	:	1.2	:	1.2	:
D Manufacturing	17.5	15.9	22.5	25.3	22.7	10.0
E Electricity gas and water supply	0.7	:	1.5	:	2.0	:
F Construction	8.3	8.4	8.3	13.2	8.0	28.4
G Wholesale and retail trade	14.3	10.8	14.6	12.1	13.8	6.3
H Hotels and restaurants	4.6	9.1	2.9	13.3	2.5	13.2
I Transport storage and communication	6.1	6.2	7.0	7.7	5.9	(2.0)
J Financial intermediation	3.3	4.8	2.3	:	1.2	:
K Real estate renting and business activities	10.6	17.4	6.5	9.4	3.6	6.4
L Public administration	7.4	2.7	6.5	:	5.8	:
M Education	7.1	7.4	7.3	2.0	5.1	:
N Health and social work	10.7	8.9	6.1	6.3	4.4	3.1
O Other community social and personal service	4.9	4.9	3.8	4.0	2.7	(2.1)
P Private households	1.3	:	0.2	2.1	0.4	19.4
Q Extra-territorial organisations	0.1	(1.4)	(0.0)	:	:	:

Source: Eurostat, EU LFS, annual data.

Note: Recent movers defined as EU-10/2 citizens resident four years and fewer in an EU-15 Member State - "-": Figures too small to be reliable. Figures in brackets of limited reliability. For some activities (e.g. agriculture, construction, hotels and restaurants) the LFS may understate the number of employed due to underestimation of seasonal workers.

Source: Employment in Europe 2008.

The health and social work sector can be characterised by a number of features (based on the Employment in Europe series and the KLEMS data), which distinguish it from the other sectors. First, the proportion of high-skilled workers is higher than in the total economy and the proportion of low-skilled workers is lower, a pattern which strengthens over time, mainly with the expansion of new technologies and more complex treatment techniques. Second, the usual average weekly working hours for full-time employees in the sector are lower than in the rest of the economy. Third, non-standard working patterns (shift work, night hours, part-time work) are considerably higher than in the other sectors, due to the specificity of the work done in the sector (see Table 4). Fourth, temporary contracts are slightly more common than in the total economy. Fifth, gross earnings are considerably lower than in the other sectors in most Member States, a finding which is in line with the high female employment in the sector, given the gender pay gap in the whole economy. The gap is visible in terms of the average gross hourly pay, which was similar in the health and social work sector and the overall economy in 1995, but which saw an increase of 24.5% for the whole economy over the following 10 years compared to only 14% in the health and social work sector in the same period. This can be partially due to the fact that the share of recent non-EU migrants in health and social work sector has increased over the recent years considerably (from 0.4% in 2000 to 1.1% in 2006) putting a downward pressure on the wages and salaries.

3. Past and recent trends in health expenditure and brief overview of the 2009 EPC/EC expenditure projections

Health expenditure (also called health spending or expenditure on health throughout this report) constitutes a significant and rising share of public expenditure and of GDP in all Member States of the EU.

The financing of health services and goods is shared between the public and the private sector, but in almost all EU Member States the public sector covers a large majority of overall spending. Private spending has a supplementary character, often concentrated on treatments that are not considered to be necessary for saving human life (dentistry, plastic surgery, etc.) and on (some) pharmaceutical goods. Therefore, the general trend concerning the entire health sector affects first and foremost public expenditure on health and public provision of health services and goods. Consequently, health spending has become one of the key factors of fiscal pressure and a key element in the analysis of sustainability of public finances.

The first part of this chapter concentrates on the financial resources devoted to the health system from public sources. Data on health expenditure used here comes from international datasets: EUROSTAT, OECD and WHO. In recent years, expenditure data has been collected using a joint EUROSTAT/OECD/WHO questionnaire for the vast majority of EU Member States that have agreed to use the system of health accounts methodology developed by the OECD. We use the OECD definition of expenditure on health.³³ This definition is broad and includes expenditure elements that are not analysed in detail in this report, including some elements of long-term care expenditure. However, using a broad definition of health spending may allow for greater comparability over time and across countries because of the differences and changes in the health accounts methodology.

The second part of the chapter summarises the EPC/EC 2009 Ageing Report and, more specifically, the impact of a number of factors on public spending devoted to the provision of a more specific and limited set of medical services and goods denoted as health care in the Ageing Report.³⁴

3.1. Past trends in public expenditure on health

Over the past decades (see [Graph 1](#)), both public expenditure on health as a share of GDP and the per capita public expenditure on health have risen markedly.³⁵ Therefore, total and public expenditure on health has been growing faster than both GDP and population over past decades,

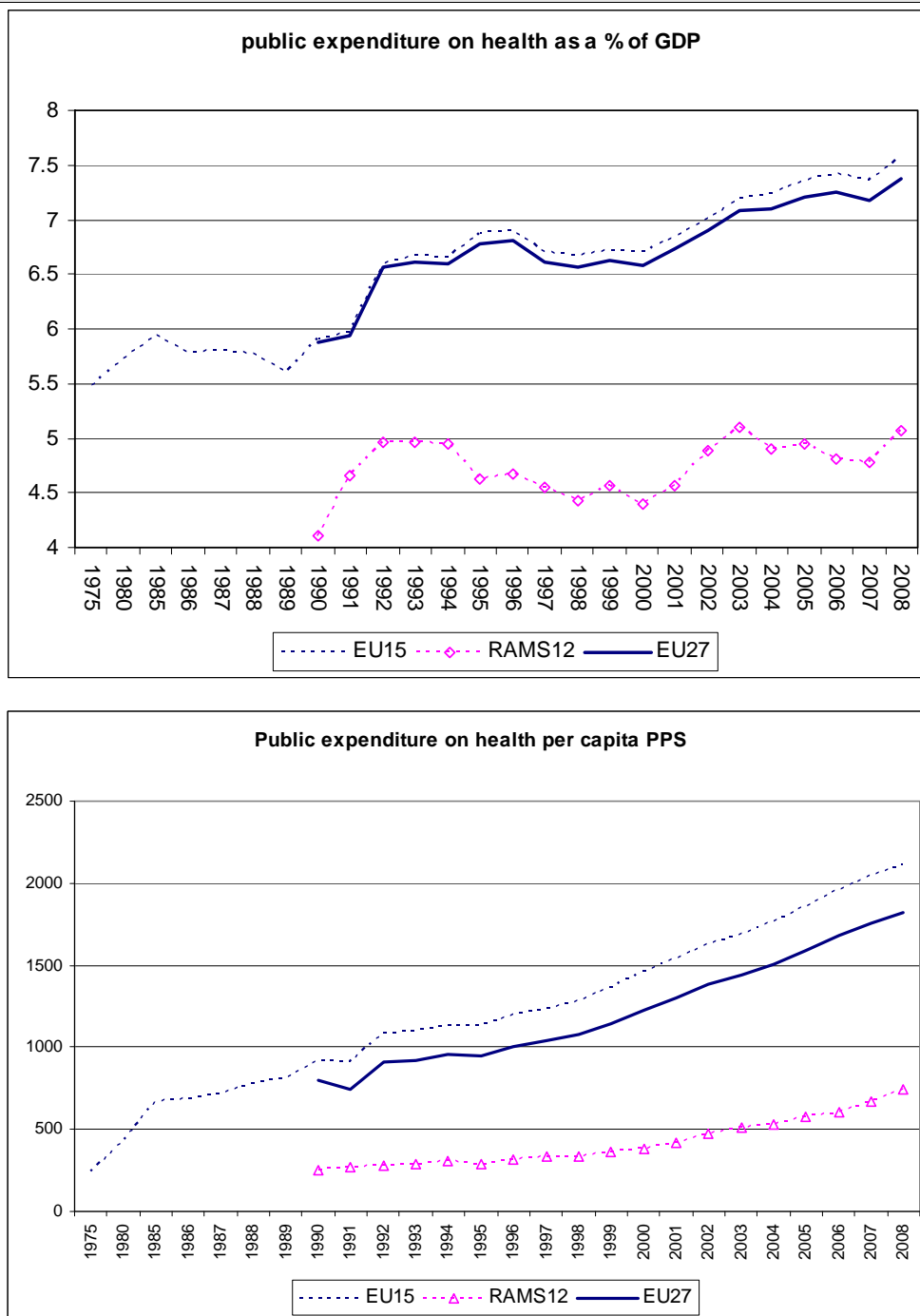
³³ Total expenditure on health is defined as the sum of expenditure on activities that – through application of medical, paramedical, and nursing knowledge and technology – has the goals of: promoting health and preventing disease; curing illness and reducing premature mortality; caring for persons affected by chronic illness who require nursing care; caring for persons with health impairments, disability, and handicaps who require nursing care; assisting patients to die with dignity; providing and administering public health; providing and administering health programmes, health insurance and other funding arrangements.

³⁴ Therefore, the term health care is used in section 3.3 of this report, and not health expenditure or health systems.

³⁵ The annual average real growth in per capita health expenditure from 1997 to 2007 was 4.1 for OECD countries. The annual average real growth in health expenditure to GDP ratio was about 2.5 during the same period and for the same set of countries.

showing that both consumers and voters give more and more importance to health (in relative terms) when living standards are increasing.

Graph 1 - Public expenditure on health



Note: the methodology used to compute health expenditure has changed over time so that there are breaks in the time series used to compute the graphs above. The most recent methodological change is the move to the OECD System of Health Accounts (SHA), a methodology introduced in 2000. Moreover, EU Member States are at varying stages in the process of implementing the SHA. As for the EU15, the geographic coverage also changed over time due to the reunification of Germany.

Source: Commission services calculations based on Eurostat, OECD and WHO health data.

Public spending on health as a percentage of GDP grew particularly fast during the 1960s and 1970s, when many Member States massively increased the share of the population covered by publicly funded or provided health services and goods either via national health services or compulsory social health insurance. Against a background of increasing budgetary consolidation efforts, expenditure growth slowed down somewhat in the 1980s, resulting in a more constant trend in the spending to GDP ratio especially in the second half of the 1980s, and up to 1990, when it picked up again. In the late 1990s, it shows another slow down to increase again in the early 2000s, albeit at a slower rate, and reach an EU average of about 7.4% of GDP by 2008. Since the 1990s health expenditure growth rates have been more in line with GDP growth rates.

The trends observed can be the result of fluctuations in either of its components. For example, the increase in public expenditure on health as a % of GDP observed in the early 2000s may partly be due to the economic slowdown observed at the time. Due to its strong dynamics, public spending on health also increased its share in total public expenditure, reaching an average of 14.7% in 2008 for the EU Member States.

Significant differences exist, however, across EU Member States (see [Table 7](#)). In 2008, the share of public spending on health in total GDP ranged from 2.5% in Cyprus to over 8.7% in France. In particular, spending on health is significantly lower in the Member States that accessed the EU after 2004. The observed differences between countries are narrowing due to a general trend towards convergence, with the largest increases over time occurring in countries with the lowest initial levels of health spending.

**Table 7 - Past trends in total and public expenditure on health in EU Member States
1970-2008**

	Total Expenditure on Health\$ as a % of GDP						Public Expenditure on Health\$ as a % of GDP						Public Expenditure on Health\$ as a % of Public Expenditure					
	1970	1980	1990	2000	2005	2008	1970	1980	1990	2000	2005	2008	1970	1980	1990	2000	2005	2008
BE	3.9	6.3	7.2	9.0	10.3	10.2	:	:	:	6.6	7.4	7.4	:	:	10.1	12.8	13.5	14.8
BG	:	:	5.2	6.1	7.8	7.3	:	:	5.2	3.7	4.7	4.2	:	:	:	7.7	17.0	12.5
CZ	:	:	4.7	6.5	7.2	7.1	:	:	4.6	5.9	6.3	5.9	:	:	:	13.7	16.0	16.8
DK	:	8.9	8.3	8.3	9.5	9.9	:	7.9	6.9	6.8	8.0	8.4	:	14.9	12.0	12.3	13.6	15.0
DE	6.0	8.4	8.3	10.3	10.7	10.5	4.4	6.6	6.3	8.2	8.2	8.1	:	:	:	14.7	14.4	15.2
EE	:	:	:	5.3	5.1	6.1	:	:	:	4.1	3.9	4.8	:	:	:	11.8	12.1	13.0
IE	5.1	8.3	6.1	6.3	7.5	8.7	4.1	6.8	4.4	4.6	5.8	6.7	:	:	11.8	16.6	19.9	18.6
GR	5.4	5.9	6.6	7.9	9.5	9.7	2.3	3.3	3.5	4.7	5.7	5.9	:	:	2.1	8.4	11.2	10.6
ES	3.5	5.3	6.5	7.2	8.3	9.0	2.3	4.2	5.1	5.2	5.9	6.5	:	:	:	13.4	14.8	14.8
FR	5.4	7.0	8.4	10.1	11.1	11.2	4.1	5.6	6.4	8.0	8.8	8.7	:	12.3	:	13.8	14.8	14.9
IT	:	:	7.7	8.1	8.9	9.1	:	:	6.1	5.8	6.8	7.0	:	:	11.7	13.0	14.4	14.6
CY	2.7	2.8	4.5	5.7	6.3	5.8	0.9	1.5	1.8	2.4	2.7	2.5	:	:	:	7.1	7.0	7.0
LV	:	2.1	2.5	6.0	6.4	6.5	:	:	2.5	3.2	3.6	3.6	:	:	:	10.4	12.0	12.5
LT	:	:	3.3	6.5	5.9	6.6	:	:	3.0	4.5	4.0	4.8	:	:	:	10.5	14.6	13.3
LU	3.1	5.2	5.4	5.8	7.9	6.8	2.8	4.8	5.0	5.2	6.7	5.7	:	:	11.1	10.9	12.5	12.0
HU	:	:	:	7.0	8.3	7.3	:	:	:	5.0	6.0	5.2	:	:	:	10.4	11.2	9.9
MT	:	:	:	6.8	8.5	7.5	:	:	:	4.9	6.5	5.8	:	:	:	12.0	14.4	12.4
NL	:	7.4	8.0	8.0	9.8	9.9	:	5.1	5.4	5.0	5.9	7.4	:	9.3	:	8.4	9.8	13.0
AT	5.2	7.4	8.3	9.9	10.4	10.5	3.3	5.1	6.1	7.6	7.9	8.1	:	10.3	:	15.8	14.7	15.8
PL	:	:	4.8	5.5	6.2	7.0	:	:	4.4	3.9	4.3	5.1	:	:	:	:	10.2	11.7
PT	2.5	5.3	5.9	8.8	10.2	10.1	1.5	3.4	3.8	6.4	7.3	7.1	:	:	9.4	14.9	15.4	14.0
RO	:	:	2.9	5.2	5.5	5.4	:	:	2.9	3.6	4.4	4.5	:	:	:	11.3	10.6	11.2
SI	4.2	4.4	5.6	8.3	8.4	8.3	4.2	4.4	5.6	6.1	6.1	6.0	:	:	:	13.8	13.9	13.8
SK	:	:	:	5.5	7.0	7.8	:	:	:	4.9	5.2	5.4	:	:	:	10.0	12.8	19.2
FI	5.5	6.3	7.7	7.2	8.5	8.4	4.1	5.0	6.2	5.1	6.2	6.2	:	12.4	12.1	11.9	13.7	14.3
SE	6.8	8.9	8.2	8.2	9.2	9.2	5.8	8.2	7.4	7.0	7.5	7.6	:	:	:	11.1	12.4	13.2
UK	4.5	5.6	5.9	7.0	8.3	8.7	3.9	5.0	4.9	5.6	6.8	7.2	9.3	11.0	12.1	14.5	15.7	15.7
EA	:	6.7	7.8	9.1	9.9	10.0	:	5.2	6.0	6.9	7.3	7.4	:	:	:	13.5	14.2	14.7
EU27	:	6.7	7.4	8.6	9.5	9.6	:	5.5	5.9	6.6	7.2	7.4	:	:	:	12.0	14.3	14.7

§Total and public expenditure on health follows the OECD definition (also used by Eurostat and WHO for those countries that use the system of health accounts) and as such it includes expenditure on: Services of curative care + Services of rehabilitative care + Services of long-term nursing care + Ancillary services to health care + Medical goods dispensed to out-patients + Services of prevention and public health + Health administration and health insurance + Expenditure on services not allocated by function + Investment (gross capital formation) in health. Note that the figures on Germany cover the country before and after reunification, thus causing a break in the series, which should be taken into account when interpreting the results over time.

Source: OECD health data 2010, Eurostat data and WHO Health for All database for health expenditure data. Eurostat data for public (government) expenditure using COFOG. EU and EA averages are weighted averages by either GDP or public expenditure where relevant and calculated by Commission Services.

3.2. The potential impact of the economic crisis on health related expenditure

3.2.1. Theoretical considerations and empirical observations from past crises

The impact of the current economic and financial crisis on the ratio of health spending to GDP cannot be reliably quantified on the basis of actual data, given the lag in the data availability. Comparable international databases (OECD, Eurostat, WHO) report total, public and private health expenditure with at least a two-year lag from the current year: most recent data for EU Member States refers to 2008. Therefore, even the most recent available figures (from 2008) cover only the

very first period of the crisis (clearly visible in most countries from the last quarter of 2008). While GDP growth slows down in 2008, negative and very large negative GDP growth rates are only observed in 2009. In 2008, for most countries, there was probably no immediate effect on public expenditure on health or even any change in policy being decided in most countries, at least at aggregate level and on a prospective basis.

Nevertheless, it can be seen that the ratio public expenditure on health/GDP goes up from 2007 to 2008 in all Member States for which data is available for 2008, except for BG, FR, HU, MT and PT, where it stays constant, and in CY, where it goes down slightly (see [Table 8](#)). On average for the EU, this means a 0.2 pp of GDP and a 2.8% increase. The possible combined effect of no change in the public budget allocated to the health sector and the economic slowdown in 2008 is quite clear in a number of countries as follows.

- In IE, where real GDP growth was negative in 2008, the ratio goes up by almost 1 pp of GDP in only one year, a sharp increase (15.5%) especially when compared to a very slow increase observed throughout the decade.
- A high increase (0.7 pp of GDP) is also observed for EE where real GDP growth was negative in 2008. As in IE, GDP growth rates in EE were very high throughout the decade and, as a result, the ratio of health expenditure to GDP was increasing at a very low pace and even showing some reductions.
- LV and LT see an increase in the ratio of 0.3 pp of GDP (respectively an 8.3% and a 6.7% increase). Like EE, LV and LT recorded very high growth rates of GDP throughout the decade and the ratio of health expenditure to health increased at a very slow pace over the same period, even showing some large reductions. Although real GDP growth was not negative in LV and LT in 2008, it was significantly lower than in previous years which can explain a larger than usual increase in the ratio.
- In IT, SE and UK, where real GDP growth rates were negative in 2008, albeit smaller than in IE, the ratio also increases but the increase is much smaller too (0.3 pp of GDP for SE, UK and IT, which is equivalent to a respective increase of 3.6%, 4.3% and 6.1%).
- An increase of 0.4 pp of GDP is also visible for ES and for SI (a 7.1% and 3.8% increase respectively), even if real GDP growth rates were not yet negative in 2008. As with LT, GDP growth rates were significantly lower than in previous years.
- Interestingly, in PL the ratio increases by 0.6 pp of GDP from 2007 to 2008. In the case of PL, the increase is most likely the combined result of a slightly lower GDP growth rate and an increase in expenditure allocated to the health sector.

**Table 8 - Public expenditure on health as a % of GDP in EU Member States
1998-2008**

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium	6.4	6.5	6.6	6.7	6.7	7.1	7.5	7.4	7.2	7.3	7.4
Bulgaria	3.6	3.9	3.7	4.0	4.4	4.9	4.6	4.7	4.1	4.2	4.2
CzechRepublic	6.0	5.9	5.9	6.0	6.4	6.7	6.4	6.3	6.1	5.8	5.9
Denmark	6.8	7.0	6.8	7.1	7.3	7.8	7.9	8.0	8.1	8.3	8.4
Germany	8.2	8.2	8.2	8.3	8.4	8.5	8.1	8.2	8.1	8.0	8.1
Estonia	4.8	4.7	4.1	3.8	3.7	3.9	3.9	3.9	3.8	4.1	4.8
Ireland	4.6	4.6	4.6	5.1	5.4	5.7	5.9	5.8	5.7	5.8	6.7
Greece	4.4	4.6	4.7	5.3	5.3	5.3	5.1	5.7	6.0	5.8	5.9
Spain	5.3	5.3	5.2	5.2	5.2	5.7	5.8	5.9	6.0	6.1	6.5
France	8.1	8.1	8.0	8.1	8.4	8.7	8.7	8.8	8.7	8.7	8.7
Italy	5.4	5.5	5.8	6.1	6.2	6.2	6.6	6.8	6.9	6.6	7.0
Cyprus	2.3	2.4	2.4	2.4	2.7	3.1	2.8	2.7	2.7	2.6	2.5
Latvia	3.7	3.8	3.2	3.1	3.2	3.2	3.3	3.6	4.3	3.6	3.6
Lithuania	4.6	4.7	4.5	4.6	4.8	5.0	3.9	4.0	4.3	4.5	4.8
Luxembourg	5.2	5.2	5.2	5.6	6.1	6.5	7.0	6.7	6.6	6.0	5.7
Hungary	5.3	5.2	5.0	4.9	5.3	6.0	5.8	6.0	5.8	5.2	5.2
Malta	4.6	4.6	4.9	5.2	5.8	6.0	6.1	6.5	6.4	5.8	5.8
Netherlands	5.2	5.1	5.0	5.2	5.5	5.8	5.8	5.9	7.4	7.3	7.4
Austria	7.6	7.8	7.6	7.7	7.7	7.8	7.9	7.9	7.8	7.9	8.1
Poland	3.9	4.1	3.9	4.2	4.5	4.4	4.3	4.3	4.3	4.6	5.1
Portugal	5.4	5.6	6.4	6.3	6.5	7.1	7.2	7.3	7.1	7.1	7.1
Romania	2.8	3.4	3.6	3.6	3.8	4.5	4.1	4.4	4.1	4.3	4.5
Slovenia	5.9	5.9	6.1	6.3	6.3	6.2	6.1	6.1	6.0	5.6	6.0
Slovakia	5.2	5.2	4.9	4.9	5.0	5.1	5.3	5.2	5.0	5.2	5.4
Finland	5.3	5.3	5.1	5.3	5.6	5.9	6.0	6.2	6.2	6.1	6.2
Sweden	7.0	7.1	7.0	7.3	7.6	7.8	7.5	7.5	7.4	7.3	7.6
UnitedKingdom	5.4	5.6	5.6	5.8	6.1	6.2	6.5	6.8	6.9	6.9	7.2
EuropeanUnion	6.6	6.6	6.6	6.7	6.9	7.1	7.1	7.2	7.3	7.2	7.4
EuroArea	6.9	6.9	6.9	7.0	7.0	7.2	7.2	7.3	7.3	7.2	7.4
EU15	6.7	6.7	6.7	6.8	7.0	7.2	7.2	7.4	7.4	7.4	7.6
EU12	4.4	4.6	4.4	4.6	4.9	5.1	4.9	4.9	4.8	4.8	5.1

Source: OECD health data 2010, Eurostat data and WHO Health for All database. EU, EA, EU15 and EU12 averages are weighted averages by GDP and calculated by Commission Services.

As more recent data is not available, only theoretical considerations, supported by the empirical observations from the past crises, can be warranted as regards the expected effects of the current slowdown for 2010 and following years.

Health expenditure, usually expressed as a share of GDP for reasons of comparability across time and countries, can be affected in two separate ways by a temporary slowdown in the GDP. The first, and so-called computational effect, occurs when a contraction in GDP is accompanied by a constant development in health spending, mainly in the initial phase of the slowdown. In such a case, increasing real health expenditure accounts for a growing share of contracting real GDP. The other, real effect, occurring more often in the later phase of the crisis and depending on its severity, sees the public authorities contracting their spending on health services and goods as a reaction to the observed economic crisis. Such reaction appears to differ according to the category of spending and predominant type of health financing mechanism. Social health insurance systems based on employment contributions may decide to and reduce their expenditure in line with diminishing contributions due to higher unemployment rates and lower revenues. In systems based on insurance premiums (e.g. NL), a decrease in revenues does not lead to lower expenditures. This shortage in

revenues has to be compensated by higher premiums in the years after the shortage. In systems financed directly from public budgets, cutting health spending requires more time and public acceptance to be adopted (as it is often associated with yearly budget adoption), and may therefore not be immediately visible. The regional financing system based more directly on tax revenues availability may transmit the budgetary restriction more quickly to health spending constraint. If the crisis is long and deep enough, a reduction in public spending on health may be an unavoidable part of the general fiscal adjustment plan.

Note that the reaction is probably strongest and most immediate when it comes to private expenditure, and in particular out-of-pocket payments, by nature the type of health expenditure which is the most elastic with respect to personal income. Private patients contract their health spending as a response to the crisis and lower disposable income (due to unemployment or new working arrangements that result in lower wages and income).

It is also possible that public spending on health increases temporarily as a reaction to the economic slowdown. Such a situation occurs if governments find the health sector as a potential contributor to economic growth and devote to it a part of the economy stimulus package. As a result, while health spending in some of the countries affected by economic downturns may fall, in others it may be maintained or even increased. In the current crisis, and as part of the European Economic Recovery Plan (EC, 2008a), an increase in health spending has been implemented by a number of countries (e.g. SE and NL), although the total amount of resources allocated to this sector has been limited.³⁶

In some cases, governments may choose to increase cost-sharing to accompany a reduction in public spending as part of the fiscal consolidation. Price increases and lower disposable income may imply a reduction in the consumption of health services and goods at least during the consolidation period.

The 2010 Joint Report on Social Protection and Social Inclusion, Supporting Document, provides a very simple analysis of what can be expected in relation to health expenditure behaviour in periods of economic downturn. Plotting growth rates of GDP against total health expenditure growth rates over the last decades shows that, in general, in economic recessions or weaker downturns health expenditure grows faster than GDP during the slowdown to then grow at similar growth rates of GDP when upturn starts (see Annex 1). It can also be observed that, in some countries and during more severe downturns or economic crisis, health expenditure growth rates, though with a small lag, become in line with very low or negative GDP growth rates. This suggests that, when an economic crisis was long and deep enough, controlling health spending was part of fiscal adjustment plans of a number of countries.

³⁶ The economic stimulus package of NL consisted of a one-off stimulus meant for investments in buildings of hospitals/care institutions; and not an investment in more care provided to patients. At the same time a long-term reduction in health spending through increased efficiency was planned. In SE, according to SPC (2009), State transfers to regional and local governments were temporary increased in 2009 and 2010 to compensate for the deterioration of the finances of municipalities and county councils.

As suggested by the OECD (2009c), total and public spending on health is linked to changes in GDP only in the long-term. When analysed on a year-to-year basis, health spending rarely follows the fluctuation in GDP growth, thus allowing for strong instability in the health spending/GDP ratio. The available database (time series 1970-2006 for nine OECD countries), does not provide a conclusive evidence on the correlation between recessions and health expenditure. Health spending has been growing constantly in practically all the countries analysed over the entire period, no matter whether GDP growth was positive or negative. There were only three situations (Finland, Canada and Italy in the mid 1990s) where there was a fall in real per capita spending. Meanwhile, when expressed as a share of GDP, health expenditure did not follow a constant pattern during slowdowns, having increased in some countries and decreased in others. A further econometric analysis of the relation between health expenditure and GDP does not ascertain correlation between the two variables when they are observed simultaneously, without a time lag. However, the effect of GDP on health spending does appear in some countries³⁷, when time lag is allowed for.

The Research Note "Recession and health in Europe: what to expect?" (European Observatory on the Social Situation and Demography) finds that economic downturns in the 27 EU countries from 1970 to 2007 had no significant effect on health spending (in per capita terms and as a percentage of GDP) over the long run.

3.2.2. Simulation of the computational effect

While the effects of a GDP slowdown on real health expenditure are very difficult to predict given the discretionary character of such decisions taken by the governments, it is possible to simulate the computational effect, measuring the impact of GDP contraction on health spending/GDP ratio.

Scherer, P. and Devaux, M., (2010, OECD) calculate total (and public) health expenditure as a % of GDP for the next 3 years (2009-2011) under two alternative assumptions. The first and stylised scenario assumes that real health expenditure remains constant at the 2008 level in order to identify the pure effect of GDP contraction. The projections show an average and median increase for the OECD Member States of 0.5% of GDP. In 2009, an additional 0.9 pp of GDP would be visible for IE, 0.7 for DE, 0.5 for BE, DK, FI, HU, IT, NL, PT, SE and UK, 0.4 pp for ES, AT, FR, LU and SK. In 2010, as recovery starts to be noticeable in a number of countries, the ratio would not go up so fast and in fact it would go down in several cases. Nevertheless, IE, for example, would see an additional increase of 0.3 pp of GDP.

A second scenario assumes the extrapolation of trend in real health expenditure over the last 3 years (2006-2008) into the future i.e. expenditure on health continues to increase rather than staying at the 2008 level. As a consequence, the average and median increase for the OECD Member States in 2009 is 1 pp of GDP. All OECD Member States that are EU Member States would register an increase equal or greater than 0.5 pp of GDP, with SK observing an increase of 1.4 pp of GDP, IE 1.3, DE and EL 0.9 and DK, FI and SE 0.8. In 2010, the ratio does not increase so fast but faster

³⁷ There is evidence of a 4-year lag in the US, 3-year lag in Switzerland and 2-year lag in France (only on a restricted sample). No evidence on lags has been found for Austria, Germany, Japan and Norway. This finding explains also the cases of an absolute fall in real health care spending mentioned in the previous footnote.

than under scenario 1 and, for example, SK and IE would see a further increase of 0.7 and 0.6 pp of GDP, respectively.

Using the European Commission Spring Forecast 2010 for GDP growth rates up to 2014, we simulate the computational effect of a decrease in GDP and its recovery in the coming years (see [Table 9](#) and [Table 10](#)). Two scenarios are considered. **Scenario 1** is a simplistic scenario where expenditure (numerator) remains at the level of 2008 (2009 for Italy) up to 2014 and GDP changes according to the GDP growth rates in the European Commission Spring Forecast 2010 up to 2014. **Scenario 2** is a more complex and interesting scenario whereby 2009 AWG projections (Pure Ageing scenario) are adjusted up to 2014 by a GDP ratio between the European Commission Spring Forecast 2010 GDP growths and the EPC/EC 2009 Ageing report GDP growths. We assume inelasticity of health expenditure to changes in the GDP growth, and we get an estimate of the impact of the economic crisis on the health care to GDP ratio, all else being equal.

The effect of lower and negative GDP growth rates in 2009 and 2010 on the ratio of public spending on health to GDP, while assuming no change in health spending from 2008 – **scenario 1**, [Table 9](#) – is visible for the whole of the EU. From 2008 to 2009, all Member States would register a positive increase in the ratio except for BG, CY and MT where the ratio would remain unchanged, and in PL where it would decrease (as PL registered a positive economic growth in 2009). Some countries (EE, IE, LV and LT, which registered the largest negative GDP growth rates) would register more than half a percentage point increase in the ratio in 2009 compared to 2008. Several other countries would see an increase of 0.3 to 0.5 pp of GDP: DK, DE, IT, NL, AT, SI, SK, FI, SE and UK. Some of these countries would have already seen a large increase in 2008 compared to 2007. In 2010, when recovery starts for most countries, the ratio would decrease back to the level of 2008. In 2010, the ratio would further increase for a number of countries (IE, LV and LT), remain unchanged for others (EE, EL, ES and CY) and start to decrease for all others.

Table 9 - Simulating changes (percentage points) in public expenditure on health as a % of GDP, 2009-2014 (scenario 1)

Assuming the 2008 level of expenditure remains constant and GDP growth rates evolve according to the European Commission Spring Forecast 2010

	2008	2009	2010	2011	2012	2013	2014
BE	0.1	0.1	-0.2	-0.2	-0.1	-0.1	-0.1
BG	0.0	0.0	-0.1	-0.2	-0.1	-0.1	-0.1
CZ	0.1	0.1	-0.1	-0.2	-0.1	-0.2	-0.2
DK	0.1	0.4	-0.2	-0.3	-0.1	-0.1	-0.1
DE	0.1	0.3	-0.1	-0.2	-0.1	-0.1	-0.1
EE	0.7	0.8	0.0	-0.3	0.0	-0.1	-0.1
IE	0.9	0.8	0.2	-0.3	-0.1	-0.2	-0.2
EL	0.1	0.1	0.0	-0.1	0.0	0.0	0.0
ES	0.4	0.2	0.0	-0.1	-0.1	-0.1	-0.1
FR	0.0	0.2	-0.2	-0.3	-0.1	-0.1	-0.1
IT	0.4	0.3	-0.2	-0.2	-0.1	-0.1	-0.1
CY	-0.1	0.0	0.0	-0.1	0.0	0.0	0.0
LV	-0.5	0.9	0.5	-0.1	0.0	0.0	-0.1
LT	0.3	1.1	0.2	-0.3	0.0	-0.1	-0.1
LU	-0.8	0.2	-0.3	-0.3	-0.2	-0.2	-0.2
HU	0.0	0.1	-0.1	-0.3	0.0	0.0	0.0
MT	0.0	0.0	-0.2	-0.2	0.0	0.0	0.0
NL	0.1	0.3	-0.2	-0.3	-0.1	-0.1	-0.1
AT	0.2	0.3	-0.2	-0.3	-0.1	-0.1	-0.1
PL	0.5	-0.3	-0.2	-0.2	-0.2	-0.1	-0.1
PT	0.0	0.2	-0.1	-0.2	-0.1	-0.1	-0.1
RO	0.2	0.2	-0.2	-0.3	-0.1	-0.1	-0.1
SI	0.4	0.3	-0.1	-0.2	-0.1	-0.1	-0.1
SK	0.2	0.3	-0.2	-0.3	-0.2	-0.2	-0.1
FI	0.1	0.5	-0.2	-0.3	-0.1	-0.1	-0.1
SE	0.3	0.3	-0.3	-0.3	-0.1	-0.1	-0.1
UK	0.3	0.3	-0.3	-0.2	-0.1	-0.1	-0.1
EU15	0.2	0.3	-0.2	-0.2	-0.1	-0.1	-0.1
EU12	0.2	0.1	-0.2	-0.3	-0.1	-0.1	-0.1
EU27	0.2	0.2	-0.2	-0.2	-0.1	-0.1	-0.1

Note that all values for 2009 are projected values except for IT which comes from the OECD health data 2010.

Source: Commission services based on Eurostat, OECD and WHO health data and European Commission Spring Forecast. The projection does not include fiscal consolidation plans affecting public health spending. It does not take into account health financial systems more directly linked to tax revenues developments.

Another exercise is to analyse the impact of the economic crisis and the reduction in GDP growth by comparing the projected values of the health expenditure to GDP ratios in the EPC/EC 2009 Ageing Report with what they would be like in view of the GDP growth rates in the European Commission Spring Forecast 2010 – **scenario 2, Table 10**. In other words, we use the projected values for levels of expenditure for the years 2009-2014 that are in the EPC/EC 2009 Ageing Report under the pure demographic scenario and apply to them the new GDP levels to calculate "new" health expenditure to GDP ratios. We then calculate the difference between the projected ratios in the 2009 Ageing Report and the new ratios. This scenario assumes that expenditure changes with changes in population size and age structure.

Table 10 – Simulated impact of the economic crisis: how lower GDP would impact on the EPC/EC 2009 Ageing Report projected ratios of health expenditure to GDP 2009-2014 (scenario 2)

	2008	2009	2010	2011	2012	2013	2014
BE	-0.1	0.2	0.2	0.1	0.3	0.4	0.5
BG	-0.4	0.0	0.1	0.0	0.1	0.2	0.3
CZ	0.1	0.5	0.7	0.7	0.8	0.9	0.9
DK	0.0	0.4	0.3	0.2	0.2	0.3	0.3
DE	0.0	0.4	0.4	0.4	0.4	0.4	0.4
EE	0.3	1.5	1.9	1.8	2.0	2.2	2.3
IE	0.5	1.6	2.2	2.2	2.3	2.4	2.4
EL	0.0	0.2	0.4	0.5	0.6	0.7	0.9
ES	0.0	0.3	0.5	0.6	0.7	0.8	0.9
FR	-0.1	0.2	0.2	0.2	0.2	0.3	0.3
IT	0.0	0.3	0.2	0.1	0.2	0.2	0.3
CY	-0.1	0.0	0.1	0.1	0.1	0.2	0.3
LV	-0.1	1.0	1.8	1.9	2.1	2.3	2.4
LT	-0.2	1.0	1.5	1.5	1.7	1.8	2.0
LU	-0.1	0.4	0.4	0.4	0.5	0.6	0.6
HU	-0.1	0.2	0.2	0.1	0.2	0.4	0.5
MT	-0.1	0.0	0.0	-0.1	0.0	0.1	0.2
NL	-0.1	0.2	0.2	0.1	0.1	0.1	0.1
AT	-0.1	0.2	0.3	0.2	0.2	0.2	0.2
PL	-0.1	-0.1	-0.1	-0.2	-0.2	-0.2	-0.2
PT	0.0	0.3	0.3	0.3	0.3	0.4	0.4
RO	-0.5	-0.1	-0.1	-0.2	-0.2	-0.1	-0.1
SI	-0.2	0.5	0.6	0.6	0.7	0.9	1.0
SK	-0.1	0.5	0.6	0.5	0.6	0.7	0.8
FI	0.0	0.7	0.7	0.6	0.6	0.7	0.7
SE	0.0	0.4	0.3	0.1	0.3	0.4	0.5
UK	0.0	0.4	0.4	0.3	0.4	0.4	0.5
EU15	0.0	0.3	0.4	0.3	0.4	0.4	0.5
EU12	-0.2	0.1	0.2	0.1	0.2	0.2	0.2
EU27	0.0	0.3	0.3	0.3	0.4	0.4	0.4

Source: Commission services based on Eurostat, OECD and WHO health data, EPC/EC 2009 Ageing Report and European Commission Spring Forecast. The projection does not include fiscal consolidation plans affecting public health spending. It does not take into account health financial systems more directly linked to tax revenues developments.

With the exception of BG, CY and MT with a zero difference and that of PL with a small negative difference (as PL registered a positive economic growth in 2009, potentially higher than the GDP growth used in the projections), the impact of the economic crisis is visible for all other Member States. In other words, for almost all countries, the health expenditure to GDP ratio would be higher than that projected in the EPC/EC 2009 Ageing Report as a result of the economic crisis. EE, IE, LV and LT, which registered the largest negative GDP growth rates, would see a difference of between 1 and 1.6 pps of GDP between the 2009 Ageing Report projections and the projected values under new GDP numbers. Several other countries would see a difference equal or more than 0.5 pp (CZ, SI, SK, FI) and some an increase of 0.4 pp (DK, DE, LU, SE and UK). From 2010 onwards, recovery is projected to start for most though not all countries. However, GDP growth rates are lower than those used in the 2009 Ageing Report due to a timid recovery in many countries. Therefore, for many Member States the differences are still positive which means that the ratio remains higher than that projected in the 2009 Ageing Report.

Cumulatively, the crisis could see a significant to very significant increase in the ratio compared to 2007. However, a word of caution is needed. **The above values are purely illustrative**, only attempting to simulate the computational effect of a GDP contraction, assuming the inelasticity of health care expenditure to GDP changes. In fact, assuming the elasticity equal to 1, according to the pure ageing scenario methodology, projection results would not change for all member states. However, the exercise is useful to help understand what would happen to the ratio of expenditure to GDP if no action was taken by authorities. The exercise can help countries identify whether or not there is need for action and to what extent. However, the values do not reflect 1) the fact that many Member States in 2009 have continued to expand health expenditure (for some, as part of their recovery plan) and 2) that from 2010 (and for some even from 2009) some countries have initiated a process of public expenditure constraints, which included health expenditure restraints and even cuts. These efforts include public wage cuts, increased cost-sharing, reduced coverage of pharmaceuticals, amongst other policies. This makes it **highly implausible that some of the above values will be attained in reality**. They may underestimate the actual values for 2009 for many countries, while overestimating the effect in 2010 for other countries. In some countries, fiscal consolidation efforts have been considerable and have seen public expenditure on health reduced in absolute terms.

Nevertheless, looking at past trends comparing health expenditure growth with GDP growth, what we will likely see for many countries will be efforts to get expenditure growth in line with lower GDP growth, and rightly so given the need to consolidate public finances.

3.3. Long-term projection of public expenditure on health care and long-run sustainability of public finances: short overview of the EPC/EC 2009 Ageing Report

The high share of public financing in health services provision (on average 77.6% in the EU) and the importance of public expenditure on health in total age-related expenditure (on average 30% in the EU) puts the issue of health spending at the centre of the debates on the long-term sustainability of public finances. As the ageing of the EU population can entail additional government expenditure in terms of public provision of age-related transfers and services, this second part of the chapter discusses the relevance of health care expenditure for the long-term sustainability of public finances. Note that, contrary to the definition of public expenditure on health presented in the first part of this chapter, the projection exercise restricted its analysis to a specific set of goods and services that was defined as health care, and looked at public expenditure on those services. This restricted definition, compared to the definition of public spending on health used up to now, excludes expenditure items such as HC.3 (Services of long-term nursing care) and HC.9 (Expenditure on services not allocated by function).³⁸

³⁸ The overall long-term assessment of public finance sustainability is provided by European Commission (2009), Sustainability report 2009, European Economy, no. 9/2009. The original document analyses the impact of several sensitivity scenarios, while this section concentrates just on the "central" health care projection, i.e. the AWG reference scenario.

3.3.1. Factors affecting health care spending considered in 2009 EPC/EC projection exercise and reported in the EPC/EC 2009 Ageing Report

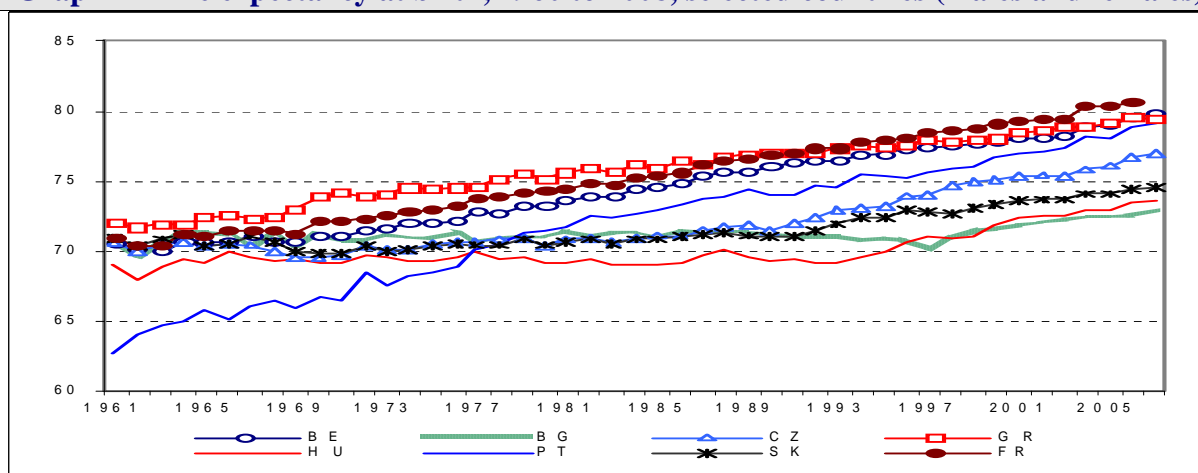
Public expenditure on health depends on a number of factors which affect the demand and supply of health services and goods. The 2009 EPC/EC projections exercise considered a limited number of variables which try to capture demand and supply side factors and include demographic and non-demographic variables. These are explained as follows.

Population size and age structure

Total demand for health goods and services depends naturally on the number of people in need of medical care. The need for health treatment, in turn, is determined by the health status of the population. The latter is highly correlated (though not completely dependent) with the share of elderly people in the overall population. This is because expenditure (spending per capita as % of GDP per capita) is seen to increase with age (notably from 55+ for men and 60+ for women). As mentioned in the introduction, individuals above a certain age often develop a multi-morbidity pattern (multiple chronic diseases, disability and dependency) which can require medical care over a long period of time. As a result, population ageing is often put forward as a potential factor in determining expenditure and behind increasing health expenditure.

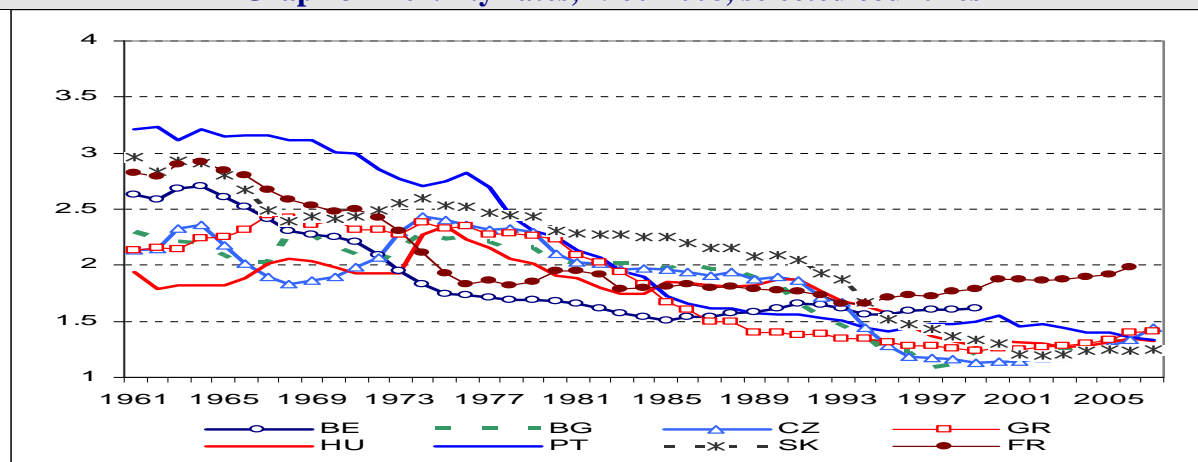
Population ageing is not a new phenomenon. As shown in [Graph 2](#), life expectancy at birth in selected EU Member States has been, despite variations, on a sustained upward trend in past decades. Meanwhile, fertility rates have declined sharply. The total fertility rate, defined as the average number of births per woman, fell in the EU27 from a "baby boom" level of 2.5 in the late 1960s to 1.5 in 2008. [Graph 3](#) shows the evolution of fertility rate in selected EU Member States over the years 1960 to 2008.

Graph 2 - Life expectancy at birth, 1960 to 2008, selected countries (males and females)



Source: Eurostat.

Graph 3 - Fertility rates, 1960-2008, selected countries



Source: Eurostat.

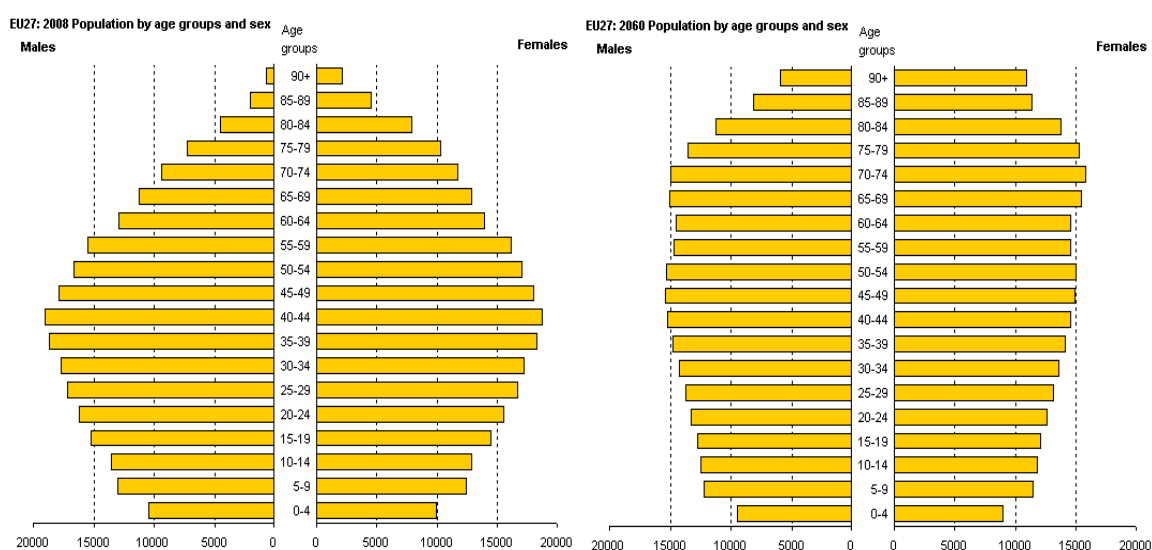
Over the coming 50 years, however, population ageing is projected to intensify in the EU. Over this period, life expectancy is estimated to increase by 7 years for women and 8½ years for men, on average in the EU. While fertility rates are projected to pick up somewhat from their current value, they will remain well below the level necessary to stabilise the population. A continuation of net migration into the EU should alleviate some of the effects of increased longevity and low birth rates, but the impact of this is projected to be slow, albeit uncertainties surrounding migration projections are large.

These changes in the population structure will lead to the well-known reduction in the working age population and an increase in the number of elderly people. Overall, the old age dependency ratio – defined as the population aged 65 or older as a percentage of the population aged 15 to 64 – is projected to increase from 25% in 2007 to 54% in 2060. If the dependency ratio increases then the burden of financing the health system could fall on fewer individuals and pose a policy challenge. However, increase in retirement ages and longer working lives accompanied by a healthier older and working population could go a long way to mitigate this issue.³⁹

While demographic developments differ from country to country, the overall size of the EU population is projected to remain broadly unchanged due to the slight rebound in fertility and continued net immigration. The age distribution of the population is forecasted to differ markedly, however (see [Graph 4](#)). The impact of ageing on health care expenditure is therefore projected to be substantial in almost all Member States (see [Table 11](#)).

³⁹ See Oliveira Martins et al. (2005, OECD).

Graph 4 - Population pyramids (in thousands) for EU27 in 2008 and 2060



Source: Eurostat, EUROPOP 2008.

Nevertheless, many researchers have shown that, while population ageing is indeed one of the elements explaining health expenditure and its role may increase in view of the demographic changes just described, population ageing has contributed much less to the observed growth in expenditure compared to what it is widely thought.⁴⁰ Therefore, ageing must be analysed in conjunction with other potential determinants of expenditure.

Developments in health status

It is often claimed that healthier people i.e. better health (less disease and disability) at any given age or for a given population can lead to lower health services use and expenditure.⁴¹ Some have argued, however, that better health proxied by longevity (life expectancy) can contribute to increase future health spending.⁴² This is because the observed increase in life expectancy translates in an increase in the number of years during which health costs accumulate, increasing total lifetime health related expenditure. This is when longevity comes in detriment of people's health or "quality" of life: in some situation medical progress has been able to save human life from a growing number of diseases, but less successful in keeping people in good health, meaning that the time spent in chronic illness increases. In this case it is crucial to understand if longevity is accompanied by more or less good health. Three different hypotheses have been put forward to predict a possible future interaction between evolution in life expectancy and changes in the prevalence of disability and ill-health:

- The "expansion of morbidity" hypothesis claims that the decline in mortality is largely due to a decreasing fatality rate of diseases, rather than reduction in their prevalence/incidence. Consequently, falling mortality is accompanied by an increase in morbidity and disability.

⁴⁰ For example: Uwe E. Reinhardt, U.E. (2010); Bryant, J. and Sonerson, A., (2006, IMF); Newhouse, J. (1992); Zweifel et al., (1999); WHO/Europe (2009a), Figueras, J. et al., (2008).

⁴¹ See Dormont et al, (2005) and Wanless, D. and the Health Trends Review team, (2002).

⁴² Zweifel et al (2005).

- The "compression of morbidity" hypothesis suggests that disability and ill-health is compressed towards the later period of life, thus people are expected to live not only longer, but also in better health.
- The hypothesis of "dynamic equilibrium" suggests counterbalancing effects of two phenomena: decreasing prevalence/incidence of chronic diseases, on the one hand, and decreasing fatality rates of diseases leading to longer prevalence of disability, on the other.

Recent empirical evidence has not come to a clear conclusion regarding these hypotheses. International evidence suggests that health may continue to improve, but some causes of disability may at the same time become more prominent.⁴³ It remains therefore very difficult to predict the levels of morbidity and therefore potential demand for health services even in the very near future.

Other authors have argued that better health throughout a lifetime can induce savings overall because proximity to death is a more important determinant of health expenditure than ageing per se: a large share of lifelong expenditure on health occurs at the last year before death and even in the last few weeks before dying. Moreover, it is shown that per unit cost of health care can be lower at very old ages than in childhood, youth or working ages. It is the fact that, in the EU, thanks to living conditions and medical progress and quality, most people die at older ages that may have enhanced the observation that expenditure increases with age. Living longer, dying at an older age and being healthy for much of a lifetime would therefore lead to savings. This has, in turn, been accompanied in recent years by a greater focus placed on health promotion and disease prevention, which would indeed deliver a longer span of healthier life.

While it is relatively straightforward to project the changes in the demographic structure of the population, forecasting the future evolution in the health status of the population is considerably more challenging. To tell whether a population is more or less healthy requires an operational measure of health or, by default, ill-health. To define this concept, a number of indicators have been proposed. They range from the simplest and most aggregate ones (e.g. life expectancy interpreted as a measure of the overall physical condition), through more complex concepts (e.g. disability-adjusted life years, combining total life expectancy with years of life lost from premature death and years of life lived with disabilities), to highly specific and narrowly defined indicators (like causes of death or prevalence rates of a number of selected conditions). Unfortunately, no single indicator is fully satisfactory. Using more general indicators, aiming to encompass all dimensions of health, come at the cost of abstracting from "quality" of life aspects while indicators targeting specific conditions lack universality. Apart from these difficulties in finding appropriate indicators, problems with establishing trends in the health status of a population also derive from the lack of comparable data covering sufficiently long periods of time.

Income

While it is generally agreed that the growth in *per capita* income brings about an increase in health spending, the strength of this relationship, i.e. the value of income elasticity of health services

⁴³ Burke, M.A. and Matlin, S.A., (2008, Global Forum for Health Research).

demand, remains uncertain. A number of empirical studies attempted to estimate the correlation between income and health expenditure. Most of them led to the conclusion that "health care is an individual necessity and a national luxury [good]".⁴⁴ In other words, health spending is highly inelastic at an individual level, but at the national level its elasticity with respect to income exceeds unity. This implies that as national income or wealth increases so expectations will rise and health spending will rise too, regardless of changes in need.⁴⁵ For the purpose of the 2009 projections an average coefficient of elasticity of public spending on health care with respect to income was estimated to be close to 1.1, based on a number of studies. Note, however, that there is no consensus about the income elasticity of health expenditure and variations can be found in the literature depending on the years, countries, methodology, level of aggregation and health system model used by the authors.

Health Technology and other Supply Factors

In the long term, growth in health expenditure has been faster than what would be suggested by developments in demographic and income variables. By implication, other factors such as technology and relative prices seem to play a significant role in the upward pressure on health expenditure. The first attempt to quantify the impact of technology is attributed to Newhouse (1992), who found that the bulk of health expenditure growth in the industrialised countries can be attributed to technological change. These results were supported by a number of other studies such as, for example, Okunade and Murthy (2002), Okunade (2004) and Oliveira Martins et al. (2005).

Even though precise estimates of the contribution of technological developments to the improvement in longevity and the health status of a population are still lacking, recent studies tend to attribute to them a crucial role in the explanation of health expenditure. In particular, medical technology, defined as "the drugs (pharmaceuticals and vaccines), medical equipment, health-care procedures, supportive systems, and the administrative systems that can tie all these disparate elements together" (OECD, 1998) is considered to be the main driver of health systems' costs in today's developed societies.

Although empirical evidence mainly points to the cost-increasing effect of new technologies, whether a particular technology increases or decreases costs depends on its impact on unit cost and its level of use and/or on whether the treatment complements or replaces the existing methods. If the outcome is a better, faster and more efficient treatment of diseases and medical conditions that have already been treated before, the new technology is likely to reduce the use of other (less efficient/more costly) services and reduce the overall unit costs without changing the scope of the treated population and therefore reduce total cost per patient.⁴⁶ If the new method supplements the existing instrumentation and its purpose is to expand the treatment to conditions that for scientific (the methods of treatment are simply unknown) or economic (the methods of treatment are known,

⁴⁴ For an overview of the empirical studies, see: Getzen (2000).

⁴⁵ Although it could be said for the purpose of argument that very rich societies may have seen their eating and exercise habits deteriorating and resulting in more chronic diseases and therefore requiring more expenditure on health care...

⁴⁶ Although as said, a reduction in unit costs can lead to an increase in demand and/or supply of that unit of treatment, which may still increase overall expenditure depending on whether volume outweighs the price effect.

but enormous costs make it unfeasible on a larger scale) reasons have not been treated previously, it will probably have a cost-increasing effect.⁴⁷

Concerning future developments, while there are reasons to be optimistic regarding the implementation of cost-effective technologies through a greater use of health technology assessment⁴⁸, the currently prevalent consensus is that the cost-increasing effects of new technologies prevail and, therefore, the overall impact on expenditure tends to be positive. Note that increases in health care expenditure to GDP ratio brought about by technological progress are qualitatively different from those caused by an ageing population. Apart from being more uncertain, technological progress in general implies improvements in quality of the goods and services provided to each individual consumer, given the class of needs he/she belongs to. Differently, ageing population produces an increase in health care expenditure, which is not related to a change in the quality of goods and services provided.

Other Factors

Apart from the above-mentioned factors, a number of other variables have been tested elsewhere for the impact on health expenditure. These included mainly institutional (e.g. share of publicly provided or financed health services, the role of GPs as an independent entity and gatekeeper, density of physicians, etc.) and behavioural (e.g. alcohol and tobacco consumption) variables. For example, physician remuneration mechanisms are a very important factor in total health expenditure growth. It has been shown that fee-for-service type of payment will cause higher growth rates than capitation types of payment.

3.3.2. Methodology and results

The methodology used by the European Commission (DG ECFIN) and the Ageing Working Group (AWG) of the Economic Policy Committee of the EU⁴⁹ to project public health care expenditure reflects mainly demand-side factors, such as demographic structure, income and health status of the population. The model used to project future public expenditure on health care is a traditional simulation model whereby the overall population is disaggregated into a number of groups having a common set of features. Each group represents a combination of characteristics. As the number of individuals in each group changes over time, so does the aggregate value of the endogenous variable.

A "*pure demographic scenario*" attempts to isolate the effect of an ageing population on public health care spending. It assumes that age-specific morbidity rates do not change over time or, in

⁴⁷ For a detailed exposition concerning the effects of technology developments on health care spending see Dybczak K., Przywara B. (2010), at

http://ec.europa.eu/economy_finance/publications/economic_paper/2010/ecp400_en.htm

⁴⁸ So far evaluations under HTA have not necessarily suggest which interventions could be removed from the reimbursed health basket in order to finance an added intervention which is found to be cost-effective.

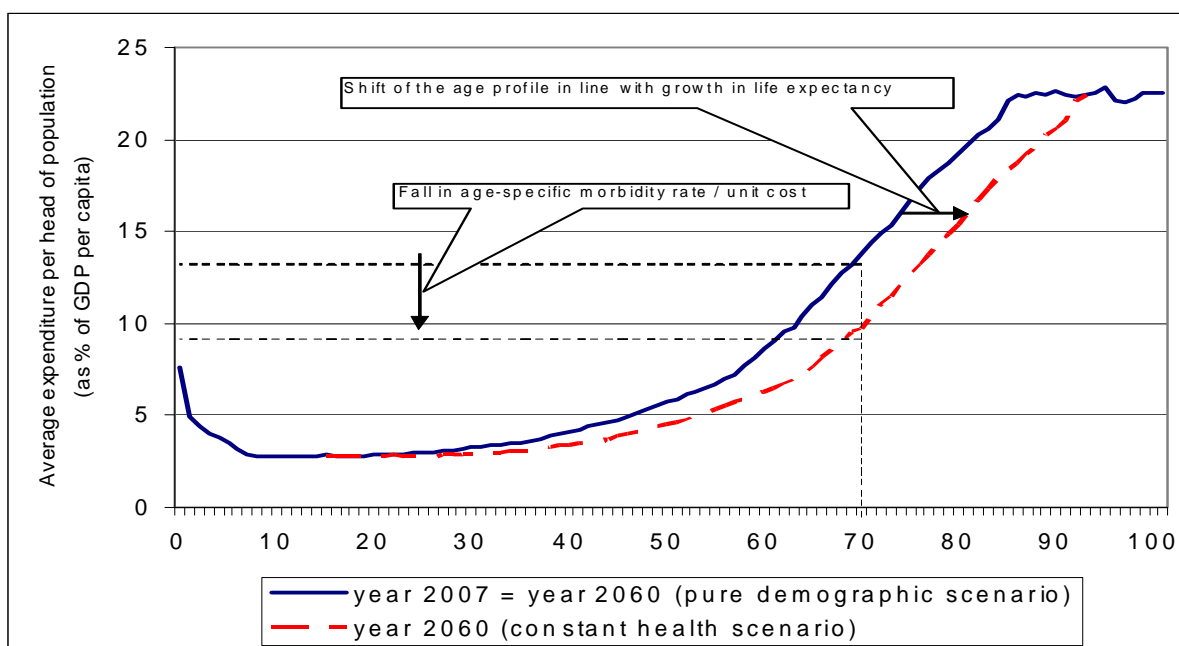
⁴⁹ For a detailed description see: EPC/EC 2009 Ageing Report.

practical terms, that age-related public health care spending per capita (considered as a proxy for the morbidity rate⁵⁰) remains constant in real terms over the whole projection period. Since this constancy in health status is accompanied by a gradual increase in life expectancy underlying demographic projections, all gains in life expectancy are implicitly assumed to be spent in bad health, while the number of years spent in good health remains constant. As such, this scenario is in line with the *expansion of morbidity* hypothesis discussed above. The constant age profile is combined with the assumption that the costs evolve in line with GDP per capita. A variant of this scenario, the *high life expectancy scenario*, is built as a sensitivity test for measuring the impact of alternative assumptions on mortality rates (life expectancy at birth being one year higher at the end of projection period than in the baseline demographic scenario). This scenario is methodologically identical to the "*pure demographic scenario*", but alternative input data on demography and GDP are used.

The "*constant health scenario*" is inspired by the *dynamic equilibrium* hypothesis and captures the potential impact of possible improvements in the health status in line with projected decline in mortality rates. It assumes that the number of years spent in bad health during a life time remains constant over the whole projection period, i.e. all future gains in life expectancy are spent in good health. As the morbidity rate (proxied by expenditure age profiles) is assumed to fall in line with the decline in the mortality rate, this process is modelled by progressively shifting the age-related expenditure profile observed in the base year outwards, in direct proportion to the projected gains in age and gender specific life expectancy, embedded in the baseline population projection. This procedure is illustrated in [Graph 5](#) below by the dotted line, which illustrates the stylised age-related expenditure profile that would be applied in the year 2060.

⁵⁰ Strictly speaking, age profiles of expenditure illustrate exclusively public health care spending per person of a given age cohort. As such it is not the measure of health status or morbidity. However, given the lack of a reliable and comparable data on the latter, one can plausibly assume that the shape of the profile follows the evolution of health status over the lifespan. To avoid counterintuitive developments, it has been assumed that the decreasing segments of the curve (early childhood, old age and child-giving period for women) will be kept constant over time.

Graph 5 - Stylized illustration of the different scenarios on future morbidity/disability and longevity using age-profiles of health care costs



Source: Commission services, EPC.

The "*death-related costs scenario*" employs an alternative method to project public health care spending, taking into account a probable reduction in public health care spending resulting from the evolution of mortality rates. The methodology links public health care spending to the number of remaining years of life, given the strong empirical evidence that a large share of total spending on health care during a person's life is concentrated in the final years of life. Therefore, as mortality rates decline and a smaller share of each age cohort is in a terminal phase of life, public health care expenditure calculated using constant expenditure profiles may be overestimated.

An additional "*technology scenario*" has been built in order to assess the impact of the progress in medical technology on the public expenditure on health care. Based on the analysis of past trends, expenditure growth is disaggregated into demographic, income and technology-driven components. This disaggregation is then used in projecting future growth of public expenditure on health care: a technology-related component is added to expenditure growth calculated on the basis of projected demographic change and income growth. The results suggest that neglecting the impact of medical technology on public expenditure on health care may lead to a considerable underestimation of the future evolution of both public and total health expenditure.

The so-called "*AWG reference scenario*", which the AWG uses as the "central scenario" when calculating the overall budgetary impact of ageing, combines the pure demographic impact of population ageing with a neutral assumption on the evolution of health status and the assumption on a moderate impact of national income on public spending on health care. These assumptions are broadly supported by empirical evidence and past trends. In practical terms, it has been assumed that half of the extra years of life gained through higher life expectancy are spent in good health.

Furthermore, the income elasticity of demand is assumed to equal 1.1 in the base year and converge to unity by 2060.⁵¹

The "*AWG reference scenario*" was produced in an effort to provide the most probable course of development in the underlying variables. Although the projection outcome is subject to uncertainty, the attempt to choose a highly plausible scenario is a potentially informative exercise, notably in the context of the analysis of sustainability of public finances policy and the public provision of health services and goods, both of which need to be based on the most reliable forecasts of the expected development in the whole range of health variables.

In general, the fiscal impact of ageing is projected to be substantial in almost all Member States and these costs will accelerate significantly over the course of the next decade. The projected increases in public expenditure on health care together with long-term care expenditure explain around one half of the overall increase in age related expenditure. The projections furthermore lead to the conclusion that public spending on health care across Member States is expected to follow a broadly similar pattern of convergence towards higher levels of expenditure (in terms of both total spending and expenditure per capita). Although in nominal terms the "old" Member States are still going to spend more for a couple of decades, the rate of growth is expected to be regularly higher in the newly acceded Member States of the EU12.

To sum up, the overall increase in public expenditure on health care (excluding HC.3 – Expenditure on long-term nursing care – and HC.9 – Expenditure on services not allocated by function – from the OECD definition of public expenditure on health) in the EU27 by 2060 is projected to lie within the range of 0.7 to 2.2% of GDP, up from 6.7% of GDP in 2007. However, even the results at the upper end of this range may still underestimate future growth, given that many supply side factors, such as health technology, health sector prices or legal regulation of health services market, may exert strong, albeit difficult to quantify, upwards pressure on expenditure. For the assessment of the long-term sustainability of public finances, the AWG reference scenario has been chosen because, as done for other items included in the calculation, the focus has been on the quantification of the budgetary impact of ageing populations.

⁵¹ Details on alternative sensitivity scenario can be found in the EPC/EC 2009 Ageing Report and the 2009 Commission Communication "Dealing with the Impact of an Ageing Population in the EU" at <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2009:0180:FIN:EN:PDF>.

Table 11 - Public spending on health care* under alternative assumptions, % of GDP

	§ Level 2007	Pure demographic scenario	High life expectancy	Constant Health	Death-related cost	Technology scenario	AWG reference scenario
	(% GDP)	Change 2007-2060 (% point of GDP)					
BE	7.61	1.48	1.95	0.34	1.17	4.15	1.24
BG	4.71	0.72	0.98	-0.02	0.63	1.69	0.74
CZ	6.20	2.28	2.78	1.13	1.97	4.17	2.16
DK	5.94	1.18	1.58	0.25	0.94	3.34	0.96
DE	7.40	2.00	2.52	0.89	1.49	4.74	1.78
EE	4.95	1.22	1.70	0.35	1.04	2.30	1.19
IE	5.83	1.98	2.40	0.96	1.66	4.24	1.76
EL	4.96	1.47	1.78	0.74	1.24	3.08	1.41
ES	5.55	1.75	2.09	0.96	1.47	3.76	1.65
FR	8.13	1.41	1.85	0.40	1.09	4.30	1.24
IT	5.85	1.23	1.53	0.49	1.00	3.37	1.09
CY	2.71	0.87	1.17	0.11	0.74	1.82	0.61
LV	3.45	0.65	0.92	0.06	0.58	1.36	1.36
LT	4.47	1.20	1.59	0.34	1.04	2.16	1.11
LU	5.76	1.34	1.73	0.43	1.01	3.11	1.22
HU	5.79	1.75	2.47	0.25	1.30	3.51	1.26
MT	4.71	3.79	4.42	2.24	2.63	6.03	3.34
NL	4.82	1.13	1.41	0.45	0.93	2.94	0.98
AT	6.49	1.73	2.14	0.74	1.36	4.17	1.52
PL	4.02	1.34	1.96	-0.55	1.20	2.39	0.96
PT	7.21	2.16	2.73	0.93	1.66	4.87	1.88
RO	3.51	1.39	1.83	0.67	1.23	2.20	1.37
SI	6.61	1.95	2.39	0.97	1.64	3.96	1.88
SK	4.97	2.28	2.67	1.23	2.02	3.46	2.26
FI	5.50	1.36	1.90	0.20	1.11	3.30	0.95
SE	7.20	0.93	1.29	0.03	0.70	3.31	0.79
UK	7.50	2.19	2.81	0.98	1.15	4.98	1.94
EU27	6.72	1.70	2.15	0.67	1.23	4.10	1.50

* Compared to the definition of public expenditure on health used in the first part of this chapter, the variable public spending on health care used here is that used in the EPC/EC 2009 Ageing Report and projections exercise and is more restricted version of public expenditure on health for it excludes items such as HC.3 (Expenditure on long-term nursing care), and HC.9 (Expenditure on services not allocated by function).

§ Note: some of the values for 2007 are projected values as they were not available at the time the projections exercise was conducted.

Source: Commission services, EPC. EPC/EC 2009 Ageing Report

4. Survey of health system efficiency, effectiveness and sustainability issues

4.1. Concepts of efficiency and effectiveness regarding health systems

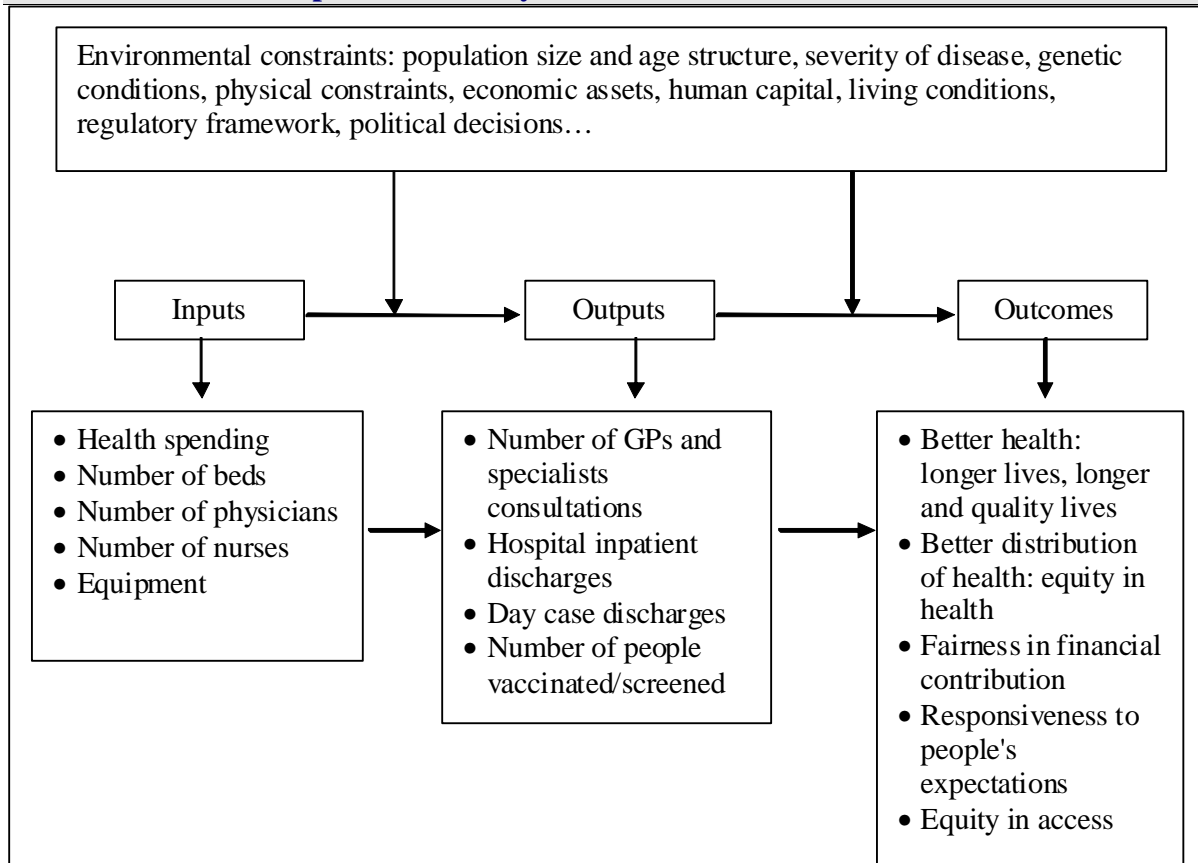
There is substantial popular confusion about what is meant by productivity, efficiency and effectiveness in general and in health systems in particular (Jacobs et al, 2006) – see Annex 2 for a short overview of the general definitions of efficiency and effectiveness. Assessing and measuring efficiency and effectiveness in the health sector implies looking at resource inputs such as labour (physicians, nurses, and other health staff), capital (hospitals, health centres) or equipment (e.g. MRI units) in relation to outputs (e.g. number of patients treated/discharged, waiting time for specific interventions) and final health outcomes (often defined as changes in health status of the population that can be attributed to public spending on health and proxied by measures of health status such as lives saved, life years gained⁵², avoidable deaths) (see e.g. Palmer and Torgerson, 1999; Jee and Or, 1998, OECD; Hurst and Jee-Hughes, 2000, OECD; Hakkinen and Joumard, 2007, OECD; Joumard et al., 2008 and 2010, OECD).

Therefore, one could define technical efficiency (also denoted cost-efficiency) in the health sector as the physical relation between inputs (labour, capital and equipment) and outputs (number of consultations or hospital discharges). Taking hospital discharges (health sector activity) as a measure of output, a technically efficient position for a hospital is achieved when the maximum possible number of discharges is attained from the set of inputs. It is possible, however, that different combinations of those inputs are used to achieve that number of hospital discharges. Hence, the choice between various combinations of inputs (in other words how you combine staff, beds and equipment to conduct a health intervention) is based on the relative costs of these different resources - input allocative efficiency or the minimisation of cost for a given output. A substantial amount of the literature regarding efficiency analysis in the health sector has indeed looked at the relationship between hospital costs of inputs and hospital discharges or other measures of hospital activity, trying to identify the more and the less efficient hospitals (including an international comparison of hospital efficiency by e.g. Erlandsen, 2008, OECD).

Effectiveness would refer to the extent to which the health system shows an acceptable level of the chosen objectives (i.e. an evaluation of its outcomes) relative to its inputs.

⁵² Beyond gained life years, a growing importance is given to the quality of these additional years. Several indicators have been utilised, such as the disability-adjusted life years (DALYs), the quality-adjusted life years (QALYs) and the healthy life years (HLYs). The latter was adopted as a European Structural Indicator in the Lisbon Strategy (http://ec.europa.eu/health/indicators/healthy_life_years/index_en.htm).

Graph 6 - Efficiency and effectiveness in the health sector



Source: Commission services.

However, defining health sector outputs as just done, i.e. using measures of health sector activities, while straightforward concept-wise, can be seen as problematic and incomplete (Jacobs et al., 2006) or lacking comparability when the decision-making units considered are countries (as e.g. in Joumard, I. et al., 2008 and 2010, OECD). Defining outputs in the health sector is challenging. Indeed, individuals do not demand health services and goods *per se*; they demand health services to improve their health (or, in even more challenging situations, to avoid health to deteriorate further). In this context, the output they look for is better/additional health. It is health gain that is the measure of success of health interventions and the use of health sector inputs (Jacobs et al, 2006) and, therefore, it is health status (measures of) that is the ultimate output. In addition, medical practices and activity definitions can vary significantly across countries so that using measures of activity to compare the level of efficiency with which inputs are used across countries may not be very accurate.

As a result, one could redefine technical efficiency in the health sector as the technical relationship between inputs (labour, capital and equipment, or, in practice, expenditure on these inputs) and health outcome, say, lives saved or longer lives. A technically efficient position for a decision-making unit is achieved when a maximum number of lives saved or a maximum number of additional years of life are attained from (the spending on)⁵³ a set of inputs. This corresponds to the notion of cost-effectiveness. In this context, overall allocative efficiency could then correspond to

the community choice or the societal perspective on the way those health outcomes ought to be distributed among the community for example.

Even more complex, there are calls to consider not only health status but health equity (distribution of health across population groups), equity in access (measured e.g. by the care utilisation across population groups after controlling for need), or patient responsiveness as measures of health sector outcomes and to compare those measures with the incurred costs of inputs (see Joumard, I. et al., 2008 and 2010, OECD). Again, what could be seen as effectiveness analysis i.e. the broad assessment of the ability of the health system in achieving goods results as defined by the above variables, is in fact seen as efficiency analysis i.e. the achievement of outcomes given the resources used. This is especially the case when establishing international comparisons which the OECD defines as efficiency in resource allocation – Hakkinen and Joumard, (2007, OECD).

In practice, both activity measures and measures of health outcomes are used as output measures in efficiency analysis in the health sector, depending on data availability or the specific aim of the analysis.

Hakkinen and Joumard (2007, OECD) argue that the measurement of efficiency can proceed at three levels: system wide, by disease and by sub-sector of care. System level analysis can account for interactions between sectors so that even if each sub-sector is highly efficient per se it could be the case that overall cost-effectiveness could be improved by shifting resources and patients from one sector to another (e.g. inpatient to outpatient care). However, if system level analysis is typically based on aggregate measures such as life expectancy, which is also determined by factors outside the health sector, it may be more difficult to disentangle the effect of health services on health from the effect of environmental or working and living conditions. Conducting disease specific analysis allows for a more accurate choice of health outcomes and estimation of a better link between inputs and outcomes but data is often still limited. Sub-sector analysis such as hospital sector analysis is often seen as easier to accomplish because there is data on outputs and inputs. However, it may not be so easy to pin-point a health outcome to a certain sub-sector of health as the outcome may depend on the interaction between sub-sectors (e.g. primary care physician who sees the patient and refers him/her to outpatient specialist who refers patient to hospital). It may also be difficult to account for issues of quality of care and case-mix.

A final remark is needed. In the literature regarding health interventions, we often read about effective interventions meaning interventions that, based on evidence, are shown to be successful in avoiding ill health or in improving health status. Connected to this we find the wording cost-effective interventions i.e. interventions that are shown to be successful in avoiding ill health or in improving health status and that in addition have associated a high ratio between the benefit they bring and the costs they involve. We also find in the literature that "effectiveness" is one of the dimensions of quality of care. In this context, effectiveness stands for the idea of care that is successful in avoiding ill health or in improving health status or care that achieves the desired

⁵³ There appears to be wide acceptance of the use of health expenditure per capita as an aggregate indicator of the inputs available to the system (WHO Scientific Peer Review Group on Health Systems Performance Assessment).

objective but also that often embodies the notion of appropriateness - "doing the right thing, in a timely fashion, to the right people, not doing unnecessary things or even harmful things".

4.2. Efficiency analysis

Efficiency analysis typically looks at a decision-making unit (e.g. a hospital in the case of the health sector). This unit consumes a certain set of inputs at a cost and produces outputs (with a value) through a certain technology i.e. production function which determines a production possibility frontier. The frontier production function or production frontier represents an ideal: the maximum output attainable given a set of inputs. Under this analysis, a technically efficient decision-making unit is one which is producing along that function i.e. that lies on that frontier. An inefficient unit, on the contrary lies somewhere below or within that frontier. The distance or part of the distance to the frontier is called inefficiency. Note that in conducting such an analysis we identify best practice producers and we benchmark other producers against those deemed the best practice producers (Fried et al., 2008).

The technical requirements for efficiency analysis are that there are an adequate number of comparable units of observation and that the relevant dimensions of performance (inputs, outputs, outcomes and environmental circumstances) are satisfactorily measured (Jacobs et al., 2006). As such, and as a result of better data availability, the demand for and the supply of efficiency analysis in the health sector continue to increase. Compared with other sectors, however, the production process in the health sector is very complex involving a wide range of inputs, a large number of outputs and a variety of outcomes and, consequently, remains a challenge for efficiency measurement.

Hollingsworth (2003) identifies about 190 studies (in 2002) using cost and production functions in the health sector with about 50% of the studies concentrating on the hospital sector. There were also studies on primary care, physicians, pharmacies, nursing homes and purchasers of care. Many studies used Data Envelopment Analysis but, in more recent years, an increasing number of studies use Stochastic Frontier Analysis. More recently, Hollingsworth and Peacock (2008) review the concepts and methods for measuring efficiency in the health and health care (see also Hollingsworth and Street, 2006 and Hollingsworth, 2008).

4.3. The quest for measuring and improving health system performance

The concern with improving health system performance (defined broadly as the extent to which the health system is meeting its objectives) notably its efficiency (defined often as the relationship between the level of resources/inputs used proxied by per capita spending on health and the goal of higher and more equally distributed population health – how good is a country in turning its resources in better health) was brought out into the international spotlight with the 2000 WHO report "Health Systems: Improving Performance" (WHO, 2000) on the determinants and

measurement of health system performance. While generating much criticism and discussion⁵⁴, this report has certainly contributed to having policy makers looking more closely at the objectives and challenges of their health systems and was an important landmark in the field of health systems efficiency evaluation. As such, the debate and research generated by the WHO rankings will ultimately be their most valuable result.

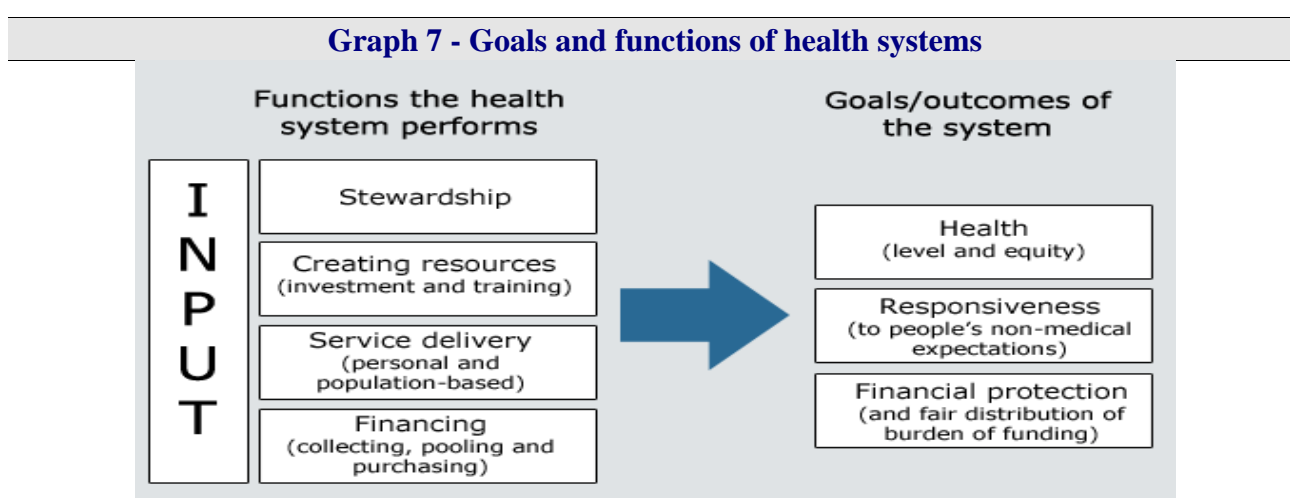
The 2000 WHO Report was a first worldwide attempt to address the following questions: What makes for a good health system? What makes a healthy system fair? And how do we know whether a health system is performing as well as it could? To answer those questions the report tried to assess the set of factors that can improve system performance (including along the dimensions of efficiency and effectiveness of care finance and delivery) and that respond to the needs and expectations of those they serve. By trying to spell out clearly the possible goals and functions of health systems, the report created a useful broad framework to help countries identify good practices and areas for improvement. It stimulated thinking and helped created a "learning from others" exercise.

The report identifies three main/fundamental goals of health systems in relation to which the systems of WHO countries are evaluated:

- *Promote, protect, restore and improve health and its distribution*: while there are important determinants of health that lie outside the health sector, this has the responsibility to develop health promotion and disease prevention strategies and tackle poor health which is amenable to health interventions;
- *fair financing*: as the need for care is individually unpredictable and may be catastrophically costly, patients should not be forced to choose between financial ruin and poor health. Therefore, the financial burden must be shared over time and across people so that the costs are distributed according to the ability to pay;
- *responsiveness and its distribution*: people have expectations, for example in relation to how they should be treated physically and psychologically. Care should be delivered with respect for the dignity of each and all persons, ensure confidentiality and allow patients to participate in choices about their own health, as well as promptly, with adequate quality, and allowing access to social support and choice.

⁵⁴ Interestingly the rankings are just a small part of the WHO report but the one that created most discussion. Papers on the rankings include: Evans et al., (2001); McKee (2001), Nolte and McKee (2003); Williams (2000, 2001), Murray et al. (2000, 2001), Hollingsworth and Wildman (2003), Richardson et al. (2003), Green (2004), Almeida et al. (2001), Navarro (2000, 2001, 2002), Murray and Frenk (2000, 2001), Walt and Mills (2001), Gravelle et al. (2002, 2003), Coyne and Hilsenrath (2002), Hakkinen et al., (2001), Rosen ((2001), Appleby and Street (2001). The criticism related to lack of data availability, accuracy and comparability (data did not in fact exist in a number of countries and/or for certain variables and was imputed or simply not used to calculate the ranking of the countries involved), to the weights attributed to each system goal and then used to calculate the composite indicator, to how a standard set of weights was used for all countries (when in principle weights do vary according to each society perspective) and to how this weight system implies that trade-off which may not be acceptable by all (can have a smaller health improvement but this is compensated by greater attention to patients on other non-medical dimensions), as well as on the definitions of the variables used to measure efficiency, health inequality or responsiveness or fair financing, and the estimation methods used.

In addition to goals, one needs to look at what health systems do /how they carry out certain functions. In the WHO report health systems are attributed four vital functions: 1) service provision i.e. the delivery of personal and non-personal health services, 2) financing i.e. the revenue collection, the pooling of funds (insurance function) and purchasing of services (the process by which pooled funds are paid to providers in order to deliver the health interventions to care users); 3) resource creation i.e. investment in equipment, buildings and people (training) and 4) stewardship or oversight of all the functions i.e. the careful and responsible management of the health system. Resource availability, distribution and skill mix, information systems, the use of cost-effectiveness analysis, budgeting procedures, fragmentation vs. integration/coordination of tasks, healthy behaviour, health-seeking behaviour and the incentive environment in the sector are some of the things that affect the way the sector performs its functions and, as a result, its overall performance.



Source: Commission services.

The idea of the WHO report is to look at what health systems are doing (functions) and how well it is succeeding i.e. how well it is achieving its goals. The analysis also looks at achievement relative to resources as a measure of system performance (or efficiency as the two terms are used interchangeably in the report). Therefore, effectiveness is taken as the achievement of better health or the three goals, while health system efficiency is defined as the relationship between the cost of inputs (health expenditure) and either health outcomes or the overall attainment of the three goals in the levels and distribution. In other words, given the country's human capital (education) and the resources devoted to its health system (health expenditure per capita) how close has it come to the most that could be asked of it? In other words how efficient are countries in turning expenditure in better health or in using expenditure to improve health, ensuring patient responsiveness and financial protection? The measures of performance (or efficiency) used included 1) a measure of health status level (disability-adjusted life years or healthy life expectancy) and 2) a composite indicator created on the basis of the defined goals of health systems (population health level and distribution across socio-economic groups, systems responsiveness and distribution across socio-economic groups, and financial protection).

Using a form of regression analysis (stochastic frontier analysis) the authors estimate the relation between health levels or the overall composite indicator and the levels of inputs (proxied by per capita expenditure on health). They use a frontier production function approach: the country with the highest level of health or overall measure of performance for each level of inputs is the most efficient and the maximum potential for each country given its inputs is the level of health or overall performance the most efficient country would have at each combination of inputs. The efficiency of each country is therefore measured in relation to that maximum: it is the ratio of the observed output (level of health or overall composite indicator) to that maximum (the output that could have been attained). The analysis shows that higher population health or higher performance (higher efficiency) is positively related to health expenditure per capita. However, the analysis also shows substantial variation in health outcomes at all levels of expenditure suggesting that countries can change the way they use their current resources (e.g. by moving from less to more cost-effective interventions) to generate additional health gains. The Report then presents a rank (league table) of WHO member countries.

Recognising that the pace of medical progress is matched by the rate at which populations seek its benefits and that there are limits to what governments can finance and deliver, the report explicitly states that if services are to be provided for all then public provision or funding must be based on effectiveness, costs and social acceptability criteria. To attain the goals, health systems need to determine priorities and find mechanisms that lead providers to implement them. This is challenging because there may be trade-offs (greater patient choice vs. more control over use of care) and criteria that may be conflicting. It also requires a mixture of rationing mechanisms, organisational structures, institutional arrangements and incentives that must be consistent with one another and across parts of the health sector as well with the goals of better health, fair financing, and responsiveness.

The 2000 WHO Report was followed by several re-estimations of the WHO analysis using different model specifications, different outcome variables, different explanatory variables and different data, resulting in different country rankings. Puig-Junoy (1998), Or (2001), Miller and Frech (2002), Shaw et al. (2002), Nolte and McKee (2003, 2004), Hollingsworth and Wildman (2003), Anand et al. (2003), Gravelle et al. (2002, 2003), Green (2004), Retslaff-Roberts et al. (2004) Alfonso and St.Aubyn (2005, 2006), Raty and Luoma (2005), Or et al. (2005) Verhoeven et al. (2007), Spinks and Hollingsworth (2009) have been some of those who have re-estimated the WHO analysis or conducted similar (efficiency) analysis of health systems.

Prior to the WHO Report, comparisons of health systems (e.g. Hitiris and Posnett, 1992; Elola et al., 1995; Filmer and Pritchett, 1997; Cremieux et al., 1999; Or, 2000) were looking at aggregate health expenditure and the determinants of expenditure or looking at aggregate health and its determinants (health spending notably public, income, education, lifestyles, pollution...).

The WHO Report was also soon followed by the OECD conference in Ottawa on "Measuring up: Improving health system performance in the OECD countries" in 2001 (OECD, 2002). The Measuring up Report departing point is that health systems are under stress due to increasing expectations, reluctance by citizens to pay more, concerns about lack of safety, effectiveness and

responsiveness, concerns about lack of equity in financing and access to care and concerns about efficiency (notably value for money). OECD systems face the twin challenge of containing costs and maximising the health of their population. Hence, it is important to have information that allow countries to measure trends in population health and health needs and to measure and evaluate the performance of systems, the way health policies and health interventions lead to positive and higher health outcomes (Jee and Or, 1998, OECD). Note that the OECD conceptual framework for performance (Hurst and Jee-Hughes, 2001, OECD; Hakkinen and Joumard, 2007, OECD) has adopted many aspects of the WHO health systems performance framework. It comprises three goals – health improvement and outcomes, responsiveness and access, and financial contribution and health expenditure, both in levels and distribution. When the analysis of the achievement of those goals is conducted in levels the OECD refers to health system efficiency; when the analysis is conducted in relation to their distribution the OECD refers to equity. Effectiveness is defined as changes in health status attributable to the activities of the health system while efficiency is seen as the relationship between inputs (proxied by health expenditure) and health outcomes or indeed any other of the goals. The OECD also distinguishes between macroeconomic efficiency – allocating an appropriated level of public sector and economic wide resources to the health sector – and microeconomic efficiency – ensuring that services are provided in a cost-efficient and cost-effective manner (Docteur and Oxley, 2003, OECD).

According to the 2002 Measuring Up Report (OECD, 2002), when looking at the health sector in various OECD countries several weaknesses were identified. They included a) weak information collection, often associated with weak and fragmented/incompatible information systems across sub-sectors of care, b) weaknesses in the availability, reliability, validity and comparability of data (on health determinants, on health activity, on health outcomes), c) lack of definition and use of indicators, and d) lack of reporting and weak dissemination system even when data and indicators were available. Also, the linkage between inputs, outputs and outcomes was not regularly monitored and data collection was not often linked with research needs.

In addition to information and monitoring issues, one could observe large variations in treatment practices across countries, regions or hospitals due to incentives/payment systems, to health policy priorities/regulation /planning, to medical knowledge and access to new technologies, or to economic circumstances for example. Also, care was often fragmented, there were separate management frameworks and there was a lack of coordination between the many players in the health field. This also contributed to separate and uneven data collection and indicators development and incompatibility of information systems in the sector.

Furthermore, different perspectives were identified:

- those of patients who want easy access to care and smoothness of the care process, good medical outcome, overall satisfaction and who measure risks - side effects;
- of physicians who want good working conditions, continuous professional development, and also care about patient outcome and satisfaction and are concerned about side effects and complications;

- of managers who care about resources like beds and personnel, about competence, about the production of care, about economic and medical results and about the risk of side effects and complications;
- of tax payers and politicians who are concerned with “macro/public health” perspectives and value for money.

The choice of what is to be optimised depends on each country's various economic and political constraints, but better choices are possible if there are data and indicators that can render many of the issues just presented more transparent and make trade-offs more evident. This emphasises the need for performance measurement as a means to improve the decision making process of key actors (consumers, health professionals, managers, policy makers). Performance measurement must also be multidimensional i.e. cover the dimensions of efficiency, quality (effectiveness and safety of care), equity.

In other words, countries need to assemble accurate, reliable, and relevant data, define relevant and commonly accepted indicators that can serve to inform different stakeholders; they need to standardise definitions of inputs and outputs and better characterise providers, patients, processes, and outcomes. Measures of health outcomes should include 1) aggregate measures of health status such as mortality data and life expectancy, 2) self-reported health status, 3) measures of prevalence and incidence of disease and 4) composite measures of mortality and morbidity data. They should also include measures that relate more strongly health status with health interventions such as measures of avoidable mortality and morbidity, rates of effective care interventions, survival rates, rates of adverse health events (hospital acquired infections) and rates of patient satisfaction (Jee and Or, 1998 OECD). With the information available, countries need to look at treatment, its inputs, costs, and outcomes more systematically (Are facilities “efficiently used” (utilisation/participation rates, discharges)? How much does it cost (unit costs)? What happens to patients (survival, readmissions, quality of life)?). Finally, countries need to disseminate the information obtained and use it for evaluation, for good practice dissemination and the development of clinical guidelines, as well as for strategic purchasing and medical priority setting so as to improve access, quality, and sustainability of care.

Information systems may of course be expensive in the short run as a considerable investment is required but they can help obtain integrated data which is crucial for decision making, and in doing so help improve cost-effectiveness in the longer run.

To improve health systems performance countries should pursue a number of steps: a) establish the goals/objectives for the system (or the care sector or the care organisation) and the motivation for performance measurement (if it is system performance one is considering the goals could be acceptability/responsiveness, accessibility, affordability, appropriateness, competence/capability, continuity, effectiveness, efficiency, safety, and the motivation for measurement could then be budgetary impact and sustainability and health status impact); b) adopt specific measures/indicators (ideally “outcomes” proxied or/and complemented with “output” and “process” indicators; c) do performance analysis i.e. routine standardised measurement of performance using those indicators and based on the information system in place; d) report data (publicly and confidentially) and use results to regulate, establish financial and non-financial incentives, to determine staff and facilities

accreditation/certification and licensing of equipment and medicines, for purchasing or commissioning decisions, to help consumers choose providers, to support accountability and encourage behavioural change; and e) monitor and follow up on reform implementation, on activity and behavioural change in a constant procedure.

Another important milestone was the adoption of the Tallinn Charter⁵⁵ by 53 member states of WHO European region in 2008. The Charter states that health is investment to economic development and countries committed to perform health system performance assessment. All EU countries are involved.

Finally, the 2002 Measuring Up Report also indicates that to improve performance, in addition to the performance monitoring system as just described, countries have to reevaluate the financial and non-financial incentives affecting the behaviour of providers, consumers, managers, and purchasers and align them with the goals and priorities for the sector. This must then be complemented with rewarding good practice, fostering self comparison and benchmarking and peer review to improve the situation. The way data is published and comparisons are made is also critical: it must be attractive, understandable, and adjusted to the different types of audience who will make use of the information.

Since 2001, much progress has been observed in the scope and ability to measure activity and outcomes in the health sector. As a result of better data and estimation techniques available and a greater interest by policy makers in health system's performance, a large number of health indicators (inputs, outputs/processes, outcomes) have been developed. Costing and measuring the technical and allocative efficiency in the health sector have become more generalised. The analysis has also moved from just process/production analysis to measuring outcomes and attempting to relate inputs and outputs and inputs and outcomes.

Consequently, in more recent years the OECD has conducted substantial analytical work (Hakkinen and Joumard, 2007, OECD; Joumard et al., 2008, OECD; Joumard et al., 2010, OECD) looking at the efficiency of health systems (defined as each country's relative ability to transform health sector resources in health outcomes). The analysis, using panel data regressions (including a kind of total factor productivity analysis) and data envelopment analysis, compares life expectancy, infant mortality, perinatal mortality, premature mortality and health adjusted life expectancy, with the costs of inputs proxied by health expenditure per capita and the number of health practitioners. The aim is to identify best-practices to enhance spending cost-effectiveness. From the various studies the following conclusions emerge: 1) health services and goods play an important role in explaining health status changes over time and cross-country differences, together with lifestyles, education, environment and income; 2) however, health spending is not producing the same value for money (cost-effectiveness) across countries: in many countries (both high spending and low spending) there is room to improve population health status (of up to 3 years) without increasing spending. Hence, "how much is spent" and "how money is spent" are both important in determining health status.

⁵⁵ http://www.euro.who.int/_data/assets/pdf_file/0008/88613/E91438.pdf

The above studies also identify the need to improve data on health outcomes including by adjusting mortality to the prevalence and severity of sickness and functional disability, the need to improve data comparability in terms of disease specific mortality/survival, and the need to develop information on health equity and equity in access to care. Indeed, current analysis fails to account for the ability of health systems to relieve symptoms, improve functional ability and quality of life which is a growing aspect of health systems in the presence of long-term chronic diseases.

Another aspect that the previous studies were unable to account for was the institutional characteristics of health systems and how these may contribute to cost-effectiveness. Some other papers that attempt to take into consideration some institutional aspects include: Puig-Junoy (1998), Or (2000), Berger and Messer (2002) and Self and Grabowski (2003) who look at the role of public expenditure vs. total expenditure, Elola et al., (1995) who look at national health services vs. social security systems, Or (2000) who looks at the public share of expenditure, Or et al. (2005) who look at the public/private mix, gatekeeping, fee-for-service vs. capitation systems, and Verhoeven et al. (2007) who look at wage spending, immunisations rates and doctors' consultations.

In an attempt to address this research gap, Paris et al., (2010, OECD) have recently conducted a detailed country questionnaire on the institutional features of health systems and related health policies of OECD countries, summarised in a detailed report. The broad areas covered include health financing and health coverage arrangements, the organisation of health services delivery and governance and resource allocation. Using this information, Paris et al., (2010, OECD) created indicators and attributed scores to each country in relation to the various institutional dimensions: breadth, scope and depth of health services coverage, gatekeeping, patient choice of providers, share of out-of-pocket payments as a proxy for price signals for users, providers incentives to increase volume of care, providers' prices regulation, regulation of workforce and equipment, degree of private provision, user information on providers' quality and prices, use choice of basic insurance, over the basic coverage (degree of private health insurance), setting of priorities, stringency of budget, budget decentralisation, delegation and the consistency of responsibility across levels of government.

Using the information on such health systems characteristics, Joumard et al., (2010, OECD) identified empirically, based on a cluster analysis, six groups of countries each sharing broadly similar institutional features. A principal component analysis further reveals that the degree of reliance on market mechanisms and regulations to steer the demand and supply of health services were the main components used to group countries. It then conducted efficiency analysis based on data envelopment analysis (in addition to the panel regression analysis and data envelopment analysis for the whole set of OECD countries). Efficiency estimates show that there are larger differences within each institutional group than between institutional groups, which suggests that there is no type of health system that performs better than another. They also show that within each group there is the potential for some countries to considerably improve health outcomes without increasing spending. Some suggestions apply to all countries such as better priority setting, more consistent assignment of responsibilities across levels of government, better balanced remuneration

systems for providers, better user information on quality and prices of health services. Others, such as those regarding administrative costs or workforce regulations, are country specific.

Hurst and Jee-Hughes (2001, OECD) and Arah et al. (2003) review some of the conceptual frameworks that some countries, the UK, Canada, Australia and USA, have been developing for monitoring, measuring and managing the performance of their health systems. The departing point is again that to manage health systems to best achieve the goals countries have set them, information systems and associated performance indicators are needed to measure health trends and health system activity trends and factors. The data generated can help make decision and steer health policy (You can't manage what you can't measure).

Given the NHS goal of ensuring access to effective, prompt and high quality care, the UK national performance framework comprises a large number of indicators covering several areas of performance. For the health authority performance measurement regards health improvement, fair access, effective delivery of appropriate care, efficiency, patient care experience and health outcomes of NHS care. For the NHS trusts performance measurement relates to: clinical effectiveness and outcomes, efficiency, patient/carer experience, and capacity and capability. Performance indicators include measures of staff and access to GPs, waiting lists, cancer treatment and overall population health. Performance indicators are used to compare NHS organisations (benchmarking) and is supported by a performance analysis toolkit that allows providers of care to compare their performance with that of their peers and understand the causes of variation. High performers are rewarded with greater autonomy over their funds while low performers require approval of the regional office and very low performers have to work with the Modernisation Agency. In the UK NHS Performance Framework, effectiveness of care is defined as "doing the right thing, at the right time, for the right people and doing them right first time" (DoH, White Paper "The New NHS Modern and Dependable", 1997).

In Canada, health system performance is part of the Health Information Roadmap Initiative Indicators Framework which looks at the health status of Canadians, non-medical determinants of health, health system performance and community and health system characteristics. The last two dimensions capture aspects of health systems performance. The goals associated with the system and therefore the domains of health system performance measurement are acceptability, accessibility, appropriateness, competence, continuity, effectiveness, efficiency and safety. Several indicators cover these dimensions. Effectiveness is defined as the service, intervention or action that achieves the desired results. Performance measurement (based on inputs, outputs and outcomes indicators) is to encourage learning and innovation, identify and sharing of best-practice and improve quality of care. It is also used to set budgets and hospital funding and define plans and priorities. Performance indicators are used to compare organisations (benchmarking) and is supported by a performance tool that allows organisations to voluntarily compare their performance to improve processes and outcomes.

Australia adapted the Canadian Health Information Roadmap to the Australia context. The Australian National Health Performance Framework looks at health status and outcomes, determinants of health and health system performance. This latter dimension encompasses 9 sub-

dimensions: effectiveness, appropriateness, efficiency, responsiveness, accessibility, safety, continuity, capability and sustainability. These dimensions are evaluated for the four main sectors of care: primary, acute and continuing care plus population health programmes. Performance indicators cover those dimensions. Effectiveness is defined as care, intervention or action that achieves the desired result in an appropriate timeframe. Performance measurement compares states and territories and Australia with other countries. Indicators are reported at local, regional and national levels and are to be used to compare and benchmark organisations to stimulate improvement. The framework also attempts to relate inputs with outputs and outcomes.

The USA has a large experience in the development, analysis and reporting of performance indicators and substantial research based on them. However, the fragmented nature of the US health system has not contributed to the implementation of a coherent national performance framework, although there are a number of initiatives in the area such as the population improvement model, the National Health Care Quality Report, and the Consumer Assessment Of Health Plans Study, the Health Employer Data Information Set, the Quality Improvement Organisation Programme and the so-called ORYZ initiative of the Joint Commission On Accreditation Of Health Care Organisations and the quality measures of the Foundation For Accountability. The Institute of Medicine (IOM) proposes six performance domains: safety, effectiveness, patient centeredness, timeliness, efficiency and equity. The IOM defines effectiveness as providing services based on scientific knowledge to all who could benefit and refraining from providing services to those not likely to benefit (avoiding underuse and overuse). Indicators used are mostly output/process and outcome indicators. The analysis of these indicators is widely reported and aims to help purchasers, providers, users and policy makers in their decisions.

4.4. Health systems: possible ways to improve cost-effectiveness in the sector

Simultaneous concerns over the need to improve population health status and differences in health across population groups, the need to improve the quality of services, the persistence of inappropriate incentives and ineffective and inefficient service provision, and the need to control the growth of health spending have encouraged countries to look for ways to improve value for money in the health sector. The work conducted for the WHO and OECD while showing that higher expenditure per capita is associated with higher level of health, has also indicated that there are opportunities for some countries to improve health outcomes or to improve quality of care without increasing or even reducing their current level of resources used on health. Indeed, their analysis shows that the best health status is not always found in those countries that spent the most on health and that care delivery falls short of good practices in many countries, including some where expenditure is quite high.

Available literature (Schoen et al., 2007; WHO, 2000; WHO/Europe, 2009a, 2009b; Joint Report on Social Protection and Social Inclusion 2010; OECD Measuring up Report, 2002; Docteur and Oxley, 2003, OECD; OECD, 2004) identifies some areas for reform that, if implemented, can contribute to efficiency gains and greater value for money (cost-effectiveness) in the health sector while ensuring access for all to quality health services and goods. Literature coming from the US actually posits that failing to ensure universal access to effective and cost-effective care to the

whole population may bring along greater costs to the both the private and the public sector in the long-term by reducing the use of belated and costly emergency care for example. Hence, the solution is not to decrease population coverage but search for other more careful (cost-effective) and comprehensive coverage.

4.4.1. Improve the management of information and knowledge to help decision-making in the health sector:

Several measures could be implemented to make better use of information, which is a precondition to help decision making in the health sector. Improving health sector performance is associated with an intensive use information and knowledge for planning, control and evaluation. Better strategies for the management and use of information and knowledge mean more quality and efficiency of health services. These include in particular:

a) improve data collection by health system managers and health authorities and encourage research: data is still not always routinely available and comparable within and across countries. Knowledge on determinants of health, underlying risk factors, disease patterns and burden of disease, or utilisation across population groups are just a few examples of the variables for which information remains limited in many countries. Without information it is difficult to know the problems and identify solutions. Current technology can help countries collect, on a routine basis, more accurate data not only on those variables but also on inputs and outputs, their costs, prices and activity patterns, and on health outcomes. Routine data and better research allow countries to identify for example the causes of treatment variation or help governments define public health priorities and national health promotion and disease prevention strategies. Building up information systems and administrative data systems, implementing electronic patient health records, patient registries, provider registries, on the basis of strengthened and harmonized privacy legislation, building up population health surveys, patient experience surveys (report on what happened when they used care), facilitating "appropriate" data flows /data linkage /data analysis and encouraging information systems compatibility are crucial to compile standard, routine and accurate data. This must then be complemented by the development of a balanced set of indicators (including quality dimensions), measurable for diverse populations and overtime, relevant to policy and practice and understood by the various groups (patients, providers, purchasers of care, policy makers) who will use them and that can facilitate comparisons;

b) make better use of data: The information can then be used by providers and purchasers of care in their activities as well as patients in their choice of insurers or providers and the general government in setting national health strategies and in monitoring and regulating the various agents in the sector. With more accurate data, available on a systematic basis, countries can look, in a transparent manner, at the effectiveness and cost-effectiveness of health interventions and identify health interventions that produce most gains (health benefits) from available resources (costs) and consequently define clinical guidelines and evidence-based standards and ensure the uniform uptake of high value medical innovations as well as defining cost coverage (cost sharing). They can use information to accredit/certify providers and regulating health services provision, in conjunction

with local contexts⁵⁶ and local prices. This work can be complemented with a Health Commission that monitors the use of effectiveness and cost-effectiveness related guidelines. They can devise health promotion and disease prevention and establish public health priorities;

c) compare in a transparent way to encourage change (using public reporting for accountability): data in certain areas (outputs and quality dimensions) in various sectors can be made publicly available on a common database to allow for benchmarking, peer review and audit programmes (site visits by peers) and dialogue for performance improvement. More and better/accurate data allows for better monitoring and regulation and improves accountability of providers and incentives to improve performance. Information should be used in a cooperative manner working with providers to improve performance: support self-regulation through the provision of information to providers so that they can improve their practices, reward clinicians and institutions. Assessment of performance is the only means by which we can understand what we are doing well, where we are falling short, and what kinds of solutions have been found effective in other jurisdictions;

d) foster the implementation and use of ICT for sharing patient information (electronic health records) and for doctors' self-evaluation of their activity: through electronic medical records /patient files across different providers and types of care to avoid doubling of procedures and medical mistakes which result in increased costs to the patients and the system. In addition, ICT in health allows for a large number of actions such as: access by patient; access to doctor after office hours, routine use of electronic ordering of diagnostic tests and prescriptions, electronic access to test results and hospital records; drug prescription alerts; prompts for test results; easy to list diagnosis; alert doctors on patients due for care. Importantly, ICT tools and patients electronic health records can foster doctors' self-evaluation of their activity. As ICT use increases it is also important to provide technical assistance to staff to help them using these new technologies;

e) improve health information for patients and motivate consumers to use performance information: patient expectations together with cultural factors (self-care) associated with health literacy, can play a role in the demand for care. Investing in information to patients on how to access the system, what is covered and why, and on the different treatment alternatives available, may align expectations with resources and lead to better informed patient decisions. Information for health can contribute to improving life-styles (see below). Information to patients must be simple and contextual and adapted to the demand of particular users (provide context, keep it simple, help people understand meaningful differences, format in a way that is easy to follow, make it clear that information is trustworthy). There is evidence that public reporting of performance data to support patient choice of provider improves quality as providers are sensitive to their public image even in the absence of market pressure from consumer choice.

⁵⁶ Health services will always reflect not just evidence about policies and practices, but also local and national contexts or circumstances, and the values or preferences of different communities and policies Hurst, J. and Jee-Hughes, M., (2001, OECD).

4.4.2. Strengthen primary care, ambulatory practices and care coordination

In recent years there has been a general acceptance that primary health care can improve the equity, efficiency, effectiveness, and responsiveness of their health systems. Studies show (WHO Health Evidence Network, 2004; Saltman, R.B. et al., 2006; WHO, 2008) that countries with strong primary care systems were successful in improving population health outcomes (all-cause mortality, all-cause premature mortality, and cause-specific premature mortality from major respiratory and cardiovascular diseases). Moreover, a strong primary care sector is associated with higher patient satisfaction and reduced aggregate health care spending. Measures to strengthen the primary care sector in a country include:

- a) increasing the pool of primary care resources (physicians and nurses) and reduce the payment differences between primary care physicians and specialists to attract medical students to primary care;
- b) improve access to primary care after office hours and ensure an even geographical distribution of primary care services to avoid patients visiting hospital emergency rooms unnecessarily;
- c) encourage the role of primary care physicians as gatekeepers and care coordinators between types of care and as health promoters and disease preventers by updating job descriptions and complementing it with financial incentives through a mixed payment system (capitation to encourage care coordination and follow up, plus fee for certain services such as health promotion, disease prevention practices and after hour visits plus bonuses);
- d) strengthen ambulatory specialties to reduce the misuse of emergency hospital services.

4.4.3. Emphasise more strongly health promotion and disease prevention

As with primary care there is a general acceptance that health promotion and disease prevention policies may contribute to increasing the length of life spent in good health and to reduce health disparities among population groups (OECD, 2010b). Given the burden of chronic diseases in EU Member States and the fact that they are strongly associated with life-styles, health promotion and disease prevention can help control expenditure growth in the sector by postponing disease to later ages. Health promotion and disease prevention policies imply a refocus in policy making from accepting the consequences of treating and managing diseases to their prevention. Strengthening health promotion and disease prevention implies:

- a) defining explicitly public health objectives on the basis of available information on health status and health behaviour;
- b) encouraging healthy behaviour (reduce tobacco and alcohol consumption and improve diet and physical exercise). The WHO and EU Member States have identified a number of strategies to encourage healthier behaviour which include economic incentives and disincentives (e.g. taxes on tobacco, alcohol and soft drinks, subsidies for replacement therapies and for physical exercise), regulation (e.g. smoking bans, advertisement bans, labelling, coupled with penalties), health education at school, or improvement of green areas and cycles paths.

4.4.4. Correct price signals in health services markets and align incentives with effectiveness and efficiency

While governments should retain control of overall health strategy, financial protection and regulation of the sector, there is place for market mechanisms and the use of incentives both financial and non-financial to improve effectiveness and efficiency. Incentives to provider organisations, health staff and users may affect things as the (more or less) use of equipment, the number and frequency of diagnostic testing, the prescription of generics vs. branded medicines. The challenge is to implement a set of incentives which are best associated with the national priorities and strategies. Improvements include:

- a) look at ways to improve staff remuneration mechanisms: no mechanism can achieve simultaneously the four objectives – prevent health problems, deliver services, respond to expectations, and contain costs. Hence, providers need a combination of payment mechanisms;
- b) look at ways to improve financial incentives for users: to for example follow health promotion and disease prevention such as free vaccination and free screening (for blood pressure, for diabetes, for cancer) and financial incentives to avoid unnecessary use of care while not deterring patients from receiving necessary care;
- c) add an element of pay for performance to hospital budgets;
- d) use group purchasing power /bulk tendering to take advantage of economies of scale and bargaining capacity (monopsony power) for equipment and pharmaceuticals and explore the use of generics;
- e) see if it is possible to reduce the administrative costs of health insurance: complex insurance schemes (varying benefits, marketing costs, benefit margins etc) and various levels of insurance administration may lead to large amounts of costs;
- f) develop a more strategic purchasing by actively searching for the interventions that should be purchased, how, from and whom;
- g) harness markets and competition in favour of the public interest supported by market regulation, expose providers to competitive elements notably competition for prepaid revenues/budgets;
- h) develop accountability mechanisms: through the use of routine monitoring and regulation, reward physicians and hospitals for achieving certain targets or complying with quality goals.

4.4.5. Training human resources for health and ensuring a balance between inputs:

Health systems are labour intensive and need clinical and non-clinical staff to function. A large proportion needs to be highly qualified. Their knowledge, skills and motivation are crucial for a good delivery of services. As a labour intensive sector, staff wages/remuneration is the biggest single item of expenditure, sometimes greater than 60% of total expenditure on health. Hence it is important to develop a comprehensive human resource strategy that:

- a) addresses limited numbers of various types of staff;
- b) improves/balances the staff mix: reorientation of specialist physicians to primary care in order to balance the professional distribution of physicians, either through training or their use as family doctors and more involvement of other professionals such as nurses: training is shorter and they can compensate for shortages in doctors in a number of areas;

- c) further training of health professionals from lower to higher qualifications and replace doctors by nurses for certain interventions;
- d) ensures staff motivation: by ensuring good working conditions, long-life learning (to be able to update with newest effective and cost-effective practices and technology), possibilities for career advancement, financial compensation, management tasks;
- e) improves the management skills of those in management positions;
- f) trains staff to communicate with different types of patients (different gender, age group, racial, religious or socio-economic background).

4.4.6. Look outside the box: socio-economic determinants of health

Population health is affected by a wide range of factors including level and disparities in income and education, working and living conditions, environmental standards, and therefore social, educational, income, employment and public health policies (EC, 2009b; de Looper M. and Lafortune, G., 2009 OECD). These influences are neither deeply embedded in the health system nor readily manageable through system-focused performance measurement. Some countries have better health outcomes than others in part owing to factors other than well performing health systems, although health systems may help mitigate the differences by providing effective and timely care. Hence, policy-makers should investigate what policies, other than health policies, can improve the general health status of the population. These can include:

- a) road safety measures and safety measures in automobile design;
- b) reducing environmental risks (e.g. lead, pollution);
- c) reducing social risks: poverty, social isolation;
- d) social and economic policies aimed at family-friendly work policies.

4.4.7. Leadership and consensus building and governance

The literature also emphasises the need for consensus and wide participation in the implementation of health systems reforms. Health system reforms changing provider remuneration are often met with resistance and intensive lobbying from staff and their representatives. Reforms changing reimbursement and prescription methods for medicines often meet the resistance and lobbying of the medical industry. Changing investments such as those associated with hospital concentration meet the resistance of the general public while increases in investment always attract popular support. Political interests may also play an important role in allowing or resisting the change. This is why consensus building and a large platform for reform is needed.

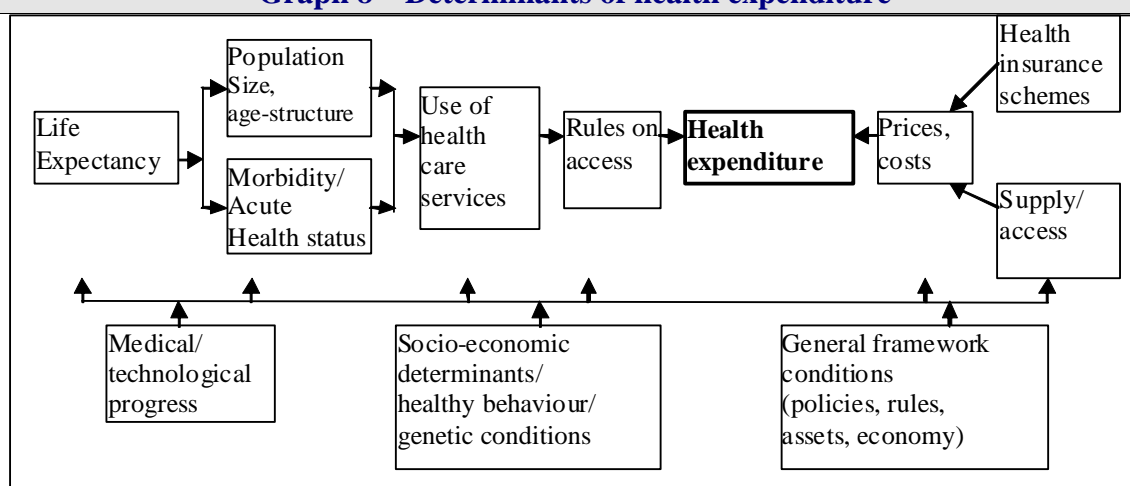
Leadership is essential to ensure that public and private coordinate, cooperate and align under national health strategies using explicit goals and targets. A clear vision on system goals and design is necessary to promote integrated care and performance. Governments must set national strategies and direction by identifying objectives, priority and major policy issues. They are responsible for setting up measurement frameworks: encouraging measurement is a political responsibility. They must define the role of public and private sectors in financing and provision and identify policy instruments (regulation, incentives) to make providers and users meet the objectives i.e. setting the rules and ensuring compliance. They must build consensus and inform people.

5. Health system characteristics and their relation to health expenditure

In general, levels of health spending are the combined effect of: a) demand side factors such as population age structure, general health status and the need for care, national and individual income, and some organisational (e.g. cost-sharing) and cultural (e.g. self-care) factors that affect the demand for care; and b) supply side factors such as the availability and distribution of services, cultural and organisational factors affecting the supply of care including wage levels, remuneration methods of providers, gatekeeping, market regulation, diffusion of high cost technology, administrative costs (see Figure 1).

Therefore, carrying out a thorough investigation of the institutional features of health systems⁵⁷ in the EU (i.e. the way services are organised, funded and delivered) and of the consequences they could have on the financial sustainability of health systems is relevant to better understand current and future trends in expenditure. It also contributes to better informed policy choice when aiming to ensure adequate and suitable health services provision.

Graph 8 – Determinants of health expenditure



Source: 2007 AHEAD – Ageing, health status and determinants of health expenditure project and own adaptation.

5.1. Health insurance coverage and its relation to expenditure

Health insurance coverage is universal or almost universal in all EU Member States (see Table 12). In general, depending on the Member State, residents are either automatically covered for a set of goods and services provided through national or local health services (DK, IE, ES, IT, LV, MT, PT, SE, UK) or are covered through compulsory social health insurance (BE, BG, CZ, DE, EE, FR, LT, LU, NL, AT, PL, RO, SI, SK, HU) organised via a common health insurance scheme or multiple insurers.

⁵⁷ For a detailed description of health system characteristics see Paris, V. et al., (2010, OECD).

Table 12 - Population coverage by both public and primary private health insurance

	1960	1970	1980	1985	1990	1995	2000	2005	2006	2007	2008
Belgium	58.0	97.8	99.0	98.0	97.3	99.0	99.0	99.0	99.0	99.0	99.5
Bulgaria	:	:	:	:	:	:	:	:	:	:	:
CzechRepublic	:	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Denmark	95.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Germany	85.2	89.2	92.3	91.2	88.8	99.9	99.8	99.8	99.8	99.8	99.9
Estonia	:	:	:	:	:	:	:	94.3	95.0	95.9	95.6
Ireland	:	85.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Greece	:	55.0	88.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Spain	54.0	61.0	83.0	:	:	98.6	:	:	98.3	:	100.0
France	76.0	95.6	99.1	99.2	99.4	99.4	99.9	99.9	99.9	99.9	99.9
Italy	87.0	93.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	:	:
Cyprus	:	:	:	:	:	:	:	:	:	:	:
Latvia	:	:	:	:	:	:	:	:	:	:	:
Lithuania	:	:	:	:	:	:	:	:	:	:	:
Luxembourg	90.0	99.6	99.8	:	:	98.6	98.2	98.7	98.2	97.9	:
Hungary	:	:	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Malta	:	:	:	:	:	100.0	100.0	100.0	100.0	100.0	100.0
Netherlands	71.0	69.0	68.3	66.3	61.4	98.6	97.6	97.9	98.5	98.6	98.8
Austria	78.0	91.0	99.0	99.0	99.0	99.0	99.0	98.0	98.5	98.7	98.8
Poland	:	:	:	:	:	:	:	97.3	99.3	98.1	97.8
Portugal	18.0	40.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Romania	:	:	:	:	:	:	:	:	:	:	:
Slovenia	:	:	:	:	:	99.0	98.0	99.0	99.0	99.0	100.0
Slovakia	:	:	:	:	:	99.3	98.8	97.6	96.3	95.5	95.4
Finland	55.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Sweden	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
UnitedKingdom	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
EuropeanUnion	80.2	88.0	95.0	96.4	95.6	99.6	99.8	99.5	99.6	99.5	99.6
EuroArea	74.9	84.5	93.5	95.0	94.0	99.5	99.7	99.6	99.5	99.6	99.7

Source: OECD health data and Commission Services computations.

Compulsory social health insurance may be organised via a central insurance office only, or via a central office plus regional or district branches. Compulsory social health insurance can also be organised via several health insurance funds either related to the type of occupation, or originally organised by political or religious affiliation, or still, private not-for- or for-profit funds/insurance companies. In most cases under compulsory social health insurance, the benefit basket is explicitly defined, as is the associated contribution rate or insurance premium. In general, patients cannot choose among funds or insurers with the exception of individuals in NL, DE, SK, and CZ. Some countries – EL and CY – have a mix-system of public provision and insurance funds (defined by occupation). FI has a mixed system of local health services provision combined with compulsory social health insurance and occupational health services provided by employers and subsidised by public funding. Finally, HU has a mix-system of financing which consists of social health insurance contributions and earmarked health care tax.

National health services (though sometimes organised on a regional/county basis such as in IT, SE or ES) or local health services are mostly financed by taxation – general, regional or local taxes, depending on the extent to which the system is organised on a national, regional or local basis. In general, both direct and indirect taxes are used to finance the health system activities. Compulsory social health insurance is mostly funded by income-related social contributions, often shared between the employer and the employee. It is, therefore, often linked to occupation though often extended to relatives (spouse, children). In the NL the funding of the social health insurance comes for 50% from community rated premiums (the nominal premium paid directly to the insurer) and

for 50% through income dependant contribution (a fixed percentage of income). Note, though, that compulsory social health insurance systems are becoming more and more mixed in terms of the sources of funding because the state (on the basis of taxation): a) pays the contributions of those not employed or on social assistance or even for the relatives (children) of those contributing and b) provides capital investment, funds ambulance and emergency care, funds health promotion and disease prevention activities and pays for health education, training and research. In NL, low income individuals receive a health care allowance to pay for social health insurance.

Table 13 - System classification based on the organisation of the supply of basic primary coverage

Country	Q2a. The basic primary health care coverage is supplied by:	Q2b. How is affiliation determined?	General government funding as % of total health expenditure (2008 or latest available)	Social security funds as % of total health insurance (2008 or latest available)
Belgium	Common health insurance scheme		11.4%	61.1%
Bulgaria	Common health insurance scheme		20.0%	38.2%
Czech Republic	Multiple insurers	Choice among several insurers	7.4%	75.2%
Denmark	Local health services		80.2%	0.0%
Germany	Multiple insurers	Choice among several insurers	8.8%	67.9%
Estonia	Common health insurance scheme		13.0%	64.8%
Ireland	National health services		76.3%	0.6%
Greece	Multiple insurers /National health services	Not a matter of choice	29.1%	31.2%
Spain	Local health services		67.7%	4.8%
France	Multiple insurers	Not a matter of choice	5.2%	72.5%
Italy	National health services		77.1%	0.1%
Cyprus	National health services /multiple insurers		42.0%	0.1%
Latvia	National health services		64.1%	0.0%
Lithuania	Common health insurance scheme		13.4%	59.2%
Luxembourg	Common health insurance scheme		17.0%	67.1%
Hungary	Common health insurance scheme		11.8%	59.2%
Malta	National health services		77.4%	0.0%
Netherlands	Multiple insurers	Choice among several insurers	5.1%	70.2%
Austria	Multiple insurers	Not a matter of choice	32.8%	44.4%
Poland	Common health insurance scheme		11.9%	60.3%
Portugal	National health services		70.7%	0.8%
Romania	Common health insurance scheme		13.4%	68.6%
Slovenia	Common health insurance scheme		4.7%	67.5%
Slovakia	Multiple insurers	Choice among several insurers	6.6%	62.4%
Finland	Local health services/compulsory social health insurance and occupational health services		59.2%	15.0%
Sweden	National health services		81.9%	0.0%
United Kingdom	National health services		82.6%	0.0%

Source: Eurostat, OECD and WHO health data and adapted from Paris, V. et al., (2010) "Health systems institutional characteristics: a survey of 29 OECD countries". Health working paper No. 50, OECD 2010.

In addition to universal or almost universal population coverage, service provision is very comprehensive with a large set of goods and services publicly funded under those systems. As a consequence, the share of public expenditure in total health expenditure is very high in the EU (77% on average in 2008 and 80%+ for CZ, DK, LU, NL, RO, SE and UK). In the vast majority of countries cost-sharing applies to many health services, albeit to different extents across services and across countries. Dental care, eye glasses and contact lenses and pharmaceuticals are those services

and goods for which patients typically pay a larger part of the costs. In some countries a comprehensive package is provided for free or at low cost for a part of the population (CY, IE), and the remaining population has to pay a user charge for most of the services. As a result of cost-sharing schemes or public provision limited to means-tested groups, private expenditure, and in particular out-of-pocket expenditure, is a significant share of total expenditure in some countries (LV, BG, EL and CY with about 30%, 36.5%, 37%, and 50.2% share of total expenditure). Nevertheless, all countries apply a system of cost-sharing exemptions for certain population groups to ensure access to care by more vulnerable groups (see Annex 3; OECD, 2010; Joint Report on Social Inclusion and Social Protection).

Table 14 - Public and out-of-pocket expenditure as a % of total health expenditure

Public expenditure on health as % of total expenditure on health										Out-of-pocket expenditure on health as % of total expenditure on health								
Countries	1960	1970	1980	1990	2000	2005	2006	2007	2008	1960	1970	1980	1990	2000	2005	2006	2007	2008
Belgium	:	:	:	:	71.8	75.4	75.9	73.5	72.6	:	:	:	:	23.9	19.3	18.8	21.3	22.2
Bulgaria	:	:	:	100.0	59.6	60.9	57.0	58.2	57.8	:	:	:	:	40.4	37.9	41.8	40.6	36.5
CzechRepublic	:	96.6	96.8	97.4	90.3	87.3	86.7	85.2	82.5	:	:	:	2.6	9.7	10.7	11.3	13.2	15.7
Denmark	:	:	87.8	82.7	82.4	83.7	84.1	84.5	84.7	:	:	11.4	16.0	16.0	14.8	14.3	13.8	13.6
Germany	:	72.8	78.7	76.2	79.8	76.8	76.7	76.7	76.8	:	13.9	10.3	11.1	11.1	13.2	13.4	13.3	13.0
Estonia	:	:	:	:	77.2	76.7	73.3	75.6	77.8	:	:	:	:	19.9	20.4	25.1	21.9	19.7
Ireland	76.0	81.7	82.0	71.7	75.3	76.6	76.3	76.8	76.9	:	:	:	16.5	15.2	15.5	14.5	14.1	14.4
Greece	:	42.6	55.6	53.7	60.0	60.1	62.0	60.3	60.9	:	:	:	:	37.8	37.9	36.0	37.5	37.0
Spain	58.7	65.4	79.9	78.7	71.6	70.6	71.3	71.8	72.5	:	:	:	:	23.6	22.4	21.4	21.0	20.7
France	62.4	75.5	80.1	76.6	79.4	79.3	79.1	79.0	77.8	30.3	17.6	12.8	11.4	7.1	6.8	6.8	6.8	7.4
Italy	:	:	:	79.5	72.5	76.2	76.6	76.4	77.2	:	:	:	17.1	24.5	20.5	19.9	20.1	19.5
Cyprus	:	34.7	52.4	40.0	41.7	41.8	42.4	42.6	42.1	:	:	:	:	55.9	47.0	46.6	47.8	50.2
Latvia	:	:	:	100.0	54.4	56.9	64.1	57.9	59.6	:	:	:	:	44.1	40.6	33.3	40.9	30.0
Lithuania	:	:	:	90.0	69.7	67.8	69.5	72.8	72.6	:	:	:	:	26.1	31.7	30.0	26.7	26.8
Luxembourg	:	88.9	92.8	93.1	89.3	90.2	90.9	84.1	84.1	:	:	7.2	5.5	7.0	6.5	6.5	12.2	12.4
Hungary	:	:	:	:	70.7	72.3	72.6	70.4	71.0	:	:	:	:	26.3	23.8	23.0	24.3	23.9
Malta	:	:	:	:	72.5	76.2	77.0	77.5	77.4	:	:	:	:	26.7	21.5	20.8	20.1	20.1
Netherlands	:	:	69.4	67.1	63.1	64.9	82.3	82.0	82.1	:	:	:	:	9.0	7.1	5.6	5.5	5.7
Austria	69.4	63.0	68.8	73.4	76.8	76.1	76.0	76.4	76.9	:	:	:	:	15.3	15.7	15.8	15.4	15.1
Poland	:	:	:	91.7	70.0	69.3	69.9	70.8	72.2	:	:	:	8.3	30.0	26.1	25.6	24.2	22.4
Portugal	:	59.0	64.3	65.5	72.5	71.8	71.5	70.6	70.2	:	:	:	:	22.2	22.8	22.9	22.7	23.1
Romania	:	:	:	100.0	67.7	80.4	79.7	82.1	82.0	:	:	:	:	32.3	18.5	19.8	17.2	17.6
Slovenia	:	100.0	100.0	100.0	74.0	71.9	72.4	72.0	72.3	:	:	:	:	11.5	12.5	11.8	13.3	12.8
Slovakia	:	:	:	:	89.4	74.4	68.3	66.8	69.0	:	:	:	:	10.6	22.6	25.9	26.2	25.7
Finland	54.1	73.8	79.0	80.9	71.1	73.5	74.6	74.6	74.2	43.6	23.8	18.4	15.5	22.3	20.1	19.0	18.9	19.4
Sweden	:	86.0	92.5	89.9	84.9	81.6	81.6	81.7	81.9	:	:	:	:	13.8	16.3	16.2	15.8	15.6
UnitedKingdom	85.2	87.0	89.4	83.6	79.3	81.9	81.9	82.0	82.6	:	:	8.6	10.6	13.4	11.8	11.4	11.7	11.1
EuropeanUnion	:	:	80.4	77.9	76.7	76.6	77.5	77.3	77.3	:	:	:	12.6	14.8	14.5	14.3	14.4	14.4
EuroArea	:	:	77.5	76.2	76.0	75.3	76.5	76.3	76.2	:	:	:	12.9	14.6	14.6	14.3	14.5	14.5

Source: Eurostat, OECD and WHO health data and Commission services calculations.

The large increases in population and service coverage observed in the 1960s and 1970s can partly explain the increase in public expenditure in those decades. More recently, additional efforts to improve access to care have led to the implementation of a number of policies in several countries (BE, DK, IE, EL, ES, IT, CY, LV, LU, MT, NL, PL, RO, FI, UK, FR) – extending coverage to self-employed, subsidies to buy insurance, cost-sharing exemptions, or means-tested provision for those more vulnerable – which may help explain an increase in public expenditure on health and a reduction in the share of out-of-pocket expenditure observed in some of those countries in the last decade. Indeed, in IE, IT, LV, MT, NL, PL, RO, FI and UK total private health expenditure has decreased, while the share of public expenditure has increased. In BE, FR, CY, LU and HU and to a lesser extent EL, ES, and PL, the decrease in out-of-pocket expenditure has been compensated by an increase in private insurance. In LT and SI out-of-pocket payments appear to have increased as a share of total expenditure while private insurance appears to have gone down.

In most countries private health insurance, taken in addition to the basic public coverage, remains a small share of total health expenditure. It has, nevertheless, grown in recent years often as part of employment packages or taken individually, as a result of growing desire to have care provided in specific settings (e.g. individual rooms). Private insurance in most countries has the role of complementary (covering a share of patients cost-sharing) and supplementary insurance (covering for additional services not included in the main and public benefit basket). While in some countries complementary insurance is not allowed (e.g. EL, NL), in others it is significant (e.g. BE, FR, LU, IE, SI and AT) or non-negligible (e.g. DK, DE, PT, FI). This raises efficiency concerns as complementary insurance renders cost-sharing less effective in its role of reducing unnecessary care use (as patients are less cost-aware), though still allowing for it to play the role of producing additional revenue to the sector. As a result, some countries have introduced or plan to introduce a fixed fee/ticket, which cannot be reimbursed and cannot be covered by complementary insurance. Moreover, if complementary insurance is limited to a small and rich part of the population, it can also increase the inequity in access by increasing cost-coverage for those who have a higher ability to pay anyway.

About half of the Member States (BE, DK, FR, FI, DE, IE, LU, MT, EL, IT, AT, PT, UK, NL, SI, BG) allow for supplementary health insurance (insurance covering for the services and goods not publicly funded/provided). As with complementary insurance, supplementary insurance may contribute to inequity in access if held only by a small and richer part of the population. However, it does not a priori have efficiency implications.

Some countries (DK, EL, IE, IT, PL, PT, ES, UK, SI, BG and HU although in HU the market is very small) allow private duplicative health insurance (insurance covering for the same goods and services in the public basket of benefits). The presence of private duplicative health insurance, combined with dual practice⁵⁸ and a fee-for-service system in the private sector vs. a salary in the public sector, may create perverse incentives for physicians to be less efficient in the public sector. Such combination may contribute to raising inefficiency in the public sector if physicians treat fewer patients in the public sector to treat more patients in their private practice, even if, for certain patients, this may not translate in additional costs because private insurance comes as part of the employment package. It may also perhaps reduce the waiting time for simple non-urgent surgeries. Again, as with complementary and supplementary insurance, duplicative insurance may contribute to inequity in access if held by only a small and richer part of the population.

An additional concern regarding cost-sharing schemes is that it does not always appear to encourage the use of primary care vis-à-vis specialist and hospital care. In some countries (NL, SK, EE⁵⁹, LV) it is clear that the user charge is higher when patients use hospital care rather than specialist care and specialist care rather than primary care. In some countries patients are charged for unnecessary

⁵⁸ Dual practice refers to the situation where public sector physicians are allowed to conduct private practice, i.e. treat private patients, either in their private offices or private clinics or even in the public hospital after-hours.

⁵⁹ Co-payment for specialist care visit is 3.2€ while visit to family practitioner is without co-payment.

use of emergency care (e.g. IT, LV⁶⁰). However, in several others (CY, DK, FI, FR, EL, IE, LT, LU, MT, CZ, DE, PL, PT, RO, SE, UK, AT, SI), it is not clear if current cost-sharing design follows the same logic. In HU and ES there is no cost-sharing for primary and secondary care although in HU a 30% cost-sharing is due in inpatient care if it is used without referral or deviating from the referral. Cost-sharing could have a reduced role in reducing consumption of unnecessary specialist or hospital care, notably emergency care, when in the presence of common illnesses. Note, though, that in many countries (DK, FI, FR, HU, IE for part of the population, LT, MT, DE, PL, PT, RO, ES, UK, SI, BG, IT) a referral system from primary care to secondary outpatient specialist care and hospital care is in place either compulsorily or financially encouraged (i.e. the share of reimbursement is smaller or zero if patients visit a specialist without a referral). Such referral system, when effective (i.e. when gatekeeping to specialist and/or hospital care takes place), can reduce unnecessary specialist and hospital care.

In addition to formal direct payments for health services, informal payments (also called non-official, under-the-table, envelope payments or even bribes) seem to be frequent in some countries (EL, LV, LT, RO, BG). It is not clear how they are quantified in the official statistics or sanctioned. Informal payments do not encourage a more effective or cost-effective use of services and constitute an additional barrier to access as there are no exemptions for low income or high risk groups (as socio-economic characteristics of the family are not related to the size of informal payments). As such, they are a source of inefficiency and inequity in the use of services.

Note that in some Member States a very small share though perhaps non-negligible number of individuals is not covered by either public or private primary health insurance (BG, EE, SK, LU, PL, NL, BE, DE⁶¹ and FR). Depending on the country those not covered include individuals who have failed to register with social health insurance (e.g. in BE, NL, LU, BG) and those who do not work or qualify for unemployment insurance or social assistance (e.g. in EE⁶², BG). In some of these countries non-coverage may be an issue for cost-effectiveness of the health systems if it leads to overuse of hospital emergency care (typically free) when in the context of common illnesses. This is likely to be an inefficient use of resources and result in extra costs to the public budget, in addition to the disease burden on the uninsured patients. It is important to note that given the very small shares of population involved the costs associated with non-coverage are unlikely to be substantial.

In a number of countries (DK, EE, FI, MT, NL, PT, SE, UK, ES, SI), increases in public expenditure in recent years may be related to efforts to improve access and reduce waiting times for

⁶⁰ In Latvia emergency care is financed only by public sector. Exception is when emergency care dispatcher informs the patient that emergency care is not necessary (patient can turn to family doctor), but patient still insists on emergency care. Then the service is charged and patient has to pay the fee.

⁶¹ In DE up to recent years a small number of people (200000-300000 people out of 82 million) who had opted out from the statutory system and held private insurance sometimes lost their primary private insurance and found themselves outside both systems. As a result DE passed legislation in 2007 with the aim of closing the last remaining gaps of coverage. Since 2009 all residents have the legal obligation to hold a health insurance policy and anyone who has lost their insurance in the past can be affiliated to the previous insurance, no matter whether statutory or private one.

⁶² In EE all long-term unemployed who will stay registered in Estonian Unemployment Insurance Fund, participate in labor force measures and continue looking for a job, even if they are not entitled to unemployment benefits any more, remain covered by Estonian Health Insurance Fund as state contributes on behalf of them.

non-urgent hospital surgery which were deemed long. These efforts included: increasing investment in hospital capacity, the implementation of time guarantees and a payment to private sector facilities for the treatment of those patients who have exceeded a certain wait, and additional remuneration costs for paying additional ward hours to doctors in hospitals. In some cases these policies have been accompanied by centralising the administration of waiting lists, allowing patients to receive earlier care in other hospitals, sometimes in other regions, and/or by the publishing of data on hospital activity and quality. This aims to encourage patients to choose hospitals with lower waiting times while encouraging hospitals to increase activity and reduce waiting times and therefore improve its performance in relation to that of their peers. Moreover, some countries (DK, UK) have made additional investments in the area of cancer in view of low survival rates for cancer, adding some explanation to the increase in the public expenditure observed.

Policy implications

Ensuring universal access to good quality care as well as equity and solidarity in health, health financing and utilisation, as common principles and values of health systems, are likely to continue shaping health policy. However, the current economic situation and future years make it necessary to identify mechanisms that can ensure those goals and lead to better population health under financial constraints.

While ensuring that recourse to private finance remains limited to ensure equity and solidarity, countries can explore whether they can improve/adjust their cost-sharing schemes so that they encourage a more cost-effective use of health services and goods in general. This would have to be coupled with a greater use of health technology assessment, including clinical effectiveness and cost-effectiveness information, to help identifying cost-effective care and adjust cost-sharing accordingly. In addition, some countries may need to explore ways to reduce informal payments which are a source of inefficiency and inequity.

For other countries, it is important to clarify the role of private health insurance, notably duplicative and complementary private health insurance, vis-à-vis publicly funded provision, to avoid raising inefficiencies in the public sector and to ensure a cost-effective use of services.

Finally, in some countries it may be important to ensure adherence to compulsory health insurance by certain groups of the population especially if non-adherence results in late and more costly use of services for both patients and authorities.

5.2. Collection, pooling and allocation of financial resources and system administration and the link with expenditure

5.2.1. Collection, pooling and allocation of financial resources

Member States differ in the ways they collect, pool, and distribute funds.

In terms of collection and pooling, in general in the context of social health insurance, the regional or district branches of the national insurance fund collect the contributions which are often pooled together centrally and redistributed to the regional or district funds using more or less complex resource allocation formulas that take more or less into consideration regional/district population size, age structure, mortality and morbidity patterns. The regional/district funds then buy services from care providers although in some countries (e.g. EE, PL, HU) the central health insurance office acts as the only strategic buyer/purchaser of care even if regional offices exist.

In the case of social health insurance with multiple insurance funds (as in the NL, CZ, DE, AT, FR and SK) collecting social contributions or insurance premiums, a risk-adjustment/risk-equalisation mechanism is used which typically takes into account the size, age-gender structure and a proxy of the morbidity patterns of the individuals insured in each fund. For example, in NL this proxy is pharmaceutical and diagnosis cost groups and in DE it is a set of 80 chronic conditions. This is to avoid patient selection and ensure funding is adjusted to need. In addition, in DE, an effective National Health Insurance Fund has been created where all the contributions from all the insurance funds are pooled together with the tax-based subsidies provided by the federal government and then redistributed to the various funds using the risk-adjustment resource allocation formula. Moreover, in FR, NL, CZ and SK a minimum/uniform basket of benefits is defined for a uniform contribution or insurance premium. Note that in EL there is no risk-adjustment/risk-equalisation or redistribution mechanism across funds, there is no choice across funds (type of occupation defines the insurance fund to which each individual belongs) and funds differ in the contribution rates and services provided. This has resulted in inequities in access to care across funds in EL.

Interestingly, in a number of countries (e.g. LT, EE, HU, RO) neither the national/central office of health insurance nor its regional offices collect contributions for health insurance: these are collected by the tax office or, in the case of LT by the Social Insurance Fund, which collects almost all contributions and then transfers the health contributions to the Compulsory Health Insurance Fund. The national and regional funds only manage the revenues they were allocated to buy care for their respective residents. The rationale for the reallocation of the responsibility of social contribution collection to the tax authority responsibility was twofold: a) to address weaknesses in contribution collection (i.e. reduce contribution evasion) and associated costs⁶³ and b) to reduce disparities in the availability and use of care which resulted from inadequate resource availability and redistribution across sub-national funds.

⁶³ Note that in the case of EE the health insurance tax was the best collected tax by the insurance fund, as people saw consequences immediately when the tax was not paid. At the same time pension tax was collected very poorly, since benefits were so far away. Merging both of them together to social tax improved the collection of pension tax.

In the case of national health systems based on taxation, revenue collection depends on whether only national taxes are used or they are used in combination with regional and local taxes, in which case all levels of government or all levels of the tax collection authority may be involved in the collection of taxes. When only/mostly national taxation is involved (IE, PT, UK) revenue collection is typically centralised and then distributed to countries (UK case) or regions according to a resource allocation much as above so that regional health authorities can provide or buy services for National Health Service (NHS) patients. Sometimes it is only the central government (or a national institution on its behalf) that acts as the main provider and/or buyer of health services.

In some national health services, organised in a regional manner, or in the case of local health services, regional or regionally collected taxation (IT, SE, ES – state taxes partly ceded to the regions) and/or local taxation (DK, FI) is also involved in the funding of the system. In SE, DK and FI tax revenues collected at central level are distributed to the counties or regions as a block grant, on the basis of the regional/district population size and age structure, morbidity and mortality patterns. In DK, local and central taxation are allocated to the administrative regions which are then responsible for buying health services and goods. Danish regions are not allowed to collect taxes to fund health services. In IT part of the regionally collected taxation revenues goes into a national pool to be redistributed using a similar formula as that above, while a part of the regional revenue remains in the region of origin. In ES the bulk of regional financing, including for health, comes from the cession of a part of the national taxes (50% personal income tax, 50% VAT, 58% excise taxes) collected in each region. Considering the different collection capacity of each region, a new balancing mechanism was introduced in 2009. In particular, the Fundamental Public Services Guarantee Fund ensures sufficient and equal resources to finance health, education and long-term care on the basis of population criteria similar to those above. Due to the importance of basic services in the regional budgets, this balancing mechanism affects 75% of the resources received by the regions under this system. There are some regional taxes as well, but these constitute a low share in overall funding for the health sector. In FI, both the state and the Finnish municipalities finance health services provision/purchasing for their respective residents. The state allocates grants to municipalities and about 25% of municipalities' revenues are spent on health services.

A number of concerns have been raised in the literature in relation to using regional or local taxes to fund the health sector if regional funding is not appropriately complemented by sufficient risk pooling and resource redistribution across regions in order to compensate for large regional disparities in socio-economic and demographic variables (e.g. type of production structure, income, population size and age structure, mortality and morbidity indicators). If the pooling of funding and resource redistribution across regions is limited, this can result in large regional differences in the availability and quality of services provision.

In some countries (SE, IT, ES) the share of regional taxation or regionally collected tax revenues or state taxes' collection partly ceded to the regions in the funding of the sector are important. In this context and to ensure an equitable resource distribution, IT, for example, defines the minimum level of financial resources to cover population health needs in national terms and then determines the level of financial resources to be distributed among regions on the basis of population criteria (size, age, and other regional characteristics). In addition to a) regional taxation on production activities,

b) a surcharge on personal income tax and c) providers' revenues from patient fees and sales of services, IT uses VAT revenues to cover the difference between the funds obtained from a) to c) in each region and the funds needed to cover the health needs of the population in each region. In FI, an equalisation system exists under which: a) municipalities with revenue-raising capacity below 92% of the per capita average in FI receive equalisation payments by the Ministry of Finance to bring it up to that threshold, while b) any municipality above the threshold pays into a central pool 37% of the differential above the 92% figure. In ES, the criteria for the calculation of the participation of autonomous communities from the Fundamental Public Services Guarantee Fund are population, extension, dispersion, insularity plus the equivalent protected population (split into subgroups by age) in order to guarantee that health, education and social services are equally provided regardless of the place of residence.

Note, though, that variations in care availability and quality can be observed in any type of national or local health service or social health insurance whenever resource allocation is weak i.e. a resource distribution across regions/districts which again does not fully adjust for population characteristics (size, age) and health status (mortality and morbidity patterns) of that population and is therefore detrimental to poorer regions. Adequate resource allocation supported with the definition of a minimum basket of services to be provided by all regions/districts and the implementation of national clinical/treatment guidelines can help reducing variations in the availability and quality of care provided across regions.

When looking at revenue collection for the health sector, some countries report limited revenues to the sector vis-à-vis the population demand (CY, RO, BG, EE, LV, LT, PL followed by SK and HU to a lesser extent). When looking at public expenditure on health these countries spend a relatively small share of GDP by EU standards (public expenditure on health is less than or about 5% of GDP). In some of these countries (EE, LT, LV), the budget for health is strictly approved for the year and revenue and expenditure must match every year. This means that expenditure is prone to large fluctuations when severe economic crisis (as the current one) develops with possible health consequences.⁶⁴ Depending on the country, limited resources have meant limited public coverage of services and goods with high levels of cost-sharing across all types of services and long waiting times for surgery, or fragmented provision with means-tested public provision and long waiting times for a part of the population and extensive use of private, mostly unregulated, provision by the rest of the population. In all, a large share of private expenditure is observed. As the income in these countries is converging to that of richer EU countries, so are the expectations of their populations. As a consequence, they will need to strike a better balance between the resources allocated to the sector and the demand for care.

The lack of revenues vis-à-vis the potential demand appears to be related to a small contribution base (many exempted groups and a relatively high number of beneficiaries compared to the number of those contributing e.g. in EE and RO) and low contribution rates. In addition, informal markets

⁶⁴ Note that the Estonian Health Insurance Fund had accumulated reserves to avoid or mitigate consequences of such fluctuations. Due to so severe crisis the reserves were not enough to finance all services at the level prior to the crisis, but it provided a substantial help. There is some regulation on how to use reserves, i.e. reserves were not used at once within one year.

and tax evasion also reduce the revenues from both social health insurance contributions and from taxation. Some of these countries (EE, RO) are therefore considering additional sources of public funding such as excise taxes on tobacco, alcohol and fuel and indirect taxes such as VAT, as well as increasing contribution rates and the revenue base by reducing the number of groups exempted from contributions or cost-sharing (RO). In HU the ceiling on contributions has been abolished so as to maximise revenues and ensure equity of access. CY plans the creation of a General Health System combining mandatory social health insurance with taxation. Many countries also plan tougher measures on tax evasion. When bringing more resources into the sector, it is important that they are pooled together to ensure pooling across time and risks.

5.2.2. System administration

Public expenditure on health administration and insurance is typically a small share of GDP (EU average of 0.3% in 2008) and a small share of total current health expenditure (EU average of 3.1% in 2008). It has basically remained unchanged throughout the last decade. There are, nevertheless, some differences across countries: from less or equal to 0.1% to 0.5 % of GDP and from 0.6% to 6% of TCHE. Some countries present slightly higher levels of public expenditure on health administration and insurance as a percentage of GDP (BE, DE, FR, NL, SK and to a lesser extent RO) and as a percentage of total current health expenditure (BE, CZ, DE, FR, CY, NL, and SK).⁶⁵

Table 15 - Public expenditure on health insurance and administration

Public expenditure on health insurance and administration as a % of GDP

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium	:	:	:	:	:	0.5	0.6	0.7	0.7	0.7	0.4
Bulgaria	:	:	:	:	:	0.1	0.1	0.1	0.1	0.1	:
Czech Republic	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Denmark	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	:
Germany	0.4	0.4	0.4	0.4	0.4	0.5	0.4	0.4	0.4	0.4	0.4
Estonia	:	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1
Ireland	0.1	0.1	0.1	0.1	0.1	0.1	:	:	:	:	:
Greece	:	:	:	:	:	:	:	:	:	:	:
Spain	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
France	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Italy	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0
Cyprus	:	:	:	:	:	0.2	0.2	0.2	0.2	0.2	0.2
Latvia	:	:	:	:	:	:	:	0.4	0.4	:	:
Lithuania	:	:	:	:	:	:	0.1	0.1	0.1	0.1	0.2
Luxembourg	:	0.3	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Hungary	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Malta	:	:	:	:	:	:	:	:	:	:	:
Netherlands	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.4	0.4	0.4
Austria	0.2	0.3	0.3	0.2	0.2	0.2	0.2	0.3	0.2	0.2	0.2
Poland	:	:	:	:	0.1	0.1	0.2	0.1	0.1	0.1	0.1
Portugal	:	:	0.1	0.1	0.1	0.1	0.1	0.1	0.1	:	:
Romania	:	:	:	:	:	0.3	0.2	0.2	0.3	0.3	0.2
Slovenia	:	:	:	:	:	0.2	0.2	0.2	0.2	0.2	0.1
Slovakia	:	0.2	0.2	0.1	0	0.0	0.3	0.3	0.3	0.3	0.3
Finland	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Sweden	0	0	0	0.2	0.2	0.1	0.2	0.1	0.1	0.1	0.1
United Kingdom	:	0.1	:	:	:	:	:	:	:	:	:
European Union	0.3	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Euro Area	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3

⁶⁵ Note that a number of countries do not provide information on this type of expenditure (EL and MT, plus IE and UK in recent years). Note also that in the case of IT the low level of health administration costs should be taken with caution, given that the incidence in terms of either GDP or total current health care expenditure is much lower than the EU average. Though the accounting methodology is in line with the SHA guidelines, further investigation and comparison with other countries' methodologies are required.

*Public expenditure on health administration and insurance
as a % of total current health expenditure*

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium	:	:	:	:	:	5.1	5.7	7.0	6.8	7.6	3.9
Bulgaria	:	:	:	:	:	1.4	1.5	1.6	1.5	1.2	:
CzechRepublic	4	3.2	2.9	2.8	2.8	2.6	3.3	3.2	3.2	3.4	3.5
Denmark	1	1	0.9	1	1	1.0	0.9	0.9	0.9	1.1	:
Germany	4.3	4.3	4.3	4.3	4.4	4.3	4.3	4.3	4.1	4.1	4.0
Estonia	:	2.9	2.9	3.6	3.7	3.9	3.5	3.3	2.7	2.6	2.2
Ireland	2.3	2.2	2.2	2.1	2	2.1	:	:	:	:	:
Greece	:	:	:	:	:	:	:	:	:	:	:
Spain	1.8	1.7	1.9	1.9	1.8	1.8	1.6	1.6	1.6	1.6	1.5
France	5.4	5.4	5.3	5.2	5	4.9	4.6	4.7	4.5	4.4	4.3
Italy	0.6	0.5	0.4	0.4	0.3	0.3	0.4	0.5	0.5	0.6	0.6
Cyprus	:	:	:	:	:	3.7	3.6	3.4	3.4	3.6	4.1
Latvia	:	:	:	:	:	:	:	6.0	6.0	4.0	:
Lithuania	:	:	:	:	:	:	2.4	2.0	1.8	2.2	2.3
Luxembourg	:	5.6	2.9	2.1	1.6	1.1	1.1	1.1	1.1	1.1	1.2
Hungary	2	2.2	1.9	1.7	1.7	1.2	1.1	1.1	1.1	1.1	1.1
Malta	:	:	:	:	:	:	:	:	:	:	:
Netherlands	3	2.9	2.7	2.4	2.2	3.2	3.3	3.3	4.6	4.6	4.5
Austria	2.5	2.8	2.8	2.6	2.5	2.4	2.4	2.6	2.5	2.4	2.3
Poland	:	:	:	:	2.3	1.4	2.5	1.5	1.5	2.1	1.7
Portugal	:	:	1.2	1.1	0.9	0.9	1.0	1.0	0.8	:	:
Romania	:	:	:	:	:	5.4	4.4	3.4	6.4	6.4	2.8
Slovenia	:	:	:	:	2.7	2.9	2.6	2.3	2.2	2.2	1.8
Slovakia	:	3	3	2.7	0.6	0.5	4.3	4.1	4.1	3.8	4.1
Finland	3.2	2.9	2.6	2.6	2.5	2.5	2.5	2.3	2.4	2.1	2.0
Sweden	0.6	0.5	0.5	2.4	2.3	1.5	1.7	1.5	1.6	1.6	1.4
UnitedKingdom	:	1.9	:	:	:	:	:	:	:	:	:
EuropeanUnion	3.5	3.2	3.3	3.3	3.2	3.2	3.2	3.2	3.2	3.3	3.1
EuroArea	3.6	3.6	3.5	3.4	3.3	3.4	3.3	3.4	3.3	3.4	3.2

Source: Eurostat, OECD and WHO health data and Commission services calculations

In some of the countries with highest spending on health administration and insurance, especially those with multiple insurers (e.g. DE, NL, FR, SK, CZ), higher expenditure on health insurance and administration appears to be connected with the close monitoring of the sector (costs, prices, contractual arrangements, activity and quality of care and market developments) and the gathering and publication of data to support choice of insurer and provider. This monitoring is particularly important in the context of allowing for competition between health insurers. As the health services market is prone to several market failures including cream-skimming i.e. patient/risk selection, the health insurance market needs to be strongly regulated and monitored and a risk-equalisation mechanism needs to be in place to ensure equal access to insurance by all patients/risks. Moreover, market concentration may take place. While competition between insurance funds aims to encourage insurers to negotiate with providers on prices, quantity and quality of services provided, it is important that the benefits (lower costs and cost-effective provision and use of care) of such a system are not outweighed by the respective costs of administering it. Interestingly, in the NL for example, we have observed a reduction in the number of insurers as a means to increase bargaining power over care providers and pharmaceutical companies.

In some countries (e.g. FR, RO, CY), the high administrative costs appear to have a different source: they may be associated with a high number of actors/organisations involved in the decision-making procedure (see Annex 3, [Table 38](#) and [Table 39](#)). Decision making can sometimes involve the central office of the social health insurance plus its regional/district branches but also the parliament, the central government, more than one ministry, and regional/district and local

governments, plus a national public health institute and its regional/district branches plus a variety of other health related organisations. In some (EL and CY) the administration of the sector involves public sector provision under the Ministry of Health plus social health insurance by a large number of occupational funds under the Ministry of Labour and Social Affairs. Such complex decision-making structures have not necessarily been accompanied by a clear definition/division of responsibilities and may have resulted in the duplication of tasks and bigger administrative structures and costs. In LV, where administrative costs were high, recent reforms streamlining the number of institutions and agencies involved in health policy have, according to the World Bank and Ministry of Health calculations, made public expenditure on health care administration 1% of the health budget.

Even in countries with small public expenditure on health administration and insurance, there is often room for clarifying responsibilities in decision-making across various levels of government, between central and regional/district health authorities, between ministries, etc. Decision-making incoherence relates to things as fundamental to the health sector as who is to buy which type of services, who buys high cost equipment and hospital beds, who is responsible for staff hiring and remuneration.

Fiscal and administrative decentralisation

A more general issue that has received greater academic attention in recent years relates to whether fiscal and administrative decentralisation (considered an institutional feature of the health system) contributes to an increase in health spending or induces savings in addition to higher quality of services.⁶⁶ Public spending on health has been growing over the past few decades both as a share of GDP and as a share of government expenditure. Many health systems in the EU have also seen a clear decentralisation trend (albeit to different degrees and in different ways), especially in the last two decades.⁶⁷ Therefore, researchers have tried to understand whether or under which circumstances the potential advantages of decentralisation can outweigh the administrative and economic costs it may bring, leading to savings rather than expenditure increases.

Decentralisation can lead to greater responsiveness to local needs and a better match between local needs and the set of services provided. It can improve the integration of public and private agencies and strengthen inter-sectoral coordination such as for example coordination between health and social services and between health policy and rural development policy. It can allow for more targeted programmes. Decentralisation can induce greater accountability of local health services providers and local decision-makers vis-à-vis the population they serve. Through these, decentralisation can improve quality of care and reduce costs for example by reducing the provision of services which are unnecessary in certain areas.

⁶⁶ See Crivelli, E. et al., (2010, IMF) and Saltman R., et al. (2007).

⁶⁷ Although some recentralisation has also been observed in some countries in recent years such as in DK, PL or EE and in Norway if we look outside the EU, with ongoing discussions on some recentralisation in SE and FI.

Empirical evidence regarding the benefits of decentralisation is mixed.⁶⁸ In certain circumstances, it seems to lead to higher costs, lower efficiency and lower cost-effectiveness of service provision. One possible reason is that decentralisation can lead to coordination problems and may result in a weaker budget constraint for local governments in the context of health services as, given the nature of health services, sub-national governments may always expect to be bailed-out. Another, but related, explanation is that lack of expertise coupled with lack of control can result in decision-making based on regional or local political whims rather than on effectiveness, safety, efficiency or cost-effective dimensions. Or it may be that high turnover of politicians at local level does not insure sufficient information on health policies or national health priorities.

In addition, a decentralised structure based on too small regions/counties/districts coupled with lack of regional/county/district cooperation can result in diseconomies of scale and scope in the provision of services. It can result in an insufficient pooling of risks and the reduction in the funding for the region/county/district because the population served by that municipal/district/county/region is too small or elderly or the economic activity is limited, reducing efficiency in service provision. Decentralisation of decision-making accompanied by an inadequate resource distribution across regions/counties/districts or municipalities, can result in differences in revenues and therefore in the provision and quality of services available, that exacerbate geographic divergences in service provision and the quality of the services provided. Decentralisation places more managerial responsibilities at in the lower levels of government and therefore requires specific abilities on health policy that are often lacking at local level. Decentralisation also implies a change in the role of central decision-makers; they have to define national priorities and formulate general policy lines, as well as regulating and monitoring rather than having direct involvement in the provision of most services.

Reaping the benefits of decentralisation therefore requires the clear and explicit setting of national overarching priorities and goals for the health system, coupled with strong coordination mechanisms (between central and sub-national governments and across sub-national governments) and monitoring systems. It requires adequate and clear financing mechanisms between central and sub-national governments and across sub-national governments, supported by the definition of minimum provision requirements and centralised standard-setting. For complex and decentralised decision-making structures to work, they require managerial capacity and experience, and therefore appropriate training of staff involved in health policy making. They need proper budgeting and accounting procedures, as well as transparency and accountability mechanisms for those in charge and good information flows across levels of decision-making. Some or the combination of these elements may be weak/lacking in a number of countries, as it takes a long time to build up such structures. Those countries which have been successful in their decentralisation reforms are those who have implemented a combination of these essential elements.

A number of countries have acknowledged the challenges just described. Some of those with a traditionally decentralised structure have started to merge and reduce the number of regions (SE,

⁶⁸ See the online sourcebook on decentralization and local development at the Center for international earth science information network, University of Colombia at <http://www.ciesin.org/decentralization/Entryway/siteindex.html>.

DK), merging counties into a small number of regions, and/or merging municipalities (FI), to increase the pooling of risks and explore economies of scale and scope. As a follow up, some hospitals were merged, certain types of treatments were concentrated in fewer regional hospitals, and a few national centres of excellence for highly specialised care were created.⁶⁹ Some countries (e.g. IE, PL, LV and EL currently, CY under proposal) have streamlined or started to streamline the health administration to induce savings in the sector.

In IT, the so-called Health Pact – a 3-year agreement between Central and Regional governments that obliges regions to reach the balance of the health sector budget within the overall annual budget – plus the close monitoring of the fulfilment of the budget objectives plus the activation of the Deficit Reduction Plan procedure for those regions not complying with the agreed budget rules have helped to significantly slow down the increase in the public expenditure on health. This complements the definition of a minimum and common catalogue of benefits alongside clinical guidelines for all regions.

In ES, the financial system has evolved in order to increase regions' ownership and financial autonomy while ensuring equal provision of basic services. The system entails the combination of general taxes' collection partly ceded to the regions and a balancing mechanism to ensure sufficient and equal resources in terms of adjusted population to finance basic public services including health; and a common basket of health services defined for all regions and a guarantee of equal provision. There is a yearly liquidation of accounts between the state and the regions, which is also complemented by a common and minimum basket of health services defined for all regions with a guarantee of equal provision.

Note though that, as with decentralisation, centralisation also requires essential elements if to deliver higher cost-effectiveness in the sector.

5.2.3. Expenditure control mechanisms

All countries define an overall budget constraint for public spending on health. In many cases this is not stringent and overshooting is possible. Overshooting in the past has led to an increase in contribution rates and/or in user charges and/or a delisting of services and goods from insurance coverage (see [Table 16](#) and [Table 40](#) in Annex 3).

Some countries, however, have in place more complex macro-level mechanisms to control public expenditure growth in the health sector. BE for example has introduced a "growth norm" to restrict the annual maximum increase in total expenditure on health (4.5% in real terms since 2004) although this growth norm may not be able to contain the increase in the health spending to GDP ratio associated with the drop in GDP growth in recent years. Sickness funds in BE are also held financially accountable for 25% of any discrepancy between their actual spending and the so-called normative, i.e. risk-adjusted, health expenditure. They are closely monitored throughout the year to see if there are any discrepancies and adopt necessary measures. In LU the sickness funds are

⁶⁹ These policies have started to be implemented also in other countries (e.g. PT, BG) again as a means to improve

obliged to maintain a reserve of between 10% and 20% of the total planned expenditure. In case of full use of such reserves, an alarm device is activated to set specific actions.

Table 16 - Nature and stringency of the budget constraint

Country	Q69. Budget constraint defined annually for public spending at macro-level	Q69b. Target is further divided in sub-targets	Q69b. Which criteria?
Belgium	Yes, target with possible overshooting	for different health services	
Bulgaria			
Czech Republic	Yes, target with possible overshooting	for different health services	
Denmark	Yes, target with possible overshooting	for different health services	
Germany	Yes, target with possible overshooting	for different health services	
Estonia	Yes, strict health budget	for different health services	
Ireland	Yes, target with possible overshooting	by region/sector	
Greece	Yes, target with possible overshooting	for different health services	
Spain	Yes, target with possible overshooting	by region/sector	historic costs for the area, population adjusted for demographic characteristics
France	Yes, target with possible overshooting	for different health services	
Italy	Yes, strict health budget	by region/sector	population adjusted for demographic characteristics
Cyprus			
Latvia			
Lithuania	Yes, strict health budget		
Luxembourg	Yes, target with possible overshooting		
Hungary	Yes, strict health budget	for different health services	
Malta			
Netherlands	Yes, target with possible overshooting	for different health services	
Austria	No		
Poland	Yes, strict health budget	for different health services, by region/sector	population adjusted for demographic characteristics
Portugal	Yes, strict health budget	for different health services, by region/sector	population adjusted for demographic characteristics
Romania			
Slovenia	Yes, strict health budget	for different health services, by sectors	Historic costs for the area, population adjusted for demographic characteristics
Slovakia	Yes, target with possible overshooting	for different health services	
Finland	Yes, target with possible overshooting	for different health services	
Sweden	Yes, strict health budget	for different health services, by region/sector	historic costs for the area, population adjusted for demographic characteristics, for morbidity/mortality data and for consumption of health services
United Kingdom	Yes, strict health budget	for different health services, by region/sector	historic costs for the area, population adjusted for demographic characteristics, for morbidity/mortality data

Source: Adapted from Paris, V., et al., (2010), "Health systems institutional characteristics: a survey of 29 OECD countries". Health working paper No. 50, OECD 2010.

In IT, as said, the so-called Health Pact defines the overall level of funds to be allocated to the health sector. A strict budget is also defined annually for the regions for the sector as a whole and for sub-sectors. The central government, through the Ministry of Health and the Ministry of Economy, monitors regional financial management and has sanctioning powers towards those regions running a deficit, leading to specific recovery plans with stringent obligations on the part of the regions. In the UK there is also a strict health budget defined annually by country and for different sub-sectors. In EE and LT revenue and expenditure in the health sector must match in each financial year.

Policy implications

The above analysis suggests that in several countries there may be room to improve collection, pooling and distribution of resources so as to reduce administrative costs while ensuring equity of access.

Several Member States may wish to consider whether to strengthen revenue collection through a centralisation of the collection function. The rationale is twofold: a) to address weaknesses in contribution collection (i.e. reduce contribution evasion) and associated costs and b) to reduce disparities in the availability and use of care which result from inadequate resource availability and redistribution across sub-national funds/regions.

Ensuring an adequate resource allocation supported with the definition of a minimum basket of services to be provided by all regions/districts and the implementation of national clinical/treatment guidelines can help reducing variations in the availability and quality of care provided across patients.

Countries should ensure that responsibilities in decision-making across various levels of government, between central and regional/district health authorities, between ministries and between institutions/agencies involved in health policy are made clear. Clearly defining responsibilities can avoid the duplication of tasks and excessive administrative structures which result in additional costs to the sector.

To reap the benefits of decentralisation requires: 1) adequate and clear financing mechanisms between central and sub-national governments and across sub-national governments, 2) the definition of minimum provision requirements and centralised standard-setting, 3) managerial capacity and experience, 4) proper budgeting and accounting procedures, 5) transparency and accountability mechanisms for those in charge and 6) good information flows across levels of decision-making.

5.3. Providers of health services: numbers and status

Health systems are still highly labour-intensive, more than many other sectors of society, so that health professionals are vital to the provision of health services and goods. As a result, the sources of pressures identified in the introduction (ageing, technology developments, patient expectations, climate change, globalisation, health behaviour) have implications for the health workforce as they can change the way care is delivered. For example, health professionals need to constantly acquire new skills: technical skills, to adapt to new technology for example, and organisational skills, such as working in multidisciplinary teams or having more managerial roles. They need to adapt to the fact that a larger share of patients may be better informed and more demanding than in previous decades and that societies have become more international, all factors that have medical and non-medical implications. They also need to gain a better understanding of the social determinants of health and of evidence-based care.⁷⁰

In addition, the health workforce who has typically worked along non-standard working patterns (e.g. shift work, night hours) is aspiring to a better work-life balance while countries have to abide by the provisions of European Law such as those related to working time, working conditions and the removal of many barriers to professional mobility in the EU.

As health systems are labour intensive, improving the cost-effectiveness of health systems is related to creating and maintaining an efficient, effective, committed and motivated workforce. Lack of and inadequately trained and practising staff, migration, uneven geographic distribution of staff and unbalanced skill-mix, as a result of weaknesses in the planning of human resources for the health sector, can place difficulties in ensuring an efficient, effective and cost-effective delivery of services or an equitable access to care and reduce the coherence of care delivery. Numbers and skill-mix must be in accordance with the policy goals established for the system. For example, if countries wish to encourage the use of primary care as a means to ensure cost-effective provision of services, as most countries now emphasise, then measures have to be implemented to guarantee sufficient numbers and good geographic distribution of trained and practising primary care physicians and nurses.

5.3.1. Numbers of physicians and nurses

Practising physicians

Available data suggests that **the number of practising physicians per 100 000 inhabitants** has increased significantly for the whole of the EU since the 1970s (134.9 vs. 324.1 in 2007), although different patterns are registered across countries (see [Table 17](#)). UK, SE, FI, CZ, DK, DE, EL, LU and AT show a consistent increase in the figure over time. In the UK, for example, changes in the type of remuneration and wage increases have been used to attract licensed but not-practicing

⁷⁰ See e.g. Dubois et al., (2006) "Human resources for Health in Europe" and Rechel et al., (2006) "The health care workforce in Europe" for the European Observatory of Health Systems and Policies and the 2008 Commission Green Paper "On the European workforce for health" at http://ec.europa.eu/health/archive/ph_systems/docs/workforce_gp_en.pdf; and OECD (2008b).

physicians back into the sector. IT, however, registers a small but consistent downward trend since 2004. Its numbers of practising physicians are still above the EU average but below the level of 1995. In BE and in ES the number appears to have gone down in 2008. In BE this reduction is large, pushing the number of practising physicians in BE below the EU average. This is the result of the combination of the introduction of the quota mechanism with a recent change in the definition of practising physicians (counting only doctors that provide a certain minimum level of service). In ES the figure shows ups and downs. In BG, EE, ES, CY, LT, LV, HU, PL, PT, HU, RO and SK the trend is towards a general increase in the number of practising physicians over the last decades, but the figure also shows some ups and downs along the way. Depending on the country, this evolution may be related with staff moving to other sectors or other countries or with an increase in the population due to immigration.

Table 17 - Number of practising physicians per 100 000 inhabitants

	1970	1980	1985	1990	1995	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium	160.4	235.6	288.1	325.9	353.6	385	389.6	393.6	398.8	399.5	401.2	400.8	401.6	297
Bulgaria	186.9	246.4	286.8	328.7	346.7	337.8	344.5	352.9	360.6	353.1	365	365.7	364.9	:
Czech Republic	177	225.9	257.7	272.1	299.8	337.1	345.1	350.4	352.2	351.3	354.9	355.7	357	360
Denmark	:	113.9	156.7	170.5	249.7	269.8	272.4	282.4	286.2	297.8	307.4	314.4	314.4	:
Germany	:	:	:	:	305.9	325.8	330.3	333.4	336.7	339.1	341.2	345.5	350	356
Estonia	:	294.8	331.7	350.7	321.7	309.7	303.9	314.7	316.6	321.7	318.1	320.9	323.4	335
Ireland	:	:	:	:	:	:	:	:	:	:	:	:	:	:
Greece	162.4	244.9	292.5	336.9	384.5	432.3	437.1	457.4	473	486.7	499.4	535	556	602
Spain	:	:	:	:	267.9	331.8	311	305.1	328.3	340.1	379.9	365.4	368.3	352.2
France	:	:	:	304.8	321.5	327.2	330	332.3	333.7	335.6	336.1	335.5	335	334
Italy	:	:	:	:	388.8	416.3	437.1	443.9	413.5	416.6	380.1	366.6	363.5	:
Cyprus	83.7	102.8	155.3	204.2	244.8	258	260.7	260.6	257.3	262.3	257.8	250.4	271.5	:
Latvia	:	:	:	355.1	284.6	288.4	267.8	276.3	279.3	286.3	293.4	293.2	287.4	306.7
Lithuania	:	:	:	:	369.8	364	362.6	368.2	362.1	355.6	363.2	364.6	371.1	:
Luxembourg	113.4	170.9	180.6	199.3	201.4	232.8	237.1	236.7	241.8	320.9	331.7	333.3	348.3	:
Hungary	202	229	263	294.2	300.6	268.5	289.4	319	325.1	334	278.4	303.7	280.6	309
Malta	:	:	:	:	:	:	:	:	:	:	:	:	:	:
Netherlands	:	:	:	:	185.3	:	:	:	:	:	:	:	:	:
Austria	134.5	168.9	188	221.3	269.2	315.2	325	329.7	336.8	343.9	352.8	365	374.2	:
Poland	142.2	200.5	196	213.8	231.6	222.3	226.7	230.4	243.5	229.1	213.9	218	219.1	216
Portugal	143.3	233	246	242.4	253.8	263.5	262.2	271.5	267.5	267.8	:	:	:	:
Romania	:	:	:	:	:	192.8	199.6	196	199.6	208.1	217.4	215.8	222	:
Slovenia	:	:	187.9	199.2	211.6	216.9	218.9	224.2	226.3	231.2	236	237.3	238.4	238
Slovakia	:	:	:	:	290.9	336	335	332.5	328.3	331.5	302.8	315.9	300	:
Finland	:	:	:	:	:	250.1	250.3	253	256.7	259.5	263.9	268.7	269.5	272
Sweden	131	220	259	287	288.3	307.8	317.5	327	335.4	342.2	348.7	356.6	:	:
United Kingdom	94	132	143	162	175	196	201	208	218	231	239	245	252	261
European Union	134.9	187.7	207.0	248.4	287.9	305.2	309.8	314.3	317.0	321.1	321.8	322.6	324.1	321.5
EuroArea	149.5	221.5	252.3	294.2	314.0	345.9	349.4	352.5	351.9	356.3	359.2	357.4	359.3	355.4

Source: Eurostat and OECD health data and Commission services computations. Averages are population weighted with the observations available for each year. The 2008 value though similar to that of 2007 should be taken with caution given the number of observations missing.

The number of practising physicians per 100 000 inhabitants differs considerably across countries: from 222 in RO to 374.2 in AT. A number of countries have a relatively low number and/or report shortages in the total number of practising physicians per 100 000 inhabitants: PL and RO with less than 225, followed by SI with less than 240, followed by PT, FI, UK and CY with about 270 physicians compared to the EU average of 324.1. In addition, there are reports of recent shortages in practising staff in BE. In many countries there are reports (see also Paris, V. (2010, OECD) of uneven distribution of staff even in those who have overall large numbers of practising physicians (CZ, PT, EL, HU, LT, LV, ES, AT, BE, IT, SK, UK, RO, DE, BG). Note that some countries (NL, IE, EL, FR, IT, MT) do not report information on the number of practising physicians, although EL, FR and IT report the number of professionally active physicians which is used as a proxy.

General practitioners (GPs)

The number of general practitioners (GPs) per 100 000 inhabitants in the EU as a whole also shows a consistent increase overtime: from about 43 in 1985 to more than 90 GPs per 100 000 inhabitants in recent years (see Table 18). Again, different trends can be observed across countries. The UK and IE show a consistent increase in the figure over time, a trend shared by DK, FR, LU, HU, NL, AT, PL, SI and SE, although the increase is smaller in these countries. A similar evolution to that of these latter countries is seen for EE, ES LV, LT and PT after 2000 and following a significant increase in the late 1990s compared to previous decades. Some significant jumps can be seen in recent years: in CZ in 2008 (following a more or less stable and even perhaps decreasing trend overtime), in RO in 2006 and in FI in 2005 (similar if not higher than that witnessed in the mid-1990s). DE sees a massive increase in 1995 followed by small but steady decrease afterwards. BE and IT show a small overtime decrease, although BE sees a very large decrease from 2007 to 2008. BG and SK show ups and downs in the figure, resulting in a small decrease in BG and a small increase in SK. EL sees a large decrease in mid-1995s followed by a small steady increase since.

Table 18 - Number of general practitioners (GPs) per 100 000 inhabitants

	1985	1990	1995	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium	:	:	180.1	175.1	177.2	176.2	176.4	175.9	173.3	170.3	170.9	117.0
Bulgaria	:	:	:	:	:	67.5	68.6	69.1	67.8	66.8	65.2	:
CzechRepublic	54.0	53.3	47.8	51.2	52.5	52.2	51.4	51.3	51.2	:	:	71.0
Denmark	:	:	51.5	71.9	72.1	72.2	71.5	75.3	74.6	74.4	:	:
Germany	25.6	27.4	121.4	106.6	106.2	105.1	104.2	102.4	97.4	99.2	:	:
Estonia	:	:	37.0	88.2	85.4	92.7	95.5	100.2	99.8	:	105.3	:
Ireland	42.0	45.0	46.0	48.0	49.0	52.0	51.0	62.2	68.3	69.9	:	:
Greece	104.8	101.4	25.7	27.7	26.5	28.5	31.9	33.9	35.5	:	:	:
Spain	:	13.6	:	:	:	:	83.0	86.0	85.0	86.0	84.0	:
France	:	:	162.5	161.1	162.0	162.8	163.8	164.5	164.6	164.1	163.0	163.0
Italy	:	:	83.0	83.0	83.0	82.0	82.0	81.0	80.0	79.0	79.0	79.0
Cyprus	24.4	:	50.0	37.4	:	:	:	:	:	:	:	:
Latvia	1.1	1.2	7.4	40.6	41.0	43.8	45.0	52.9	54.7	55.7	54.7	58.0
Lithuania	:	:	2.4	21.3	27.9	36.0	43.0	48.2	50.5	52.6	:	:
Luxembourg	65.0	:	68.8	74.3	77.2	75.2	74.7	76.6	:	77.0	82.0	:
Hungary	51.6	56.6	63.3	66.0	66.0	66.1	66.1	65.6	65.4	65.2	64.9	65.4
Malta	:	:	:	:	:	:	:	:	:	:	77.7	:
Netherlands	42.5	43.1	44.0	45.5	45.5	45.6	45.6	46.1	46.4	52.0	53.0	54.0
Austria	89.5	108.9	125.4	134.6	137.4	139.9	141.1	143.3	146.0	150.5	153.3	153.0
Poland	:	:	:	8.0	9.0	10.0	11.9	13.3	14.3	15.2	16.0	17.0
Portugal	2.2	2.8	40.1	44.2	44.5	44.7	44.9	45.6	:	:	:	:
Romania	:	:	:	:	:	:	:	:	65.8	80.9	:	:
Slovenia	30.0	29.3	43.8	45.7	46.3	46.7	46.3	46.4	48.7	48.8	50.0	50.0
Slovakia	:	:	32.5	43.2	44.0	43.6	43.2	43.2	36.9	36.3	:	:
Finland	15.0	22.7	30.5	37.7	38.7	39.7	40.6	:	101.0	102.0	101.0	103.0
Sweden	:	:	48.0	52.8	54.6	56.0	57.0	57.7	58.9	60.2	:	:
UnitedKingdom	57.0	59.0	61.0	71.1	71.8	72.5	74.8	76.9	79.0	:	:	:
EuropeanUnion	42.6	40.0	93.5	85.5	86.2	86.1	86.5	87.7	87.2	92.3	94.3	94.1
EuroArea	35.6	32.5	108.1	104.1	104.6	104.4	101.7	102.9	103.3	106.4	111.2	115.4

Source: Eurostat and OECD health data and Commission services computations. Averages are population weighted with the observations available for each year. The 2007 and 2008 values though in line with that of 2006 should be taken with caution given the number of observations missing.

The number of general practitioners (GPs) per 100 000 inhabitants, however, varies significantly across countries: from 17 in PL to 153 in AT. Some countries have a relatively low number of practising GPs (PL, EL, SK and PT with less than 50 GPs per 100 000 inhabitants vis-à-vis the EU average of 96.3 in 2007). Trends do not show a clear pattern of convergence.

Table 19 - Share of GPs in the total number of practising physicians

	1985	1990	1995	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium	:	:	51%	45%	45%	45%	44%	44%	43%	42%	43%	39%
Bulgaria	:	:	:	:	:	19%	19%	20%	19%	18%	:	:
CzechRepublic	21%	20%	16%	15%	15%	15%	15%	15%	14%	:	:	20%
Denmark	:	:	21%	27%	26%	26%	25%	25%	24%	24%	:	:
Germany	:	:	40%	33%	32%	32%	31%	30%	29%	29%	:	:
Estonia	:	:	12%	28%	28%	29%	30%	31%	31%	:	33%	:
Ireland	:	:	:	:	:	:	:	:	:	:	:	:
Greece	36%	30%	7%	6%	6%	6%	7%	7%	7%	:	:	:
Spain	:	:	:	:	:	:	25%	25%	22%	24%	23%	:
France	:	:	51%	49%	49%	49%	49%	49%	49%	49%	49%	49%
Italy	:	:	21%	20%	19%	18%	20%	19%	21%	22%	22%	:
Cyprus	16%	:	20%	14%	:	:	:	:	:	:	:	:
Latvia	:	0.3%	3%	14%	15%	16%	16%	18%	19%	19%	19%	19%
Lithuania	:	:	1%	6%	8%	10%	12%	14%	14%	14%	:	:
Luxembourg	36%	:	34%	32%	33%	32%	31%	24%	:	23%	24%	:
Hungary	20%	19%	21%	25%	23%	21%	20%	20%	23%	21%	23%	21%
Malta	:	:	:	:	:	:	:	:	:	:	:	:
Netherlands	:	:	24%	:	:	:	:	:	:	:	:	:
Austria	48%	49%	47%	43%	42%	42%	42%	42%	41%	41%	41%	:
Poland	:	:	:	4%	4%	4%	5%	6%	7%	7%	7%	8%
Portugal	1%	1%	16%	17%	17%	16%	17%	17%	:	:	:	:
Romania	:	:	:	:	:	:	:	:	30%	37%	:	:
Slovenia	16%	15%	21%	21%	21%	21%	20%	20%	21%	21%	21%	21%
Slovakia	:	:	11%	13%	13%	13%	13%	13%	12%	11%	:	:
Finland	:	:	:	15%	15%	16%	16%	:	38%	38%	37%	38%
Sweden	:	:	17%	17%	17%	17%	17%	17%	17%	17%	:	:
UnitedKingdom	40%	36%	35%	36%	36%	35%	34%	33%	33%	:	:	:
EuropeanUnion	21%	16%	32%	28%	28%	27%	27%	27%	27%	29%	29%	29%
EuroArea	14%	11%	34%	30%	30%	30%	29%	29%	29%	30%	31%	32%

Source: Commission services computations based on Eurostat and OECD health data. Averages are population weighted with the observations available for each year. The 2007 and 2008 values though in line with that of 2006 should be taken with caution given the number of observations missing.

The share of GPs as a percentage of all practising physicians (EU average of 29% in 2006 and in 2007, although some observations are missing) varies considerably across the EU, from 49% in FR⁷¹ and 43% in BE down to 7 % in PL and in EL (see Table 19). Some countries may have a skill mix imbalance, i.e. compared to the overall number of practising physicians, they have a relatively low number of practising GPs: in BG, CZ, EL⁷², LV, LT, PL, PT, SK and SE GPs constitute less than 20% of all doctors, followed by SI, ES, DK, IE⁷³, HU and LU with less than a 25% share. A low share of GPs may be of relevance if countries wish to implement a primary care-led system and a referral system from primary to specialist and hospital care which require sufficient numbers of GPs and an adequate skill-mix. Note that in some of these countries (CY, ES, IT, SI) the number of GPs would have to be complemented with the number of paediatricians who work as family doctors

⁷¹ As a share of professionally active physicians.

⁷² As a share of professionally active physicians.

⁷³ As a share of licensed physicians.

for children to obtain a better picture of primary care physicians vis-à-vis other physicians. This is important in assessing the gatekeeper's role of primary care.

A number of countries report relatively low numbers or even shortages of physicians including GPs (NL, PT, FI, SE, HU, BG, SI) in certain geographic areas especially rural, remote or less populated areas. In a number of countries recruitment of health staff is often decentralised with some regions, municipalities or hospitals finding it more difficult to recruit staff. When looking at the distribution of physicians (Paris, V., 2010, OECD), geographic disparities can be observed in many Member States. Interestingly, while almost all EU Member States regulate the number of students in medical schools (exceptions include CZ, DE, LU), and many do so also by specialty, the location of physicians is not regulated or financially encouraged except in a few countries (BG, AT, DK, DE, HU, IT where a maximum number of patients per GP is defined that has to be respected all over the national territory, and FR, RO, BE, EL and ES where remuneration includes a geographic component).

In some countries (e.g. PT, SE, MT, FI, HU, IE, LT, LV, RO, BG, EL), relatively low numbers of GPs vis-à-vis other physicians or in some geographic areas may result in long-waiting times for GP consultations. This, often in combination with limited access to primary care after office hours, makes patients seek specialist and emergency care when not necessary (i.e. when in the presence of common illnesses) or private sector doctors at a cost to the patient. This may result in additional costs, for example, through unnecessary consultations or unnecessary medical tests or the duplication of medical tests. It is also possible that demand is higher in some countries not necessarily due to need (ill-health) but due to cultural habits and expectations sometimes coupled with the absence of any cost-sharing. Consultations per capita vary substantially across the EU. High demand compared to supply can also lead to long waits and patients going straight to emergency departments.

Many of the countries presenting a relatively low number or uneven distribution of GPs (see Paris, V., et al., 2010, OECD and country fiches of this report) have recognised the challenge and have seen the number of GPs increase in the last two decades (massive increase for LV, LT, FI and PT, a fair increase for SI and SE, some increase for NL, PL, EL, RO). Other EU Member States that have seen an increase in the number of practising GPs include DK, EE, IT, LU, HU, AT, UK.

Practising nurses and midwives

Available data suggests that **the number of practising nurses and midwives per 100 000 inhabitants** has increased significantly for the whole of the EU since the 1970s (133.3 vs. 324.1 in 2007), although different patterns are registered across countries (see [Table 20](#)). BE, DK, DE, ES, LU, RO, SI, SE and UK as well as CZ, FR, IT, LV, FI, show a consistent increase overtime, although FR, IT and FI appear to see a decrease in 2007 and CZ and LV register a decrease in 2008. LT and SK register a downward trend perhaps associated with migration of nurses and midwives to other countries. Most other countries show an overall increase over the past decade but observe various ups and downs in the figures.

The number of practising nurses and midwives per 100 000 inhabitants varies from 364 in EL to more than 1500 nurses per 100 000 inhabitants in LU and IE. Some countries show or report a relatively low number of practising nurses and midwives per 100 000 inhabitants: BG, EL and PT with less than 470 nurses, followed by LV, PL and HU to a lesser extent.

Table 20 - Number of practising nurses and midwives per 100 000 inhabitants

	1970	1980	1985	1990	1995	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium	130.5	173	258.5	430.1	519.2	583.8	597.6	608.7	625.7	644.2	661.1	674.7	639.4	659.5
Bulgaria	:	:	:	:	:	437	421.8	407.1	424.4	427.6	449.4	456.1	466.5	:
CzechRepublic	548.9	638.1	722.8	775.5	789.3	805.7	833.8	847.2	843.7	852	850.2	844.7	849	774
Denmark	:	:	:	:	935	1257	1309.4	1365.6	1378.2	1422.2	1459.4	1466.6	1459.3	:
Germany	:	:	:	:	:	957.9	977.7	983.8	988.7	991.5	995.9	999.8	1070	1090
Estonia	:	:	686.8	740.9	687	623.1	617.4	643.4	652.4	655	663	658.7	665.8	670
Ireland	:	:	:	:	1192	1400	1483	1534	1482	1502	1515	1546	1550	1615
Greece	:	:	:	:	:	309	331	367	370	368	372	361	360	364
Spain	:	:	:	:	:	658.2	681.4	742.6	756.3	749.8	747.7	737.2	761.1	815.8
France	:	:	:	555.6	609.8	688.6	707.3	724.3	743.5	764.3	787.6	807.3	798.9	:
Italy	:	:	:	:	518.4	:	:	:	:	666.8	692.8	703	700.4	:
Cyprus	:	:	:	:	:	:	:	:	:	:	:	:	:	:
Latvia	:	:	:	:	:	479	469.9	472.4	485.2	498.9	508	567.2	557.2	553.2
Lithuania	:	:	:	:	:	805.3	794.9	775	758.7	746.3	742.4	741.7	735.2	:
Luxembourg	:	:	:	:	713	863.8	901.2	909.2	1084.3	1107.5	1197	1332.9	1571.5	:
Hungary	:	:	:	544	558	579.2	583.4	594.1	602.4	601.4	611.2	620	595.6	632
Malta	:	:	:	:	:	:	:	580.7	582.9	592.1	579	591.2	619.1	678.3
Netherlands	:	:	:	:	:	:	:	830.8	:	947.7	899.8	872.9	:	:
Austria	:	:	:	:	:	728.6	732.1	724.7	732.7	724.3	729.1	739.6	753.6	774
Poland	:	441	483	609	617	553.2	544.8	543.3	530	550.8	564	564.6	574.9	577
Portugal	:	:	:	:	:	353.2	345.3	348.8	344.8	364.7	:	:	:	:
Romania	:	:	:	:	:	530.1	549.5	566.8	554.3	560.3	571	586.9	639.9	:
Slovenia	:	:	:	:	:	685	711.8	715.8	736.6	741.9	749.5	762.1	773	794
Slovakia	:	:	:	:	646.1	750.7	733	713	679.7	663.8	631.6	632.6	:	:
Finland	:	:	:	:	:	1436	:	:	:	1545	1580	1583	1547	:
Sweden	:	:	:	:	1031	1060	1075	1097	1109	1128	1141	1155	:	:
UnitedKingdom	:	:	:	:	:	916	945	975	1021	1036	1043	1006	1000	1005
EuropeanUnion	:	:	:	:	625.7	757.9	766.3	786.3	795.6	801.5	820.8	821.2	830.0	879.2
EuroArea	:	:	:	:	582.0	770.3	773.8	795.3	801.6	801.4	825.1	830.0	850.9	930.2

Source: Eurostat and OECD health data and Commission services computations.

In addition, data shows that the **ratio of practising nurses and midwives to practising physicians** varies substantially across countries: from 5.7 in FI, 5 in IE and about 4.5 or more in LU and DK, down to 0.6 in EL, 1.3 in BG and 1.4 in PT (see [Table 21](#)). The ratio is below or equal to 2 in BG, EE, IT, LV, LT, HU, MT, AT, PT and SK (compared to EU average of 2.5 in 2006). This denotes another dimension of skill-mix imbalance across health staff and differences in task attribution among doctors and nurses and midwives.

In some countries a more diverse skill-mix (e.g. nurses prescribing and undertaking some of the roles traditionally carried out by doctors) is the norm. However, in other health systems, flexibility in assigning tasks or even creating teams, is hindered by tradition in the medical profession, legal barriers (what a nurse is or can do being laid down in national legislation), perverse incentives in the reimbursement system (e.g. doctors receiving fees for flu immunisation), and trade union distrust (delegation of tasks without commensurate remuneration).

Table 21 - The ratio of practising nurses and midwives to practising physicians

	1990	1995	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium	1.3	1.5	1.5	1.5	1.5	1.6	1.6	1.6	1.7	1.6	2.2
Bulgaria	:	:	1.3	1.2	1.2	1.2	1.2	1.2	1.2	1.3	:
CzechRepublic	2.9	2.6	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.2
Denmark	:	3.7	4.7	4.8	4.8	4.8	4.8	4.7	4.7	4.6	:
Germany	:	:	2.9	3.0	3.0	2.9	2.9	2.9	2.9	3.1	3.1
Estonia	2.1	2.1	2.0	2.0	2.0	2.1	2.0	2.1	2.1	2.1	2.0
Ireland	:	5.7	6.3	6.2	6.3	5.7	5.4	5.3	5.3	5.2	5.0
Greece	:	:	0.7	0.8	0.8	0.8	0.8	0.7	0.7	0.6	0.6
Spain	:	:	2.0	2.2	2.4	2.3	2.2	2.0	2.0	2.1	2.3
France	1.8	1.9	2.1	2.1	2.2	2.2	2.3	2.3	2.4	2.4	:
Italy	:	1.3	:	:	:	:	1.6	1.8	1.9	1.9	:
Cyprus	:	:	:	:	:	:	:	:	:	:	:
Latvia	:	:	1.7	1.8	1.7	1.7	1.7	1.7	1.9	1.9	1.8
Lithuania	:	:	2.2	2.2	2.1	2.1	2.1	2.0	2.0	2.0	:
Luxembourg	:	3.5	3.7	3.8	3.8	4.5	3.5	3.6	4.0	4.5	:
Hungary	1.8	1.9	2.2	2.0	1.9	1.9	1.8	2.2	2.0	2.1	2.0
Malta	:	:	:	:	2.2	1.9	1.7	1.7	1.5	1.9	2.0
Netherlands	:	:	:	:	2.5	:	2.7	2.5	2.4	:	:
Austria	:	:	2.3	2.3	2.2	2.2	2.1	2.1	2.0	2.0	:
Poland	2.8	2.7	2.5	2.4	2.4	2.2	2.4	2.6	2.6	2.6	2.7
Portugal	:	:	1.3	1.3	1.3	1.3	1.4	:	:	:	:
Romania	:	:	2.7	2.8	2.9	2.8	2.7	2.6	2.7	2.9	:
Slovenia	:	:	3.2	3.3	3.2	3.3	3.2	3.2	3.2	3.3	3.3
Slovakia	:	2.2	2.2	2.2	2.1	2.1	2.0	2.1	2.0	:	:
Finland	:	:	5.7	:	:	:	6.0	6.0	5.9	5.7	:
Sweden	:	3.6	3.4	3.4	3.4	3.3	3.3	3.3	3.2	:	:
UnitedKingdom	:	:	4.7	4.7	4.7	4.7	4.5	4.4	4.1	4.0	3.9
EuropeanUnion	2.5	2.2	2.5	2.5	2.5	2.5	2.5	2.6	2.5	2.6	2.7
EuroArea	1.1	1.8	2.2	2.2	2.3	2.3	2.2	2.3	2.3	2.4	2.6

Source: Eurostat and OECD health data and Commission services computations.

Ageing of the health workforce

Population **ageing** is expected to increase the demand for health related goods and services. At the same time population ageing can affect the provision of health services and goods if it shrinks the pool of workers available to the sector vis-à-vis a growing demand, namely if the rate at which health staff retires is significantly higher than the pace at which new recruits are brought into the sector. Shrinking health staff due to ageing can become a policy challenge. Available data (see [Table 22](#)) indicates that, on average in the EU, more than 60% of physicians have more than 45 years of age. Again there is some variation across the EU: it reaches 72.3%% in FR, 71.2% in IT, 70.4% in DE, and 70.2% in LV and it is more than 60% in AT, EE, LT, LU and HU while lower than 50% in UK, IE and RO. The proportion of physicians with more than 45 years of age has increased over time: about 17 pps since 1995 (44.4% in 1995 to more than 60% in recent years) and continues to increase. From 1995-96 to 2007-2008 the share has gone up by 20pps or more in ES, FR, IT, LV and AT. There are also reports of the ageing of staff in FI even if data is not available (Ailasmaa, Terveiden ja hyvinvoinnin laitos – National Institute of Wealth and Welfare). In PT, a significant portion of doctors are above 50 years of age and early retirements have been witnessed in recent years.

Table 22 - Share of physicians aged 45+ and 55-64, in percentages of total physicians

Share of physicians aged 45+

	1995	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium	40.8	55.9	48.6	50.2	51.6	53.5	55.1	54.0	57.7	58.6
Bulgaria	:	:	:	:	:	:	:	:	:	:
CzechRepublic	39.9	50.4	51.7	53.1	54.0	54.9	55.6	56.1	56.4	56.9
Denmark	46.2	54.5	56.1	56.3	56.2	56.6	56.0	55.2	54.5	:
Germany	56.7	62.5	63.8	65.4	66.6	67.7	69.4	69.5	70.1	70.4
Estonia	:	:	:	:	:	:	:	:	68.1	:
Ireland	:	:	:	:	:	:	42.3	41.4	43.6	41.2
Greece	42.9	:	:	:	:	:	:	:	:	:
Spain	:	35.8	44.2	42.4	45.0	48.9	49.0	53.9	51.0	54.2
France	43.9	57.9	60.4	62.9	64.9	67.1	68.8	70.3	71.2	72.3
Italy	35.6	53.1	56.4	59.5	61.8	63.8	65.4	66.7	66.3	71.2
Cyprus	33.9	53.8	:	:	:	:	:	:	:	:
Latvia	:	53.6	56.8	57.9	61.0	60.2	65.5	68.2	68.8	70.2
Lithuania	:	:	58.1	61.9	69.0	68.0	68.3	67.2	66.2	:
Luxembourg	47.8	58.0	60.5	62.6	65.5	57.0	60.9	63.5	64.3	:
Hungary	45.8	52.3	55.8	58.4	60.2	60.4	61.8	63.7	57.2	64.6
Malta	:	:	:	:	:	:	:	:	:	:
Netherlands	:	51.5	52.8	53.8	54.4	55.2	55.8	56.3	56.7	:
Austria	45.9	49.8	52.2	54.9	57.2	60.8	62.0	64.0	65.9	:
Poland	:	:	:	:	:	:	:	:	:	:
Portugal	:	:	:	:	:	:	:	:	:	:
Romania	:	:	:	:	:	47.6	46.5	46.8	46.0	:
Slovenia	44.5	48.9	48.7	49.5	51.1	34.6	51.8	52.8	54.3	55.5
Slovakia	39.9	53.0	52.0	54.0	55.3	56.4	57.7	56.7	56.0	56.1
Finland	:	46.0	48.1	50.0	51.8	53.3	54.2	55.1	56.0	56.5
Sweden	50.9	57.9	58.7	59.4	59.7	59.6	61.8	59.0	:	:
UnitedKingdom	:	33.7	34.0	34.0	34.4	34.7	34.8	34.8	35.1	36.8
EuropeanUnion	44.4	52.2	54.7	56.4	57.9	59.0	59.8	60.9	60.8	63.5
EuroArea	44.3	54.0	56.8	58.7	60.4	62.2	63.3	64.7	64.6	67.4

Share of physicians aged 55-64

	1995	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium	11.6	13.0	11.8	12.5	13.2	14.3	15.5	15.2	18.0	19.2
Bulgaria	:	:	:	:	:	:	:	:	:	:
CzechRepublic	11.4	14.0	14.9	16.0	16.5	17.3	18.1	19.0	20.2	21.6
Denmark	11.0	17.1	19.2	20.5	21.2	22.1	22.6	23.4	23.6	:
Germany	26.0	30.3	31.1	31.9	32.5	32.9	33.9	33.8	34.3	34.8
Estonia	:	:	:	:	:	:	:	:	21.2	:
Ireland	:	:	:	:	:	:	11.5	11.6	12.5	11.8
Greece	11.5	:	:	:	:	:	:	:	:	:
Spain	:	6.1	11.8	12.5	12.7	13.1	10.2	13.4	13.7	16.0
France	10.2	12.9	14.7	17.2	19.7	22.5	25.3	27.9	30.2	32.1
Italy	7.6	7.8	8.7	9.8	11.1	12.7	14.6	17.1	19.6	24.1
Cyprus	6.8	10.2	:	:	:	:	:	:	:	:
Latvia	:	21.1	21.4	20.2	19.8	19.2	18.2	18.3	18.4	18.6
Lithuania	:	:	20.3	20.4	21.9	21.6	21.3	21.0	23.5	:
Luxembourg	10.4	13.3	14.7	15.5	16.4	14.3	16.2	18.1	18.9	:
Hungary	14.0	19.6	21.2	21.9	22.2	21.1	23.0	23.3	21.2	23.4
Malta	:	:	:	:	:	:	:	:	:	:
Netherlands	:	12.2	13.9	15.1	16.2	17.1	18.0	18.7	19.4	:
Austria	10.2	14.6	15.6	16.3	17.0	17.2	17.4	17.8	18.4	:
Poland	:	:	:	:	:	:	:	:	:	:
Portugal	:	:	:	:	:	:	:	:	:	:
Romania	:	:	:	:	:	11.1	11.7	13.0	14.5	:
Slovenia	13.0	15.9	17.1	17.7	18.5	8.8	19.1	19.1	19.4	20.1
Slovakia	10.8	15.3	14.8	16.0	17.3	18.8	20.0	20.9	22.4	23.7
Finland	:	14.5	15.4	16.4	17.2	18.5	19.0	19.9	21.0	22.3
Sweden	12.6	18.9	20.6	22.1	23.6	25.2	27.4	26.2	:	:
UnitedKingdom	:	10.2	10.5	10.6	11.0	11.4	11.5	11.4	11.3	11.9
EuropeanUnion	13.7	14.6	16.2	17.2	18.2	18.9	19.7	21.1	22.2	24.8
EuroArea	13.8	14.8	16.4	17.6	18.7	19.9	20.7	22.5	23.9	26.9

Source: Eurostat and OECD health data and Commission services computations.

The share of physicians aged 55-64 has also seen a large increase of about 10 pps: from around 10% in most Member States in 1995 to about or more than 20% in the large majority of Member States (see Table 22). Again the figure varies from 12% in IE and the UK and 15% in RO to 32% in FR and 35% in DE.⁷⁴ This indicates an increase in the average age of physicians. It also means that a non-negligible share of physicians may be retiring in the next 10 years, potentially reducing the pool of practising physicians if retirement is not compensated by training and recruitment strategies. An example to illustrate the impact of ageing is that of FR whose number of practising physicians per 100 000 inhabitants has been projected to reduce to 276 in 2020 before increasing to 292 in 2030 but still below today's numbers.⁷⁵ Exploratory calculations by Commission services (DG SANCO), modelling both physician supply and demand, estimate the potential shortage in practising physicians' headcount at 230,000 by 2020 for the EU27 countries.

To address this challenge, several countries have been increasing the training of more staff i.e. the intake of students in medical schools (e.g. DK, FI) and as a consequence have seen the number of young recruits and the share of younger physicians increase in recent years.

Table 23 - Medical graduates per 100 000 inhabitants

	1980	1985	1990	1995	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium	:	:	:	10.6	10.1	11.1	10.2	11.5	8.0	7.3	6.5	6.9	7.2
Bulgaria	:	:	:	:	:	:	:	:	:	:	:	:	:
CzechRepublic	14.1	13.6	9.0	13.5	7.9	9.0	8.3	9.9	10.0	10.4	10.1	10.7	11.2
Denmark	12.4	11.1	9.7	6.3	8.4	10.2	11.8	13.2	14.3	15.1	15.8	16.0	14.7
Germany	:	:	:	12.5	11.1	10.8	10.7	10.8	10.7	10.7	10.6	11.6	12.1
Estonia	18.3	16.9	12.7	12.0	5.0	5.1	11.6	13.7	7.8	9.2	9.5	7.9	8.3
Ireland	13.7	12.4	12.2	12.9	14.4	14.3	14.5	15.3	15.8	14.4	15.1	16.7	15.8
Greece	12.4	8.5	:	13.3	:	12.7	:	:	:	13.3	14.7	14.3	:
Spain	20.7	20.4	13.4	11.6	10.5	10.1	9.9	9.5	9.9	9.4	9.0	8.6	8.9
France	16.2	15.0	9.2	7.8	6.5	6.0	5.3	6.2	5.7	5.5	5.3	6.0	:
Italy	25.3	23.1	18.4	12.0	11.5	11.3	12.2	12.6	11.4	10.9	10.4	11.5	11.5
Cyprus	:	:	:	:	:	:	:	:	:	:	:	:	:
Latvia	:	:	:	:	:	:	:	:	:	:	:	:	:
Lithuania	:	:	:	:	:	:	:	:	:	:	:	:	:
Luxembourg	:	:	:	:	:	:	:	:	:	:	:	:	:
Hungary	:	9.4	8.6	9.7	9.3	10.0	10.2	9.6	11.1	11.4	10.6	10.0	9.6
Malta	:	:	:	:	:	:	:	:	:	:	:	:	:
Netherlands	:	10.1	9.7	9.1	8.9	8.9	9.7	10.2	10.5	10.7	11.2	12.3	12.2
Austria	15.0	20.0	18.5	13.1	18.9	14.3	24.0	19.7	21.2	20.6	19.4	21.6	:
Poland	9.5	9.7	8.6	10.8	6.0	6.4	6.6	6.6	6.8	6.2	6.1	6.7	7.2
Portugal	:	8.5	4.8	4.1	5.9	5.8	5.3	5.8	6.6	7.0	7.7	9.7	10.4
Romania	:	:	:	:	:	:	:	:	:	:	:	:	:
Slovenia	8.1	4.6	7.6	7.8	5.3	6.1	7.6	8.2	7.6	8.1	6.4	6.4	8.6
Slovakia	13.7	9.0	7.6	12.8	10.8	9.8	9.9	10.7	10.6	10.3	9.4	9.9	9.0
Finland	13.0	8.6	9.3	13.9	7.8	7.2	7.0	8.6	6.6	6.4	7.5	6.9	10.3
Sweden	:	:	:	8.7	9.1	9.1	8.7	9.3	8.9	8.9	10.0	:	:
UnitedKingdom	:	:	6.4	6.6	7.5	7.2	7.5	7.8	8.0	8.6	9.2	10.3	9.2
EuropeanUnion	17.6	15.5	10.9	10.3	9.2	9.1	9.2	9.5	9.3	9.3	9.3	10.0	10.3
EuroArea	19.5	17.1	12.9	10.9	10.0	9.7	9.9	10.1	9.7	9.6	9.5	10.2	11.0

Source: OECD health data and Commission services computations.

In some countries, possible future shortages due to ageing may be reinforced by **staff migration** to countries also in need of qualified staff and providing higher wages compared to the country of origin. Indeed, several countries pursue an active policy to recruit foreign workers, a reasonable

⁷⁴ Note that detailed and/or recent data is lacking for BG, EE, EL, CY, MT, PL and PT.

⁷⁵ Attal-Toubert and Vanderschelden (2009).

policy from the receiver's point of view. In some cases, this may have had cost consequences for the country as it may have to pay higher wages. This policy can also have negative consequences on the country of origin.

Licensed vs. practising physicians

To better understand the reasons behind possible relatively low numbers of practising personnel we need to look at both licensed and practising staff numbers. Relatively low numbers and reported shortages of practising staff may be due to a small number of graduated and licensed physicians, GPs and nurses, a situation which may be further reinforced by a high pace of retirement in the sector in the coming decades. This is different from a situation where relatively low numbers of staff in the sector are observed, despite what appears to be a sufficient pool of graduated and licensed physicians.

The difference between licensed and practising physicians is on average high in the EU context (see Table 24): on average, per 100 000 inhabitants, there are 444 licensed physicians but only 324 practising physicians. The difference appears to be increasing. Countries vary, however, in the extent of this difference: in RO, SI and HU followed by EE, LT, PT, AT and FI the difference is less or about 80 physicians per 100 000 inhabitants but in DK and IT the difference is more than 200 physicians per 100 000 inhabitants.⁷⁶

Table 24 - Difference between licensed and practising physicians

	1970	1980	1985	1990	1995	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium	:	13.4	16.1	9	19	17.7	18.1	21.4	37.7	40.8	58.8	63.4	68.6	186
Bulgaria	:	:	:	:	:	:	:	:	:	:	:	:	:	:
CzechRepublic	:	:	:	:	:	:	:	:	:	:	:	:	:	:
Denmark	:	174.2	192	216.7	161.2	174	179.5	181.4	174.2	177.5	183.1	190.5	203.9	:
Germany	:	:	:	:	104	123.2	124.8	128.6	133.7	139	144.7	148.9	153	158
Estonia	:	:	:	:	:	:	:	:	:	62.1	82.3	81.2	68.8	84
Ireland	:	:	:	:	:	:	:	:	:	:	:	:	:	:
Greece	:	:	:	:	:	:	:	:	:	:	:	:	:	:
Spain	:	:	:	:	144.6	110.5	129.4	141.1	122	112.2	75.2	91.2	91.2	120.3
France	:	:	:	:	:	:	:	:	:	:	:	:	:	:
Italy	:	:	:	:	181.8	190.6	175	172.9	208.3	212.8	255.8	273.7	288.9	:
Cyprus	:	:	:	:	:	:	:	:	:	:	:	:	:	:
Latvia	:	:	:	:	:	16.6	41.5	131.7	130.6	142.6	144.3	144.7	154.9	144
Lithuania	:	:	:	:	:	:	23.2	20.7	33.9	50.3	52.2	66.8	:	:
Luxembourg	:	:	:	:	18.2	19.4	19.6	25.8	27.5	30.3	79.5	84	126.7	:
Hungary	24.5	29.5	26.3	32.7	62	:	47.1	27.4	31.2	31.4	23.1	13.5	22.4	28
Malta	:	:	:	:	:	:	:	:	:	:	:	:	:	:
Netherlands	:	:	:	:	:	:	:	:	:	:	:	:	:	:
Austria	32.5	52.1	69	77.7	77.8	65.8	67	73.3	75.2	76.1	78.2	78	78.8	:
Poland	:	:	:	:	:	110.1	97	111	77.1	98.5	117.8	121.4	112.4	:
Portugal	:	:	:	38.6	38.5	53.3	59.5	52.8	61.3	66.6	:	:	:	:
Romania	:	:	:	:	:	11.3	14.6	14.4	16.5	14.2	1.9	1.8	1.9	:
Slovenia	:	:	:	:	:	10.3	10.1	9.8	9.3	8.9	9	8.4	8.3	:
Slovakia	:	:	:	:	:	:	:	:	:	:	:	:	:	:
Finland	:	:	:	:	:	72.8	75.9	77.4	77.6	78.5	78.8	78.5	80.1	:
Sweden	:	:	:	:	112.7	143.2	145.5	149	154.6	162.8	173.3	180.4	:	:
UnitedKingdom	:	:	:	:	:	:	:	:	:	:	:	:	:	:
EuropeanUnion	:	41.5	92.2	117.4	103.8	101.3	98.5	101.3	102.6	105.2	110.4	115.8	119.9	121.0
EuroArea	:	15.5	60.9	89.8	94.7	83.2	83.9	86.2	93.2	94.9	100.6	108.0	113.1	91.8

Source: Commission services computations based on Eurostat and OECD health data.

⁷⁶ Note that there was no complete information on practising and licensed physicians for a number of countries including BG, CZ, CY, MT, RO, SI, SK, EL, FR, NL, IE and UK.

Explanations put forward for the difference observed include: 1) the presence of pharmaceutical companies in a given Member State may account for justifiable number of non-practising physicians (whose skills are used in industry) and/or 2) absence of ancillary professions might explain for higher demand for physicians in government/insurance/industry.

Therefore, from the above analysis, **countries can be grouped** into (see [Table 25](#)):

a) those with relatively low numbers of practising and licensed physicians (RO, PT, SI and FI) with SI also showing a lower share of graduates per 100 000 inhabitants in the EU context. PT and SI (albeit to a much lower extent) show relatively low numbers of GPs and a low share of GPs in relation to all medical specialties. This was also the situation of FI until 2005, since when the numbers and share of GPs increased significantly. PT, FI and RO report some problems with the distribution of physicians including GPs. FI and PT also report an ageing workforce. Therefore, countries in this group may need to increase training to increase the pool of available staff whilst regulate training to adjust the skill mix and staff distribution;

b) those who have relatively lower numbers of practising but relatively high numbers of licensed physicians: LV (until 2008 where the number of practising physicians saw a large increase but which could be a temporary result of the economic crisis and high unemployment in the private sector), PL, BE (which in 2008 registered a significant decrease in the number of practising physicians) and UK (although for this country we do not have access to the number of licensed physicians). Their challenge is to attract and retain physicians in the health sector. Some (LV, PL) in this group have relatively low numbers and a low share of GPs so that they may need to adjust the skill mix. Some may need to improve the distribution of staff (LV, UK);

c) those who presently do not appear to have a problem of both overall numbers of practising and licensed physicians but could be ageing fast (FR, SE, IT, SK and DE and AT, HU, LU, LT and EE to a lesser extent), unless corrective measures are taken in this respect. Some may face migration (EE, LT) so that they may see a reduction in the number of practising physicians without an additional pool from where to hire. For those in this group the challenge is to monitor and plan for potential future needs of staff while retaining staff in the sector. Some may have a low share of GPs (LU, LT, SE, DK, SK), so that they may need to adjust the skill mix too, or may need to address the distribution of staff (DK, SE, AT, LT, IT, SK, DE);

d) those who presently do not have a problem of both overall numbers of practising and licensed physicians, or with ageing but may need to improve on the share of GPs (BG, EL, CZ, NL, IE) and on the distribution of staff (EL, CZ, NL, IE, BG).

Table 25 – Country grouping on staff issues

a) Small number of practising physicians and small number of licensed physicians	b) Small number of practising physicians but high number licensed physicians
<p>PT, RO, SI, FI</p> <p><i>Relatively low numbers of GPs/low share of GPs: PT, SI (to a lower extent), FI till 2003</i></p> <p><i>Uneven distribution: PT, FI, RO, SI</i></p>	<p>LV (until 2007), UK, CY, PL, BE (large reduction in practising in 2008)</p> <p><i>Relatively low numbers of GPs/low share of GPs: LV, PL</i></p> <p><i>Uneven distribution: LV, UK</i></p>
d) Large number of practising and licensed physicians no ageing but uneven distribution or unbalanced skill-mix:	c) Large number of practising and licensed physicians but ageing:
<p>BG, EL, CZ, NL, IE</p>	<p>FR, SE, DK, IT, SK and DE plus AT, HU, LU, LT and EE to a lesser extent</p> <p><i>Relatively low numbers of GPs/low share of GPs: LU, LT, SE, DK, SK</i></p> <p><i>Uneven distribution: DK, SE, AT, LT, SK, DE</i></p> <p><i>Migration: EE, LT</i></p>

Source: Commission services.

Most Member States (see country fiches of this report) can strongly regulate the health workforce including in terms of numbers trained and curricula, licensing processes, recruitment and career development, wages and sometimes location. In view of higher rates of retirement, high dropouts, migration, uneven distribution of physicians, and the fact that it takes a long time to train physicians, it appears that there is room for more proactive and long-term strategies in relation to staff. These proactive and long-term strategies include a more proactive use of existing regulation, and adjustments to regulation if necessary, to address current and future challenges. In a sector that is currently labour intensive, training, recruiting, retraining and retaining sufficient numbers of well distributed staff across skills and geographic areas as well as devising compensation and staff performance assessment schemes in the systems (see further) is a continuous challenge faced by all Member States. Some Member States have started to implement policies in that direction, notably through an increase in the number of student places in medical schools (e.g. DK, PT, FI, SI) and through giving additional financial or in-kind benefits for doctors to establish in certain areas (FR) and through providing additional income via performance-related bonuses to render the profession more attractive.

Policy implications

Note that the above analysis has shown a number of important issues for policy making.

A first one regards the need to improve data availability and comparability. There are a number of countries for which there is no comprehensive and routine (annual) information on the number of different types of physicians and nurses, on practising and licensed physicians, or on the number of graduating physicians. In addition, the values for the overall number of physicians or nurses (practising or licensed) or number of physicians or nurses in specific specialties vary across international databases for a number (albeit small) of countries. Despite recent efforts, there is still some inconsistency across databases and across countries. However, having accurate and comprehensive information is key to understand what the current and future situations are and therefore implement a correct human resources strategy that ensures sufficient numbers and an adequate skill-mix.

Secondly, depending on the current and future situation, policies may differ. A situation characterised by low numbers of practising and licensed physicians can be addressed by a certain type of policies: for example, to recruit elsewhere in the short run and train more staff in the medium and long-run and to use existing staff regulation (e.g. less strict *numerus clausus*, incentives for staff location) as a more effective human resources planning device, adjusting numbers to ensure sufficient supply across different specialties and regions over time. Numerous *clausus*, for example, should not be a static tool but a dynamic one, to be adjusted up (lax) and down (strict) and across specialties as needed to ensure sufficient numbers of physicians and a balanced skill-mix.

The other situation is one where there is a large number of licensed but not practising physicians. In this case, it is important to investigate what lies beyond the difference i.e. why many licensed physicians and nurses do not go on to practice or leave the sector after a number of years: is this the result of cost-containment in the sector, which limits recruitment or because staff perceives workload to be high compared to the wages they can get elsewhere for less heavy work? The policies to implement in this situation relate to career development opportunities, the attribution of responsibilities, using monetary and non-monetary incentives (wages, working conditions) so as to retain and attract staff back into the sector.

In general, to ensure sufficient numbers of staff and a balance between specialties should be seen as a shared responsibility between the government and the professional associations representing providers.

5.3.2. Providers' status

Countries differ in the way GPs and specialists provide services under public coverage independently of whether Member States have national health services, local health services or compulsory social health insurance. A large number of combinations are observed.

In several countries (AT, BE, DK, FR, DE, EL, NL, LU, SK), GPs and outpatient specialists are mostly independent self-employed individuals working in their own individual private practices (AT, BE, DK for specialists, EE for GPs, FR, DE, EL, NL for specialists, LU) or group private practices (BE, DK for GPs, EE for GPs, NL for GPs, SK) and contracted by funds or hospitals to provide services under the public benefits basket. In EL and AT a number of specialists also work in public hospitals while in LU and FR a number of specialists work in private clinics. In EE all specialist care providers work under private law, although owners are mostly municipalities or state.

In some other countries (CZ, HU, IE, PL, UK, RO), 1) GPs are independent self-employed individuals working in their own individual (CZ, HU, IE, RO, IT) or group (PL, UK, MT, IT) private practices and contracted by funds or given budgets (UK) to provide services under the public benefits basket, but 2) specialists mostly work in public centres (HU, PL, RO) or outpatient departments in public hospitals (CZ, HU, IE, RO, UK, IT) although in some specialists may also be organised in private group (CZ) or individual (PL) practices.

Yet in other countries (BG, FI, PT, ES, SE, CY, LT, LV, SI), GPs work in publicly owned health centres while most specialists work in outpatient departments in publicly owned hospitals or public centres. In some, there are also private primary care and specialist outpatient group practices (BG, FI, SI, LT), private primary care individual (BG, LT, LV, SI) practices or specialist outpatient individual practices (BG, EE, LT, SI).

In addition many countries have private provision for privately paying patients in a combination of settings: private individual or group practices, clinics and polyclinics, private hospitals.

Table 26 - Predominant modes for the provision of primary care and outpatient specialist services

Country	Q27. Predominant mode of provision for primary care services	Q27. Second mode of provision for primary care services	Q27. Predominant mode of provision for specialists' services	Q27. Second mode of provision for specialists' services
Belgium	private solo practices	private group practices	private solo practices	private group practices
Bulgaria				
Czech Republic	private solo practices		public hospital	private group practices
Denmark	private group practices		private solo practices	
Germany	private solo practices		private solo practices	
Estonia	private solo practices	private group practices	hospitals and clinics under private law, often owned by state or municipality	private clinics
Ireland	private solo practices		public hospital	
Greece	private solo practices		private solo practices	Public hospital
Spain	public centres		public centres	
France	private solo practices		private solo practices	private clinic
Italy	private sole practices	private group practices	public hospital	
Cyprus				
Latvia	primary care centres / private offices		municipal facilities	
Lithuania	public group practices	private solo&group practices	public hospital	private clinic
Luxembourg	private solo practices		private solo practices	private clinic
Hungary	private solo practices		public centres	Public hospital
Malta	private group practices			
Netherlands	private solo practices		private solo practices	
Austria	private solo practices		private solo practices	Public hospital
Poland	private clinics	private solo practices	public centres	private solo practices
Portugal	public centres		public hospital	Public centres
Romania				
Slovenia	public centres	Private solo practices	Public hospital	Private group practices
Slovakia	private group practices		private group practices	Public hospital
Finland	public centres	private group practices	public hospital	private group practices
Sweden	public centres		public hospital	
United Kingdom	private group practices		public hospital	

Source: Adapted from Paris, V., et al., (2010), "Health systems institutional characteristics: a survey of 29 OECD countries". Health working paper No. 50, OECD 2010+ Country Fiches (annexed).

5.3.3. Hospital beds

For the EU as a whole the number of acute care beds per 100 000 inhabitants has gone down significantly and consistently during the last 20 years (554.4 in 1988, 491 in 1998 and 383 in 2008). This trend is visible for all Member States. However, there are still large differences across EU countries: the number of beds varies from less than 200 beds per 100 000 inhabitants in FI to more than 500 beds per 100 000 inhabitants in BG, CZ, DE, LV, LT and AT. BE, EL, LU, HU, PL and SK have more than twice the number of beds per 100 000 inhabitants than FI. In general, high numbers of acute care beds reflect a tradition of using hospital care and in particular hospital inpatient care as the main care setting for many health interventions. This is a tradition that most Member States are now trying to mitigate.

Dual practice (i.e. the fact that public sector doctors are allowed to conduct private practice in public hospital settings or in their own facilities after public office hours) is allowed in a number of countries (e.g. MT, IE, PT, UK, DK, IT, EL, EE). When dual practice takes place under a combined set of elements it may have associated a number of incentives which may result in public sector inefficiency. Doctors may have an incentive to reduce public activity or at least not conducting activity to a maximum so as to increase demand for their private practice. It can also increase costs for the public sector depending on how production costs of using the same facilities are shared. This is particularly the case if dual practice is associated with:

- a) salary remuneration in the public sector (so that doing less does not translate in lower wages),
- b) fee-for-service in the private sector (with fee-for-service encouraging higher activity as explained further) and
- c) duplicative private insurance (private insurance that covers the same goods and services as the primary coverage) so that patients do not pay the full costs of pursuing private treatment.

This situation may lead to inefficiencies and cost-ineffectiveness in the system, as well as inequity in access and differences in quality of care between those who can afford to pay for private treatment or hold private insurance to cover private costs and those less well-off who are unable to pay.

Some countries (IT, EL) nevertheless indicate that dual practice in public hospitals, rather than in private offices of physicians, has provided extra revenues for hospitals and an additional income for physicians, while reducing the possibilities for informal work and tax evasion. This is the case if dual practice in public hospitals is strongly regulated (working hours, appointments, number of patients, staff remuneration and hospital organization).

Some of the above countries (PT, IE, UK) have implemented a number of policies to try to counteract the perverse incentives of dual practice under the above contexts. One measure is to have doctors choosing between types of contracts which involve either higher public wages and exclusively assigned to the NHS or to have a lower salary, but work less hours or even part-time and can then conduct private practice. A slightly different strategy is to have doctors conducting private practice conducting an extra shift when not pursuing NHS practice only.

Table 27 - Public/private mix in the provision of hospital acute care

Country	Q30. Percentage of total acute care beds in:			Q31. Is private practice in the public hospital setting allowed?		
	Publically owned hospitals	Not-for-profit privately owned hospitals	For-profit privately owned hospitals	For self-employed doctors	For salaried doctors	No
Belgium	34	66	0	X	X	
Bulgaria						
Czech Republic	91	0	9			X
Denmark	96.7	2.5	0.8	X		X
Germany	49	36	15	X		
Estonia						
Ireland	73	19	8		X	
Greece	69	3	28		X	
Spain	74.23	17	8.77			X
France	66	9	25		X	
Italy	81.5	16.7	1.8		X	
Cyprus						
Latvia						
Lithuania	61,6	0	87,2			
Luxembourg	68	29	3	X	X	
Hungary	83	3	15			X
Malta						
Netherlands	0	100	0			
Austria	72.5	18.8	8.7		X	
Poland	95	0	5	X		X
Portugal	85.7	6.6	7.7		X	
Romania						
Slovenia	98.6	0	1.4			X
Slovakia	59.6	0	40.4	missing	missing	missing
Finland	89	0	11			X
Sweden	98	0	2	X		
United Kingdom	96	4	0		X	

Source: Adapted from Paris, V., et al., (2010), "Health systems institutional characteristics: a survey of 29 OECD countries". Health working paper No. 50, OECD 2010

5.4. Rules on access: the use of primary care, referral systems, care coordination and patient choice of provider

There is a general acceptance, especially in recent years, that strengthening primary health care can contribute to improve the equity, efficiency, effectiveness, and responsiveness of health systems. According to the WHO Health Evidence Network (2004), studies show that the strength of a country's primary care system is associated with improved population health outcomes (measured using all-cause mortality, all-cause premature mortality, and cause-specific premature mortality from major respiratory and cardiovascular diseases). This relationship is significant after controlling for determinants of population health at the macro-level (GDP per capita, total physicians per one thousand population, percentage of elderly) and micro-level (average number of ambulatory care visits, per capita income, alcohol and tobacco consumption).

Furthermore, studies from developed countries demonstrate that increased availability of primary health care is associated with higher patient satisfaction while an orientation towards a specialist-based system enforces inequity in access. Increased emphasis on primary care also appears to reduce aggregate health care spending. Most studies comparing services that could be delivered as

either primary health care or specialist services show that using primary care physicians reduces costs and increases patient satisfaction, with no adverse effects on quality of care or patient outcomes. In other words, the majority of studies analysing substitution of some services from secondary to primary care showed primary care to be more cost-effective.

To encourage the use of primary health care, almost all Member States are implementing the so-called "referral system". This system implies that a family doctor providing primary care is the first point of contact with the health system when a person falls ill and needs non-emergency care. This family doctor and primary care physician is very often a GP, although in some countries it can be a general paediatrician (e.g. IT and ES) or even a specialist in the case of patients with chronic diseases (e.g. FR). The GP/family doctor then acts as a gatekeeper/care coordinator to other types of care (specialist outpatient care, hospital care). In countries with national or local health services, except for SE, the referral system is compulsory i.e. in principle patients can only access specialist's outpatient care and hospital care if sent by their GP/family doctor. Compulsory referral is also the case in many countries with a compulsory social health insurance system (NL, EE, LT, RO, PL, HU, SI, SK). In other countries with compulsory social health insurance, such as BG, BE, FR and DE, the referral system is financially encouraged: the level of reimbursement is higher if a referral takes place; the direct out-of-pocket payments patients have to bear are higher in the absence of referral. In EL, CZ, LU, AT and SE a referral system to secondary (outpatient specialist and hospital) care is not necessary, although LU limits the number of reimbursed specialist visits. In HU there are some outpatient professions (ophthalmology, urology, gynaecology, surgery, dermatology, psychiatry, otorhinolaryngology, oncology services and a repeated visit to specialist within 30 days from the previous one) that do not need referral. In EE there are also some outpatient professions (ophthalmology, gynaecology, pulmonologist in case of tuberculosis, dermatology-venerology, psychiatry, traumatologist or surgeon in the case of trauma) that do not need referral.

Shortages, uneven distribution of primary care physicians and nurses, and lack of primary care services after office hours render referral systems from primary to secondary care less effective. In a number of countries (LT, MT, RO, PT, EE and FI in some geographic areas) referral systems are bypassed by patients as a result of few available GPs and long waits for a GP consultation, and/or because of patients' perceptions that specialist and especially emergency care is of higher quality. In FI and SI, for example, patients can visit specialists directly in the private sector without a referral from their GP, and specialists can refer patients to municipal hospitals rendering the referral system less efficient.

When patients bypass the referral system and go straight to specialists' or emergency consultations this can have cost consequences for the system and possibly to the patient. The accompanying work to the Communication and Recommendation on patient safety, including the prevention and control of healthcare-associated infections ⁷⁷ suggested that a 5% decrease in healthcare associated infections would save €274 million in health expenditure and represent a gain of €68.5 million in productivity. Therefore, an adequate use of primary care could reduce unnecessary hospitalisations and associated infections.

⁷⁷ EC (2008c) at http://ec.europa.eu/health/archive/ph_systems/docs/patient_ia_exs_en.pdf

The growing emphasis on primary care has been accompanied by a small but steady increase in the number of GPs as mentioned in the previous section. In addition, a number of countries have increased opening hours in primary care health centres or have opened after-hours primary care centres or wards (walk in centres after office hours). Many have now counselling phone lines and websites. Some countries are to use more nurses in primary health care settings to pursue health promotion and disease prevention activities to compensate for GP shortages (e.g. LV). Some Member States do report a success with their primary care system. ES indicates that the compulsory referral system with primary care physicians acting as gatekeeper has had efficiency gains. In ES, primary care is based in a global health concept, supported by multidisciplinary teams including paediatricians, located in health centres well-equipped for giving adequate solutions at this level. Team working (of which skill mix is a part) is shown to produce better outcomes and patient satisfaction - and perhaps the argument is that if patients are happier and have better outcomes there is a cost saving in further treatment.

Table 28 - Gatekeeping from primary to specialist care

Country	Q40. Registration with a primary care physician	Q41. Referral to access secondary care
Belgium	Financially encouraged	Financially encouraged
Bulgaria	Can change every 6 months	Compulsory (exceptions)
Czech Republic	Free	Not necessary
Denmark	Compulsory	Compulsory
Germany	Financially encouraged	Financially encouraged
Estonia	Compulsory	Compulsory (some exceptions)
Ireland	Free	Financially encouraged
Greece	Free	Not necessary
Spain	Compulsory	Compulsory
France	Financially encouraged	Financially encouraged
Italy	Compulsory	Compulsory
Cyprus	Not yet; Reform plan	Not yet; Reform plan
Latvia	Free	
Lithuania	Compulsory	Financially encouraged
Luxembourg	Free	Not necessary
Hungary	Financially encouraged	Compulsory
Malta		Meant to be compulsory
Netherlands	Compulsory	Compulsory
Austria	Free	Not necessary
Poland	Free	Compulsory
Portugal	Compulsory	Compulsory
Romania	Meant to be mandatory	Meant to be mandatory
Slovenia	Compulsory	Compulsory
Slovakia	Compulsory	Compulsory
Finland	Free	Compulsory
Sweden	Free	Not necessary
United Kingdom	Financially encouraged	Compulsory

Source: Adapted from Paris, V., et al., (2010), "Health systems institutional characteristics: a survey of 29 OECD countries". Health working paper No. 50, OECD 2010 + Country Fiches (annexed).

Shortages, uneven distribution of primary care physicians and nurses and lack of primary care services after office hours also limit patient choice of GP/family doctor, which more and more Member States wish to pursue (see Annex 3, Table 41). Choice of provider (GP, specialist, hospital) is seen as a way to encourage providers to improve their performance (reducing prices or improving quality to attract patients). Allowing choice also intends to make patients part of the decision-

making process that directly affects their health. Many Member States are trying to combine choice with referral systems. This means that the patient can choose his/her GP, can choose the specialist following a referral, and can choose hospital when hospital care is needed. This allows choice to play a role while still controlling the consumption of health services.

Choice is increasing but it is still limited (BG, DK, FI, ES, PT, UK, NL, MT,) notably in terms of primary care/GPs, in part because of low number of GPs, in part because when services are provided on a local basis the choice is restricted geographically by definition. In FI, for example, by 2014 patients may choose the health care unit where they are treated. Moreover, good choices by definition require information on providers including prices, activity and quality. However, according to the OECD 2010 (see [Table 41](#) in Annex 3), only a limited number of countries provide information on prices and on the activity and quality of providers (very often hospitals) in order to a) support patient choice of provider (BE, FR, EL, IE, and SK) and b) encourage providers to improve performance compared to that of their peers (BE, CZ, DK, DE, HU⁷⁸, NL, SK, UK).

A rationale for emphasising primary care as a means to improve quality of health services is that family doctors can act as care coordinators. This means that the family doctor actively defines an appropriate path of care together with the patient, particularly when dealing with chronic patients, takes care of patients' health promotion and disease prevention, and ensures patient follow-up care after secondary care events. The role of care coordinator may not just limit itself to health services but family doctors could also be the link to social care. This may be important if licensed but not practising physicians are to be brought back into the sector or if doctors with other specialties are to be retrained and practice as GPs. Some countries have started to implement this policy more actively. In PT a new type of primary care units combining health and social care have been piloted. However, care coordination between types of health services (from primary to specialist, from specialist to hospital, from hospital back to primary care for follow up) and between health and social care remains weak in the majority of countries (OECD, 2008; Joint Report on Social Protection and Social Inclusion).

⁷⁸ The indicator list of the Health Supervisory Authority.

Policy implications

To encourage the use of primary care it is necessary to make it more attractive to both patients and physicians. Promoting the use of primary care and the implementation of referral systems from primary to secondary care (outpatient specialist and hospital care) and back to primary care requires sufficient numbers of adequately trained primary care physicians and nurses. Matching better informed patients and ever growing expectations with well-trained primary care GPs and nurses is important. It requires a more even distribution of primary care physicians and nurses and access to primary care services after hours.

This needs to be coupled with cost-sharing mechanisms and referral systems that encourage primary care vis-à-vis other types of care when the latter are not necessary.

In addition, GPs/family doctors should be attributed the role of care coordinators. GPs/family doctors or primary care practices could then be rewarded for this role through a mix remuneration system that partly rewards staff for health promotion and disease prevention practices, chronic disease management or treatment of vulnerable groups and for health outcomes.

To support referral systems and care coordination, a number of ICT and e-health options (e.g. electronic medical file/record, e-prescribing) are available which countries could implement and some indeed have (e.g. ES). They nevertheless represent an investment which is costly in the short-term so that, under the present economic circumstances, the introduction of such systems remains a challenge for a number of countries. Primary care practices could also be better equipped to conduct very basic surgical interventions so that patients would not have to be sent to hospitals.

5.5. Purchasing, contracting and remuneration systems and sector outputs

As with providers' status also payment schemes vary substantially across countries, across staff types and across private or public provision.

5.5.1. Payments to physicians: primary care and specialists

The most common modes of paying physicians are: a salary, a capitation and a fee-for-service. **Salary** is an agreed amount of money paid for working a certain amount of hours. This payment is independent of the number of patients treated or the price of services. **Capitation** refers to an amount of money per patient registered with a physician over a period of time (typically a year) often adjusted to the amount of care provided to each patient (e.g. patients with chronic diseases may need care more often so the per capita payment is adjusted accordingly). The remuneration of a doctor under capitation depends on the number of patients that are on his/her list and the amount provided per patient. It is mostly used in primary care settings to encourage patients to register with a family doctor/GP and to encourage these to accept patients and follow their care needs, although often a ceiling on the number of patients is applied to ensure quality of care. **Fee-for-service (FFS)** is the payment of a price for each service provided. The remuneration level of physicians is affected

by the number and type of services provided. Fees are often negotiated between the Ministry of Health or health purchasers and the providers. Fees can vary across regions or purchasers.⁷⁹

Table 29 - Predominant modes of physician payment

Country	Primary care physicians payment	Out-patient specialists payment	In-patient specialists payment
Belgium	FFS	FFS	
Bulgaria	Capitation (+FFS)	FFS	Combination, depending on type of institution
Czech Republic	FFS/Capitation	FFS/Salary	Salary
Denmark	FFS/Capitation	Salary	Salary
Germany	FFS/Capitation	FFS	Salary
Estonia	Capitation/FFS/combination of some more	Salary	Salary
Ireland	Capitation	FFS	Salary
Greece	Salary	FFS/Salary	Salary
Spain	Salary/Capitation	Salary	Salary
France	FFS	FFS	Salary
Italy	Capitation	Salary	Salary
Cyprus	Public: Salary / Private: FFS		
Latvia	Mixed system	Salary/Fee-for-episode	
Lithuania	Capitation/FFS/Bonus	Episode	Salary
Luxembourg	FFS	FFS	
Hungary	Capitation	Salary	
Malta	NHS: Salary / Private: FFS	NHS: Salary /Private: FFS	
Netherlands	FFS/Capitation		FFS
Austria	FFS/Capitation	FFS	Salary
Poland	Capitation	FFS	
Portugal	Salary	Salary	
Romania	Capitation/FFS	FFS	Salary
Slovenia	Salary	Salary	Salary
Slovakia	Capitation		Salary
Finland	Salary/Capitation/FFS	Salary	Salary
Sweden	Salary	Salary	
United Kingdom	Salary/Capitation/FFS	Salary	Salary

Source: Adapted from Paris, V., et al., (2010), "Health systems institutional characteristics: a survey of 29 OECD countries". Health working paper No. 50, OECD 2010 + Country Fiches (annexed).

Table 29 shows that BE, FR and LU use FFS to pay for both primary care physicians and outpatient specialists. IE, IT, HU, PL and SK use a capitation system to pay primary care physicians. IE and PL pay a FFS for outpatient specialists' services and IT and HU pay a salary to outpatient specialists. EL, PT and SE pay primary care physicians on a salary basis. They also pay a salary to outpatient specialists, although in EL some social security funds pay outpatient specialists a FFS. Except for NL (which uses a FFS system), all countries use a salary to pay inpatient specialists. Interestingly, a number of countries are now using a combination of systems to pay both primary care physicians and outpatient specialists. This is the case of CZ, DK, EE, NL, AT, RO and DE⁸⁰, which use a mix of capitation and FFS for primary care physicians and the case of UK and FI which use a mix of salary, capitation and FFS.

⁷⁹ See for example Fujisawa, R. and Lafortune, G., (2008, OECD),.

⁸⁰ In DE the global budget for outpatient care is negotiated at the federal level, so that services above the global budget are only remunerated on a graduated basis.

It is widely believed that the method of payment of physicians affect their clinical behaviour.⁸¹ Some studies have shown that a FFS type of remuneration can result in a higher number of primary care visits/contacts, of visits to specialists and of diagnostic and curative services than a capitation or salary system. In other words, a FFS system increases activity/volume of services and may result in supply-induced demand and unnecessary care. Capitation or salary systems, on the contrary, do not necessarily induce more activity. As such, they are seen as good at reducing unnecessary care and better at controlling costs. Interestingly, although a FFS system may result in a larger number of visits, it may result in fewer hospital referrals as physicians have an incentive to see patients in their primary or specialist outpatient settings. A salary or capitation may over-refer patients to other sectors and do not encourage higher activity, although patients do not appear to be less satisfied than in a FFS system. As a result of a higher number of visits, a FFS system can result in higher compliance with a recommended number of visits especially in the case of patients with chronic diseases, therefore increasing continuity of care.

Outpatient consultations do vary significantly across Member States from 11.4 in the CZ down to 2.8 per capita visits per year in SE. It is important to note that overall labour costs and outpatient activity depend not only on the remuneration system but also on the number of physicians, their working hours, whether they are self-employed, the population size, gender and age structure, disposable income, insurance coverage, cost-sharing and the degree of gatekeeping as well as patients' cultural habits and expectations for example. It is shown (Fujisawa, R. and Lafortune, G., (2008, OECD) that in most countries the remuneration of specialists is higher than that of GPs. The gap may be increasing except in the UK. However, this is not necessarily due to longer training periods for specialists or longer working hours but more likely associated with the combination of self-employment and FFS payment and barriers to enter the profession (licences).

⁸¹ See for example: Gosden, T., et al., (2000) in Cochrane Database of Systematic Reviews 2010 and Simoons, S. and Hurst, J. (2006, OECD).

Policy implications

In a labour intensive sector, remuneration is important to ensure (attract, retain and motivate) sufficient numbers of staff and therefore ensure access to quality of care. However, payments for health professionals are one of the largest costs in the provision of health services and goods. Consequently, it is crucial to understand the incentives associated with different payment mechanisms. It is important to ensure that payment schemes are used to their best in order to achieve policy objectives of, say, improved access or quality of care or cost containment.

The analysis suggests that different payments have different associated incentives. This is the reason why a number of countries have moved towards a combination of remuneration systems in the primary care and outpatient specialist context. In addition, a number of countries have introduced a performance related payment or bonus (UK, PT for the health centre as a whole). Such mix remuneration especially in primary care is aimed at getting a better balance of incentives as well as encouraging the provision of specific types of services such as promotion and prevention and the management of chronic diseases. In some countries that use a FFS system, some other mechanisms are used to reduce unnecessary care. These include treatment guidelines and monitoring systems as well as, in DE, the establishment of morbidity-related remuneration budgets that are based on price and quantitative trends previously agreed and, thus, restricted on the federal level between the national associations of service providers and sickness funds.

5.5.2. Payments to hospitals

As with payments for physicians, Member States vary in the way they pay hospitals (see [Table 30](#)). As it can be seen several countries use a mix of payment types.

Hospital funding mechanisms are key in health systems, as hospital care typically represents the largest share of health expenditure. It is often a key part of reform in many healthcare systems as the way hospitals are paid may have a large impact on the overall performance of the system. Just as with physician remuneration, the method used to pay hospitals can impact on hospital activity and can be a tool to achieve health policy objectives set by national authorities. Certain types of payments induce activity possibly beyond necessary levels, while others reduce inputs used to provide care, and other still may give rise to gaming, cost-shifting and administrative burden. The key objective is to create the right set of incentives that ensure equitable access to necessary and high quality of care, while ensuring an effective and efficient use of resources, maintaining cost control and providing the correct use of types of care among patients.

The most common payment methods are as follows. *Prospective global budgets* refer, in a simplistic way to an overall spending limit or target. It will define the volume of service that is to be delivered and its total price. It is usual for the budget to be prospective and agreed for a defined time period (i.e., the fiscal year). Many countries with publicly funded health systems have adopted prospective global budgets as their key-funding block.⁸² Global budgets often come together with

⁸² The World Bank in recent reform programs has also sponsored this model.

the use of strategic purchasing whereby the buyers of care contract with providers for the provision of services.

Global budgets aim to improve public sector performance. One of the major attractions of the global budget model is that it can combine administrative simplicity (especially if there is only one or few buyers of care) with strong incentives for performance enhancements. In other words, "society establishes some sort of prospective budget for health care and tells providers to do the best they can with that budget"- Reinhardt, U.E. (1994) Indeed, the idea is that prospective global budgets directly constrain both the level and rate of increase of hospital care costs. Global budgets may also help to control some of the FFS incentives to supply-induced demand when physicians are paid on a FFS basis.⁸³ There is an incentive to improve the input mix but there may still be under-provision of services. A potential problem is that providers who find themselves in danger of exceeding the budget may postpone the treatment of patients to another year. Sometimes difficulties may be the result of an imbalance between available funding (revenues to the health sector) and demand.

Activity-based payments (also called case-based payment) are hospital payments based on the number and type of services provided to each patient receiving hospital care. Hospitals are paid a pre-determined fixed rate for each treated hospital case. Typically, the number and type of services are based on a definition of cost-clusters – often the so-called Diagnosis Related Groups (DRGs).⁸⁴ This system is attractive for its relative simplicity (once the cost-groups have been defined) and because it encourages activity, improves the input mix and reduces hospital length of stay. In some cases it has been used with the aim of reducing waiting times in countries with limited hospital capacity and combined with a referral and gatekeeping system. In those cases, the method is used to induce hospital activity but not necessarily beyond what is necessary as this is controlled via the referral system. At the same time, activity-based payments may be too simple to pay effectively for the full diversity of facility-based services and patient types. Also, there may be an incentive for hospitals to classify patients in higher cost groups than the actual treatment so as to get higher income, or to treat simple cases rather than complex ones.

Per diem (per day) payments means a daily rate used to pay for services. This system can lead to an increase in the number of beds and in the number of days (number of admissions but especially an increase in the length of stay of each patient). To reduce the incentive to increase length of stay some countries reduce the per diem after the first day or days.

Line-item payments typically means that a prospective budget is given to providers for specific lines of services. In general, rules limit the transfer of resources across line-items. In this case, there is not necessarily an incentive to improve the input mix and there may be an incentive to spend the full budget in each and every line. This may result in under-provision in some lines.

⁸³ See Dredge, R. (2004). The World Bank suggests that prospective global budget can deliver real progress in a cost effective way.

⁸⁴ A classification of hospital case types into groups that are clinically similar and are expected to have similar hospital resource use. The groupings are based on diagnoses, and may also be based on procedures, age, sex and the presence of complications or comorbidities.

The fact that each system has powerful but contradictory incentives had led several countries to use a mix of payment modes. For instance, within the DRG system in DE, the law allows hospitals and sickness funds to negotiate reimbursement for additional costs in the form of a certain share of the respective DRG to be added or subtracted from normal payment in order to respond on the full diversity of facility-based services and patient types.

Table 30 - Hospital payment schemes

Country	Hospital payment scheme
Belgium	Payment per case (45%) + Payment per procedure (41%) + payments for drugs (14%)
Bulgaria	Case-based (flat rate combined with global budgets)
Czech Republic	Prospective global budget (75%) + per case (15%) + per procedure (8%)
Denmark	Prospective global budget (80%) + Payment per case/DRG (20%)
Germany	Payment per case/DRG
Estonia	Payment per DRG (70%) + payment per FFS (30%) up to the ceiling
Ireland	Prospective global budget (60%) + Payment per case/DRG (20%) + per diem (20%)
Greece	Per diem and retrospective payment of costs
Spain	Line-item budget
France	Payment per case/DRG
Italy	Payment per case/DRG
Cyprus	Specific hospital budget/ Plan: DRG (NHIS)
Latvia	
Lithuania	Payment per case/DRG
Luxembourg	Prospective global budget
Hungary	Payment per case/DRG
Malta	Prospective global budget
Netherlands	Adjusted global budget (80%) + Payment per case/DRG (20%)
Austria	Payment per case/DRG / Retrospective reimbursement of costs
Poland	Payment per procedure/service
Portugal	Prospective global budget + payment per case (DRG)
Romania	
Slovenia	Payment per case/DRG (66%), prospective global budget (12%), per service/item (22%)
Slovakia	Payment per case/DRG
Finland	Payment per case/DRG
Sweden	Payment per case/DRG (55%) + global budget
United Kingdom	Payment per case/DRG (70%) + global budget (30%)

Source: Adapted from Paris, V., et al., (2010), "Health systems institutional characteristics: a survey of 29 OECD countries". Health working paper No. 50, OECD 2010+ Country Fiches (annexed).

The combination of available resources (staff and beds), the method used to pay physicians and the method used to pay hospitals can impact on hospital activity. For example, in the EU, the number and the share of hospital day case interventions vs. inpatient interventions is increasing but there is a large variation in the EU from less than 10% share in CZ, DE, CY, LT, HU, PT and SE to more than 40% in BE, IE, NL, and UK (see Table 31). In addition, within the group of countries that show a limited use of day surgery, some have large numbers of inpatient discharges while others show a relative smaller number of hospital discharges overall. In DE, the number of day discharges is several times lower than in other EU countries, because a legal possibility has been created for hospitals in the area of outpatient care to provide outpatient services in the treatment of certain diseases.

Table 31 - Hospital day case discharges as a share of all hospital discharges

	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium	35.49	37.83	40.17	36.90	38.53	39.49	40.48	41.92	:
Bulgaria	:	:	:	:	:	:	:	:	:
CzechRepublic	:	:	1.29	1.36	1.37	1.57	1.72	1.80	:
Denmark	16.87	16.64	18.33	19.74	20.60	21.36	22.38	23.04	:
Germany	4.52	4.29	4.21	:	:	:	2.61	2.54	2.56
Estonia	4.28	5.13	6.08	6.78	8.08	12.21	14.21	16.19	16.79
Ireland	34.22	36.74	39.59	41.54	43.13	43.99	53.18	54.56	56.34
Greece	:	:	:	:	:	:	:	:	:
Spain	:	:	:	:	:	:	22.03	29.13	:
France	28.43	30.31	31.69	33.10	34.58	37.04	38.57	36.83	36.77
Italy	:	:	:	29.29	30.90	31.77	31.54	30.71	:
Cyprus	6.94	6.77	7.45	7.69	7.77	8.71	9.69	:	:
Latvia	:	:	:	:	:	10.63	:	:	2.54
Lithuania	:	1.34	1.63	2.31	2.67	3.59	4.40	5.99	6.88
Luxembourg	16.72	18.35	19.55	19.92	20.84	21.74	24.50	26.93	:
Hungary	:	:	:	:	2.02	2.18	2.49	4.02	5.37
Malta	:	:	:	:	33.81	30.54	:	31.84	27.42
Netherlands	:	:	43.00	44.33	45.57	46.52	48.01	49.26	50.08
Austria	:	:	:	13.45	13.48	14.02	14.82	:	16.21
Poland	:	:	:	8.84	9.86	13.66	16.19	17.21	:
Portugal	:	:	:	:	:	9.47	:	:	:
Romania	:	:	:	:	:	:	:	:	:
Slovenia	:	:	:	:	9.71	11.66	11.78	12.14	13.33
Slovakia	:	:	:	:	:	:	:	:	:
Finland	:	:	19.15	19.53	20.22	21.62	21.59	22.22	22.40
Sweden	7.26	7.48	7.57	7.60	7.98	8.21	8.10	:	:
UnitedKingdom	42.40	42.71	43.58	43.91	:	:	50.18	51.74	:
EuropeanUnion	23.5	23.9	24.5	29.3	25.5	27.1	26.7	28.1	20.8
EuroArea	17.7	18.5	20.9	31.3	32.6	33.5	25.0	25.5	22.0

Source: Eurostat database and Commission services calculations.

When looking at average length of stay, this has slightly gone down over the decade but again varies substantially across Member States (see Table 32).⁸⁵

⁸⁵ A word of caution is needed here when comparing ALOS across countries as it is not necessarily computed in the same way across Member States: i.e. it does not always adjust for case-mix and consider all hospitals.

Table 32 - Hospital Average Length of Stay (ALOS)

	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium	7.7	7.5	7.4	7.7	7.6	7.5	7.4	7.3	
Bulgaria	:	:	:	:		8.3	7.5	7.2	6.7
CzechRepublic	:		10.3	10.2	10.2	10.9	10.7	10.6	:
Denmark	6.3	6.2	6.1	5.9	:		5.4	5.3	:
Germany	10.1	9.8	9.7	:	:		10.2	10.2	10
Estonia	8.8	8.5	7.9	7.7	7.5	7.7	7.7	8	7.9
Ireland	6.4	6.4	6.4	6.4	6.4	6.5	6.3	6.2	:
Greece	8.4	8.0	7.8	8.7	7.8	8.1	:	:	:
Spain	8.8	7.7	7.7	7.7	7.2	7.1	7	7.2	7
France	6	6	6.1	6	5.9	5.9	5.8	5.8	5.8
Italy	:	:		7.6	7.6	7.6	7.7	7.8	:
Cyprus	6.4	6.5	6.4	6	6.3	6	5.9	6.2	:
Latvia	:	:	:	:		9.6	:		9
Lithuania	:	10.1	9.7	9.4	9.2	9.1	9	8.6	8.5
Luxembourg	7.5	7.4	7.5	7.2	7.3	7.3	7.4	7.3	:
Hungary	:	:	:		8.1	8	7.9	7.9	8.2
Malta	:	:	:		5.4	5.4	:	4.8	4.9
Netherlands	:		8	7.6	7.2	6.9	6.7	6.4	6.2
Austria	:	:		10	9.5	9	8.9	9	8.9
Poland	:	:		7.2	6.8	8.4	8.1	8	:
Portugal	:	:	:	:		6.7	:	:	:
Romania	:	:	:	:	:	:		7.8	7.8
Slovenia	:	:	:		7.9	7.9	7.7	7.7	7.7
Slovakia	9.9	9.5	9	8.8	8.7	8.4	8.3	:	7.9
Finland	:		12.9	12.7	12.5	12.5	12.7	12.9	12.4
Sweden	6.8	6.7	6.7	6.5	6.4	6.4	6.4	:	:
UnitedKingdom	10.8	10.6	10	9.3	:	8.7	8.8	8.1	:
EuropeanUnion	8.8	8.5	8.5	7.8	7.3	7.7	8.1	8.0	7.9
EuroArea	8.4	8.0	8.1	7.4	7.2	7.1	7.9	7.9	7.9

Source: Eurostat database and Commission services calculations. ALOS is for all causes of diseases (A00-Z99) excluding V00-Y98 and Z38.

Policy implications

The analysis suggests that different hospital payments have different associated objectives which may be further enhanced or mitigated by physician payments. This is why some health care financial experts recommend adopting a hybrid model that incorporates both activity-based and block funding for hospitals. With this system, hospitals can benefit from pay for performance if they meet their targets and still continue to control costs.

The choice of method depends on the goals of the health system, the weaknesses one is trying to address (whether it is cost-containment or improving access) and the existing resources available to provide health services and goods.⁸⁶ For example, if cost-containment is the issue and there is excess capacity, line item budgets and per diem systems have been discouraged. As such the method may and should be adapted when circumstances change. Importantly, payment systems should be supported by national clinical/treatment guidelines, good information and monitoring systems and accountability mechanisms.

5.5.3. Policies regarding pharmaceuticals

Total and public expenditure on pharmaceuticals constitutes a relatively small share of GDP: an EU average of respectively 1.5% and 1% of GDP in 2008 for public expenditure. When compared with the situation a decade ago, both total and public expenditure on pharmaceuticals are now a slightly higher share of GDP (respectively 1.4% and 0.8% in 1998). It is also a relatively small share of TCHE especially when only public expenditure is considered: EU average of respectively 16.9% and 11.2% of TCHE. Again these values are slightly higher than those observed in 1998 (16.2% and 9.8% of TCHE in 1998). Therefore, at first sight pharmaceutical expenditure does not appear to have increased significantly in the last decade as a share of GDP or as a share of TCHE.

However, looking in more detail, the apparent constancy or small increase in pharmaceutical expenditure in the EU, notably public expenditure on pharmaceuticals over the 1998-2008 period, is strongly associated with a reduction in expenditure in recent years (2006-2007-2008). In fact, according to the OECD (2008a and 2009b), the share of pharmaceutical expenditure on overall health expenditure has been growing over the past 20 years at an average rate of 5.7% per year. In addition, the public sector is a very important source of financing for pharmaceuticals (+60% of all expenditure on average).

Moreover, there are important differences across countries in terms of total, public and per capita spending and in some expenditure on pharmaceuticals as a % of GDP has increased in a more significant manner (EL, HU, RO, PT). Such differences can be explained by differences in retail prices and the volume and mix of products consumed. These differences in turn are explained by country differences in the pharmaceutical sector, in the general level of income, in the particular characteristics of each health system and differences in health policies and priorities.

⁸⁶ Cashin et al., (2005), "Case-based hospital systems: a step by step guide for design and implementation in low and middle income countries, USAID 2005.

Differences and ups and downs in pharmaceutical expenditure suggest that this may be strongly affected by policies regulating prices, reimbursement levels, prescription behaviour by doctors, consumption behaviour by consumers, or selling behaviour by pharmacists, agreements/contracts with the pharmaceutical industry, availability of generic alternatives and the importance of the pharmaceutical sector and related industry policy. For example, while concern over controlling pharmaceutical expenditure is common across all Member States, priorities and their weight differ across countries.

Moreover, there are important trade-offs (Jacobzone, S., 2000, OECD; Espin and Rovira, 2007; OECD, 2008a, 2009b): that between ensuring affordable access to effective medicines and controlling public expenditure, that between controlling pharmaceutical expenditure and maintaining pharmaceutical production, which is associated with employment and income generation, and that between maximising value for money for today's expenditure and creating incentives to encourage R&D in the sector in the future i.e. rewarding industry innovation. Citing Espin and Rovira (2007) "while innovation and access are usually welcomed by all stakeholders, high prices and growing expenditure are perceived as bad news from the payers' perspective (consumers and health insurers), but as good news for suppliers since for them it translates into higher revenues and profits".

Table 33 - Public Expenditure on pharmaceuticals

Public Expenditure on pharmaceuticals as a % of GDP

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium	0.7	0.7	:	:	:	0.9	0.9	0.9	0.9	0.9	1.0
Bulgaria	:	:	:	:	:	0.8	0.6	0.6	0.6	0.5	:
CzechRepublic	1.4	1.2	1.2	1.2	1.3	1.4	1.4	1.4	1.1	1.0	0.9
Denmark	0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.5	0.5	0.5	:
Germany	0.9	1.0	1.0	1.1	1.1	1.2	1.0	1.2	1.2	1.2	1.2
Estonia	:	0.5	0.5	0.6	0.7	0.5	0.6	0.5	0.5	0.5	0.5
Ireland	0.5	0.5	0.6	0.6	0.7	0.7	0.8	0.9	0.9	1.0	1.1
Greece	0.8	0.9	0.9	1.0	1.2	1.3	1.4	1.5	1.6	1.9	:
Spain	1.1	1.1	1.1	1.1	1.2	1.4	1.4	1.3	1.3	1.3	1.3
France	1.0	1.1	1.1	1.2	1.2	1.3	1.3	1.3	1.3	1.3	1.2
Italy	0.7	0.7	0.8	1.0	1.0	0.9	0.9	0.9	0.9	0.8	0.8
Cyprus	:	:	:	:	:	0.3	0.3	0.3	0.3	0.3	0.3
Latvia	:	:	:	:	:	:	:	0.4	0.5	:	:
Lithuania	:	:	:	:	:	:	0.7	0.7	0.7	0.6	0.6
Luxembourg	0.6	0.6	0.5	0.6	0.6	0.7	0.7	0.6	0.6	0.6	0.5
Hungary	1.4	1.3	1.2	1.3	1.3	1.4	1.5	1.7	1.7	1.4	1.3
Malta	:	:	:	0.8	0.8	0.8	1.1	1.1	1.0	1.1	1.0
Netherlands	0.5	0.5	0.5	0.6	0.6	:	:	:	:	:	:
Austria	0.7	0.8	0.8	0.8	0.9	0.9	0.9	0.9	0.9	0.9	0.9
Poland	0.5	0.5	0.6	0.7	0.7	0.8	0.7	0.7	0.7	0.6	0.6
Portugal	:	:	1.1	1.2	1.2	1.2	1.3	1.3	1.2	:	:
Romania	:	:	:	:	:	0.5	0.5	0.7	0.6	0.6	0.6
Slovenia	:	:	:	:	1.1	1.1	1.1	1.1	1.0	0.9	0.9
Slovakia	:	1.5	1.5	1.6	1.8	1.9	1.7	1.7	1.6	1.5	1.6
Finland	0.5	0.5	0.5	0.5	0.6	0.6	0.7	0.7	0.7	0.6	0.7
Sweden	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.7	0.7	0.7
UnitedKingdom	:	:	0.8	0.8	0.8	0.9	0.9	0.9	0.9	0.9	0.9
EuropeanUnion	0.8	0.9	0.9	1.0	1.0	1.1	1.0	1.1	1.0	1.0	1.0
EuroArea	0.8	0.9	0.9	1.0	1.1	1.1	1.1	1.1	1.1	1.1	1.1

Public Expenditure on pharmaceuticals as a % of total current health expenditure

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium	8.4	8.6	:	:	:	8.9	9.2	9.3	9.1	9.2	9.7
Bulgaria	:	:	:	:	:	10.1	8.5	7.6	7.7	7.2	:
CzechRepublic	22.5	18.6	18.9	18.8	19.1	19.1	19.6	19.4	16.6	14.7	12.9
Denmark	4.5	4.4	4.4	4.6	5.0	5.3	5.1	5.0	4.9	5.0	:
Germany	9.5	10.0	10.2	10.9	11.2	11.2	10.3	11.6	11.4	11.9	11.9
Estonia	:	8.1	10.2	13.3	14.0	10.9	11.8	10.6	9.8	9.3	9.3
Ireland	8.5	8.9	9.6	10.0	10.5	10.8	11.6	12.2	12.9	13.6	13.5
Greece	10.1	10.6	12.5	12.4	13.4	14.8	16.4	16.3	17.9	20.4	:
Spain	15.7	16.0	16.1	16.2	16.7	17.6	17.0	16.6	16.2	15.8	15.5
France	10.2	10.7	11.3	11.8	11.8	11.9	12.0	12.0	11.7	11.7	11.2
Italy	8.9	9.5	10.3	12.7	12.1	11.2	11.1	10.5	10.4	9.7	9.0
Cyprus	:	:	:	:	:	5.5	4.5	5.0	4.6	4.8	5.2
Latvia	:	:	:	:	:	:	:	7.1	7.6	:	:
Lithuania	:	:	:	:	:	:	11.9	11.9	11.2	11.0	9.8
Luxembourg	:	9.6	9.0	9.0	8.7	9.2	8.8	8.6	8.6	8.4	8.5
Hungary	20.9	18.8	18.3	18.2	18.1	17.9	19.1	20.8	22.1	18.9	18.4
Malta	:	:	:	:	:	:	:	:	:	:	:
Netherlands	7.0	7.1	7.2	7.1	6.9	:	:	:	:	:	:
Austria	7.9	8.5	8.7	8.6	8.9	9.2	9.0	8.9	8.9	9.2	9.5
Poland	9.5	9.6	11.4	11.7	11.3	12.8	11.3	11.3	11.1	9.8	9.3
Portugal	:	:	13.1	13.7	13.6	13.1	13.3	13.1	12.7	:	:
Romania	:	:	:	:	:	8.6	8.6	13.4	11.6	12.3	11.6
Slovenia	:	:	:	:	13.6	13.3	13.3	13.3	13.3	12.5	11.7
Slovakia	:	26.5	28.6	28.6	31.7	33.3	26.0	24.5	22.7	20.3	21.1
Finland	6.9	7.6	7.5	7.8	8.1	8.2	8.5	8.6	8.4	8.2	8.5
Sweden	9.8	10.3	10.2	9.1	9.2	8.9	8.8	8.6	8.4	8.2	8.1
UnitedKingdom	:	:	11.6	11.6	11.7	11.6	11.4	11.1	10.9	10.7	10.5
EuropeanUnion	9.8	10.2	10.9	11.5	11.6	11.7	11.5	11.7	11.5	11.5	11.2
EuroArea	9.8	10.3	10.8	11.6	11.7	11.9	11.6	11.9	11.8	11.9	11.5

Source: Eurostat, OECD and WHO databases and Commission services calculations.

All these help explain the interest placed on pharmaceutical expenditure and pharmaceutical policies by policy makers. Many countries have implemented a variety of policies to control costs, ensure equitable access to affordable medicines and to support industry goals. These policies can be divided into demand side and supply side policies (see tables below). On the demand side policies are directed at patients, physicians and pharmacists. For patients, common policies include information and education campaigns and cost-sharing. For physicians policies include: information and education campaigns, prescriptions guidelines, monitoring and feedback of prescribing behaviour, prescriptions quotas, budgets and financial incentives. Policies directed at pharmacists include generic substitution, financial incentives and claw-back.

On the supply side policies include:

- product price regulation including external price benchmarking (price decision based on international prices) and economic evaluation;
- expenditure control including rebates, payback, price-volume agreements and risk-sharing arrangements;
- industry regulation including profit control and tax benefits;
- product reimbursement including reference pricing (also called internal reference pricing i.e. pricing drugs by reference to therapeutic comparators including generic drugs), positive and negative lists and economic evaluation for reimbursement price levels.

There are significant differences in the way these policies are used by Member States as can also be seen in the country fiches annexed to the Report (see also GÖG-ÖBIG, 2006 and 2008 in addition to previous references). In DE, for instance, the reimbursement of generics and some patent-protected drugs in outpatient care is limited by reference prices established nowadays for more than 70% of prescribed drugs. In addition, a new legislation addresses price-setting and reimbursement of patent-protected drugs, mainly by encouraging centralised bargaining between sickness funds and pharmaceutical companies based on cost-benefit evaluation.

One policy field which is gaining interest is that regarding generic medicines as a means to ensure cost-containment in relation to pharmaceuticals while increasing patients' access to care. A set of policies can be implemented to encourage generic uptake when products go off patent (see also Directorate General Competition, (2009) and the Pharmaceutical Sector Inquiry Report). These include policies directed at pharmacists such as financial incentives to pharmacists to ensure that pharmacists do not earn less by dispensing generics. For example, if pharmacists earn on a mark-up which is defined as a percentage of the ex-factory price they earn less if they dispense generics and have an incentive not to sell them. Specific mark-ups of neutral payments schemes to pharmacies can overcome this problem. Generic substitution and stock controls are other strategies. Policies directed at physicians include prescribing guidelines and generic prescription. For patients, cost-sharing arrangements can encourage the consumption of generics vis-à-vis more expensive drugs.

Health insurers or third party payers should on their part define the reimbursement levels and positive lists together with monitoring and feedback in relation to prescription guidelines. The recent pharmaceutical inquiry also concluded that strategies to speed up the entry of generics into the market once products go off patent are very important. These include simplifying administrative procedures and reducing entry fees.

Table 34 - Demand side policies

	<i>Physicians</i>							<i>Patients</i>			<i>Pharmacists</i>			
	Clinical practices /prescriptions Guidelines	Educational and information	Monitoring of prescribing patterns	Prescription quotas	Pharmaceutical budgets	Financial incentives	Other	Information education campaigns	Cost sharing	Other	Generic substitution	Financial incentives	Claw-back	Other
AT	✓	✓	✓			✓		✓	✓				✓	
BE	✓	✓	✓	✓		✓		✓	✓				✓	
CY											✓			
DE	✓	✓	✓	✓		✓		✓	✓		✓			
DK	✓	✓	✓					✓	✓		✓			
EE	✓	✓					✓	✓	✓					
EL			✓					Ⓢ	✓					
ES	✓	✓	✓	✓	✓	✓		✓	✓		✓	Ⓢ		✓
FI	✓	✓	✓					✓	✓		✓			✓
FR	✓	✓	✓					✓			✓	✓		
HU	✓		✓						✓		✓			
IE		✓	✓			Ⓢ		✓	✓			✓		
IT	✓	✓	✓					✓	✓		✓	✓	✓	
LT	✓			Ⓢ		Ⓢ			✓					
LV	✓	Ⓢ	✓	✓	✓			Ⓢ	✓		✓			
MT	✓	Ⓢ	Ⓢ							✓	✓			✓
NL	✓	✓	✓			✓		✓	✓		✓	✓	✓	
NO	✓	✓	✓	✓					✓		✓	✓		
PL		✓						✓	✓		✓		✓	
PT	✓	✓	✓				✓	✓	✓	✓	✓			✓
RO		✓	✓		✓			✓	✓		✓			✓
SE	✓	✓	✓		✓	✓		✓	✓		✓			
SK	✓	✓	✓	Ⓢ	Ⓢ			✓	✓		✓			
SI	✓	✓	✓								✓			✓
UK	✓	✓	✓		✓	✓		✓	✓			✓	✓	

✓ Currently applied

Ⓢ Once applied but discontinued

Source: In "Analysis of differences and commonalities in pricing and reimbursement systems in Europe", Jaime Espín and Joan Rovira, 2007.

Table 35 - Supply side policies

	Product price regulation							Control of expenditure					Industry regulation			Product reimbursement				
	Initial price decision based on clinical performance	Initial price decision based on economic evaluation	Initial price decision based on cost of existing treatments	Initial price decision based on cost-plus calculations	Initial price decision based on international prices	Controlled price updates	Other	Use of discounts / rebates	Payback	Price-volume agreements	Use of price-freezes and cuts	Other	Profit control	Tax benefits	Others	Reference Price System	Positive lists	Negative lists	Based on economic evaluation	Other
AT	✓	✓	✓		✓		✓	✓				✓					✓		✓	
BE	✓	✓	✓		✓	✓			✓		✓			✓		✓	✓		✓	
CY				①	✓								①		✓		✓			
DE								✓			①	✓				✓		✓		
DK							✓			①	①					✓	✓		✓	
EE		✓	✓		✓					✓						✓	✓		✓	
EL				✓ ①	✓	✓		✓			✓					✓	①		①	
ES	✓		✓	✓	✓	✓		✓	①	①	✓			✓		✓	①	①		
FI	✓	✓	✓		✓	✓	✓				✓						✓	✓	✓	
FR	✓		✓		✓			✓	✓	✓	✓						✓			
HU			✓		✓			✓	✓	✓	①			✓		✓	✓	✓	✓	
IE	✓	✓	✓		✓			✓			✓						✓		✓	
IT	✓	✓	✓		①	✓		✓	✓		✓		✓			✓	✓		✓	
LT					✓	✓						①				✓	✓		✓	
LV	✓	✓	✓			✓				✓						✓	✓		✓	✓
MT												✓			✓		✓		✓	
NL					✓						✓	✓			✓	✓	✓		✓	
NO					✓					✓	✓					①	✓	✓	✓	
PL	✓				✓											✓	✓		✓	
PT	✓	✓	✓		✓	✓	✓		✓	✓	✓			✓		✓	✓		✓	✓
RO					✓	✓		✓	✓		①		✓	✓		✓	✓	①		
SE	①	✓	①		①		✓	①		✓						①	✓		✓	
SK	✓	✓			✓	✓				✓			✓			✓	✓		✓	
SI		✓			✓	✓	✓				①	✓				✓	✓		✓	✓
UK						✓	✓		✓		✓		✓	✓				✓		

✓ Currently applied

① Once applied but discontinued

Source: In "Analysis of differences and commonalities in pricing and reimbursement systems in Europe", Jaime Espín and Joan Rovira, 2007.

Policy implications

To control expenditure growth while ensuring access and cost-effective use of a growing number of medicines, and allowing for innovation of health interventions will remain an important challenge in the coming decades.

Areas for improvement include (as adapted from OECD 2009b and the conclusions and Recommendations from the Pharmaceutical Forum (High-Level) (2005-2006,):

- a) generating and providing better access to quality information to patients, physicians and insurers and creating adequate incentives for physicians, pharmacists and patients to prescribe, dispense and use medicines adequately in consideration of volume and prices (through for example, information and education campaigns and prescriptions guidelines).
- b) improving pricing and reimbursement practices through a consistent package of supply and demand side practices which include price regulation, price-volume agreements and rebates, reference pricing and cost-sharing schemes.
- c) encouraging the use of generics by speeding the access of generics to markets, encouraging generic prescription, substitution and price competition.
- d) improving relative effectiveness assessment for pricing and purchasing decisions, through the use of agreed definitions and good practice principles and the exchange of information on effectiveness assessment to improve data transferability and availability.
- d) exploring the potential for risk-sharing arrangements to reduce the financial risk of new medicines when information on costs and effects is insufficient.
- e) considering whether there are opportunities for efficiencies in the distribution chain.

While ensuring cost-effectiveness in pharmaceutical consumption is important, it is essential to see it as only one part of the overall goal of increasing cost-effectiveness in the health system.

5.6. Information and monitoring, use of health technology assessment including cost-effectiveness information

Regular and comparable data, used appropriately, can improve access, quality and sustainability of health systems. Considerable progress has been observed in the last decade in the implementation of health information systems to improve data collection, notably through the widespread use of information and communication technology (ICT). ICT in health has allowed for better accounting and ordering systems, both at national and individual providers' level, for better patient follow-up during an episode of hospital care and a better patient follow-up more generally through better care coordination. It has allowed for better recording of providers' activity or prescribing behaviour and patients' consumption of care, to mention a few examples.

Recent ICT advancements in the health sector yield great potential for developing innovative solutions and business models for integrated health and social care (e.g. continuum of inpatient and outpatient care, home care tele-care). This more integrated approach to care delivery, including innovations in products, services and processes, will be further supported by the new European

Innovation Partnership (EIP) on Active and Healthy Ageing, to be launched in the beginning of 2011. The EIP aims to pursue elderly individuals' health and independent living goals, as well as to improve the sustainability and efficiency of health systems. Furthermore, the Partnership's objective is to foster innovation and turn the challenge of ageing into an opportunity - by improving health and quality of life of older EU citizens.⁸⁷ To do so, it will bring together Member States, regions and other stakeholders to overcome obstacles and fill in the gaps slowing down the innovation process from research to market in the area of active and healthy ageing. Thus, the EIP will build synergies and mobilise expertise and resources across Europe by linking all relevant initiatives and tools into a coherent and coordinated framework, and complement with new actions where necessary.

An additional challenge associated with data is to actually use it when available with the purpose of improving the system's performance. Indeed, in several countries there is a rich pool of information available but there is no mechanism in place to regularly assess it over time and across units with the purpose of identifying trends, good practices and areas for improvement, to assess performance in sub-sectors of care (primary, outpatient specialist care, hospital care), to compare outcomes vis-à-vis resources and see how cost-effective the overall system or each of its sub-sectors is, to identify the results of policy implementation and policy change, or to define public health priorities.

Given limited resources and growing demand for care, it is important that what is publicly provided/funded is safe (does not harm patients), is effective in achieving the objective of better health, and is cost-effective (resources are used appropriately to achieve better health). Health technology assessment⁸⁸ (HTA) can contribute to the assessment of different health interventions, and in doing so it can contribute to decisions regarding the definition of clinical guidelines and the set of goods and services publicly funded.

Many Member States (AT, BE, DK, FI, FR, DE, HU, IE, IT, NL, PL, PT, SE, UK) now have a central structure in place that is responsible for conducting or gathering information on HTA, including cost-effectiveness analysis of high cost equipment, pharmaceuticals and health interventions. For example in the UK, the National Institute for Health and Clinical Excellence (NICE) is an independent organisation responsible for providing national guidance on promoting good health and preventing and treating ill health.⁸⁹ In DE, the Federal Joint Committee (G-BA) assesses new methods of medical diagnosis and treatment following a standardised procedure according to the principles of evidence-based medicine.

However, such structure or department is still at a development stage in several Member States and is still missing in others. In some countries, HTA is conducted in a fragmented way, without a

⁸⁷ Its headline target is to increase a healthy lifespan (Healthy Life Years) by 2 years by 2020.

⁸⁸ Health Technology Assessment is a multi-disciplinary field of policy analysis that examines and summarises information about the medical, economic, social and ethical implications related to the use of a health technology – taken broadly to mean medicines, equipment and interventions – in a systematic, transparent, unbiased, robust manner. Its aim is to inform the formulation of safe, effective health policies that are patient focused and seek to achieve best value for money.

central coordinator that promotes, coordinates or finances HTA. This may limit the dissemination of information but may also have implications for comparability and validity of the data used and conclusions obtained. These weaknesses are explained by a lack of administrative capacity and scientific know-how, especially in the case of small countries, where conducting HTA at national level may be currently too expensive.

HTA, though growing in importance, is still not commonly used in the EU to assess many high-cost equipment and health interventions. For a number of countries the decision on which medical procedures to include in the benefit basket is based on affordability, for others on both affordability and clinical effectiveness, and only a relatively small share of EU countries also takes into account a cost-effectiveness measure of interventions.

In this context, the EUnetHTA Collaboration process can help improving the current situation. The EUnetHTA Collaboration process was launched in 2008 and joins together government-appointed organisations from EU Member States, EEA and EFTA countries and a large number of relevant regional agencies and non-for-profit organisations that produce or contribute to HTA. It aims to encourage a wider and more systematic use of HTA. To do so the EUnetHTA Collaboration process promotes good practice in HTA methods and processes through the diffusion of common methodological and process standards and common review processes. It encourages the use of best available evidence, facilitates access to existing expertise and knowledge sharing across Europe and adaptation to national contexts.

⁸⁹ On their website, NICE presents a set of guidelines that can induce/have induced substantial cost savings in the sector: <http://www.nice.org.uk/usingguidance/benefitsofimplementation/costsavingsguidance.jsp> . NICE also produces the "do not do" guidelines to improve cost-effective delivery of services.

Policy implications

Authorities need information on health status to define public health priorities. They need information on inputs (staff, equipment) to understand if they are over or under capacity or if resources are well distributed. They need information on processes to understand for example if treatment guidelines are being implemented. Authorities need information on outputs and outcomes to assess whether inputs are being used in a cost-effective manner or can produce a better value. They need information to understand weaknesses and strengths of the system.

In addition, regular and comparable data is necessary to ensure the coherence in the governance of the system. If authorities wish to encourage improvement in the quality of health services through free patient choice of provider, comparable and reliable information on at least the most comparable aspects of providers' activity should be publicly available to patients. This way, patients are able to exercise choice and choice plays the incentive role it is expected to play.

If authorities want to improve providers' performance through contracting based on activity and quality of care and/or through performance-related remuneration, they need to ensure that they, or buyers/purchasers of care acting on their behalf, have access to that information on activity and quality so that contracting can encourage good performance. For many Member States improving the purposeful use of data remains a priority for the near future.

In addition, if authorities want to improve patient follow-up and coordination between types of health care and between health and social care, they also need to have mechanisms in place so that information can flow across providers. A few Member States have such mechanisms in place but for many its implementation is still lacking.

Authorities need to gradually increase the use of HTA to help/support defining the benefit package, the extent of cost-sharing, the number of high-cost equipment units, or clinical guidelines, as well as monitoring its compliance across providers. However, this requires acquiring diverse scientific skills and expertise and is therefore a gradual process. The EUnetHTA Collaboration process can help providing essential support to enhance the use of HTA.

5.7. Health status, health behaviour and health promotion and disease prevention policies

For the EU as a whole, life expectancy at birth for the whole population has consistently increased in the past decade (about 2.2 years from 1998 to 2008). This increase in longevity has been accompanied and explained by a decrease in infant mortality (from 6.6 per 1000 in 1998 to 4.3 per 1000 in 2008) and in premature mortality – mortality by all causes before the age of 65 – (from 255.4 in 1999 to 215.1 per 100000 inhabitants in 2007).

There are, however, large differences between men and women in life expectancy and premature mortality with women expected to live longer than men (82.2 years vs. 75.8 years) and more men dying before the age of 65 (standardised death rate of 293.2 vs. 139.2 per 100000 inhabitants).

Moreover, there are large differences between countries: a 13-year gap in life expectancy at birth for men between SE and LT, and an 8 year-gap in life expectancy at birth for women between FR and BG. For some Member States (LT, LV, EE, BG, RO, HU) men may expect to live less or 70 years of age i.e. 6 years or more less than the EU average. While the gap in female life expectancy is smaller than that for men, in LT, LV, BG, RO and HU women may expect to live 77 or 78 years of age i.e. 4 years or more less than the EU average. For some countries (LT, LV, EE, HU, RO, BG, PL, SK) premature mortality (especially in the case of men) remains high (in some more than twice as high as the EU average), and in BG, RO, LV infant mortality can be about or more than twice as high as the EU average.

Existing information suggests that, on average, the increase in life expectancy has been accompanied by an increase in healthy life years (the number of years spent in good health). However, a large gap between life expectancy and healthy life years at birth remains: in 2007 this gap was on average for the EU 20 years for women and 14.7 years for men. This gap is not necessarily decreasing and in the case of some countries it may have increased. This is the case of DK, IE, EL, ES, FR, IT, LV, NL, AT, PL, SI and SK for women, and DK, DE, IE, EL, ES, FR, IT, LV, NL, AT, PL and SK for men.⁹⁰

As with the other measures of health status, gender and cross-country differences can be observed for healthy life years. Typically, women live slightly more years in good health than men (62.3 vs. 61.5 years) although, as they live longer than men, men spend a higher proportion of their lives in good health (80.9% vs. 75.8%). There are also important differences between countries⁹¹: an almost 20-year gap between MT and SK for women and an almost 18-year gap between SE and LV for men. In some Member States (EE, LV, SK) men may expect to live 9 or 10 years less in good health than the EU average. In SK and LV women may expect to live 10 and 8 years less than the EU average.

A bulk of literature⁹² also demonstrates that large differences in health status (measured using a variety of variables including life expectancy, infant mortality, mortality, self-perceived measures of health, birth weight, height, prevalence and incidence of specific diseases, etc.) can be found within each Member State across socio-economic groups and regions.

While progress has been remarkable over the last decades in terms of life expectancy, infant mortality and premature mortality, thanks to living conditions and medical progress, one can observe some worrying trends in life-styles. Obesity, diet, alcohol consumption, smoking and lack

⁹⁰ As there is a break in the series from 2004 onwards when the EU-SILC began to be used for the computation of this variable, we have looked at both time series – pre and post 2004 – to try and capture a sort of trend in both periods.

⁹¹ Caution is needed as data is based on EU-SILC questionnaire and there were some differences in the way health related questions were designed and applied across countries. Moreover, cultural differences may influence the way patients self-report their health.

⁹² See e.g. the Joint Report on Social Protection and Social Inclusion, the Impact assessment associated with the Commission Communication "Solidarity in Health: Reducing health inequalities in the EU", Mackenbach, J. (2006) for UK Presidency, WHO and OECD work as mentioned previously.

of exercise are associated with the main causes of mortality and morbidity in the EU such as cardiovascular disease, cancer and dementia.

Available information shows that obesity rates, which are strongly related with diet and physical exercise, have increased significantly overtime and in the last decade: the share of the population that is obese has grown on average from 12.7% in 1998 to more than 15% in 2008.⁹³ An increasing trend is observed for all EU Member States for which there is more than one data point available, perhaps with the exception of IT and SK where values have been more or less constant in recent years. Large differences exist across countries: rates reach 18% or more in EE, EL, IE, LU, MT and UK but are about 10% in IT and SE.

Alcohol consumption has remained more or less stable for a decade at about 10.5 litres per capita although a slight increase may be discernible for the last 2-3 years. The above average hides some country differences in consumption: per capita consumption is above 12 litres per capita in CZ, EE, IE, FR, LT, HU, AT and PT but is less than 8 litres per capita in IT, SE and MT. Some countries show a reduction in consumption rates: BE, DE, EL, ES, FR, IT, MT, NL, AT, PT and SK, even if some of these still register high consumption rates (AT, FR and PT). An increase is observed in EE, IE, LT, PL, FI, UK and SE, although IE and SE may have seen a reduction in the last 2-3 years and EE in the last year.

In the EU, the share of the population 15+ that are daily smokers has seen a reduction from 27.7% in 1998 to 24.1% in 2008. This reduction is especially visible in recent years, which coincided with the introduction of a number of stricter policies such as smoking bans in public places and stricter selling or advertising rules. Available data suggests that all countries show an overall decreasing trend over the past decades, although in several countries ups and downs can be observed and/or the reduction is not so marked (BE, CZ, DE, EE, IE, EL, LV, LT, HU, AT, PT and SK). Some countries appear to have been relatively more successful in decreasing smoking rates over time (e.g. BE, DK, ES, SI, PL, SE and UK). Just as with alcohol consumption, there are important differences across countries: e.g. in SI and SE the percentage is below 19% while in IE, LV and NL it is equal or higher than 28% and in EL it reaches almost 40% (more than twice as much as in SI and SE).

Additional risk-factors are emerging such as the overconsumption of certain medicines (e.g. antibiotics) or non-compliance with treatments, which have resulted in bacterial resistance and have become a risk for health. Data suggests that about 50% of treatments are not taken correctly/as prescribed i.e. there is a failure to pick up and renew prescriptions, failure to take the medicines at the right time interval or abandonment of medication regimen. This is related to various causes that have to do with patient education/knowledge of health and health interventions, cost barriers, physicians' interest in the patient condition. However, this can have important consequences on health but also on expenditure.

⁹³ These averages are calculated on a small number of Member States as data is not available on an annual basis for all Member States.

The observed gender, cross-country and socio-economic gaps in health status, the gap between life expectancy and healthy life years and a pattern of life-styles that can have a negative impact on health status in the future pose important questions for policy including health policy.

As argued before, an improvement in the health status of the population that more than compensates for the longer lives could substantially reduce the potential increase in age-related expenditure in the future: living longer, dying at an older age and being healthy for much of a lifetime could lead to savings⁹⁴ and may be crucial in the context of an ageing society and longer working lives. Bad health, on the other hand, is seen to imply higher spending on health services and limit investment in other areas such as research or education. The above data shows that there is room for improvement in having healthier as well as long lives in the EU.

The differences in health status across countries, gender, regions and socio-economic groups provide grounds to investigate how effective and cost-effective health systems are in their role to promote population health and prevent disease. This has been accompanied in recent years by a greater focus placed on health promotion and disease prevention, that reaches all segments of the population and which would indeed deliver a longer span of healthier life.

Total and public expenditure on "prevention and public health services"⁹⁵ constitutes a very low share of total current health expenditure (respectively, 2.7% and 2.1% in 2008) and as a percentage of GDP (respectively, 0.3% and 0.2% in 2008). One argument put forward for this is that the time needed for the outcome to be recognised is long and is not necessarily fitting with political cycles.⁹⁶ Most of the expenditure on prevention and public health services is public, although in the case of NL and FI private expenditure is also significant. In the case of FI this is perhaps related to widespread occupational health offered by private companies. Again some cross-country variation is present: total expenditure on prevention and public health services is 0.4% of GDP in DE and NL and 0.5% of GDP in FI, but only 0.1% of GDP or less in IT⁹⁷, CY, LT and LU. In terms of share of total current health expenditure, which somehow indicates the relative importance of expenditure on prevention and public health services in relation to other types of care, total expenditure on prevention and public health services is 4% of total current health expenditure in BE, BG, HU and SI, 5% in NL and 6% in FI and RO, while less or equal to 1.5% in DK, LV, IT and CY.

Total expenditure on prevention and public health services as a percentage of total current health expenditure has slightly increased in the last decade, especially in recent years, which coincided

⁹⁴ If a large share of lifelong expenditure on health occurs on the last year of life and even in the last few weeks before dying, and per capita expenditure is lower at very old ages than in childhood, youth or working ages, then living longer, dying older and being healthy for most of one's lifetime could induce savings.

⁹⁵ The category of "Prevention and public health services" in the OECD health data comprises services designed to enhance the health status of the population as distinct from the curative services which repair health dysfunction. Typical services are vaccination campaigns and programmes. The category does not cover all fields of public health in the broadest sense because it excludes some broadly defined public health functions such as emergency plans and environmental protection.

⁹⁶ OECD (2010b), co-funded by the EC, collected evidence on the effectiveness of prevention. General results are available at the OECD Economics of Prevention webpage:

http://www.oecd.org/document/10/0,3343,en_2649_33929_38334282_1_1_1_1,00.html

⁹⁷ Note that SHA data produced by Italy in May 2010 puts total expenditure on prevention and public health services at 0.2% of GDP.

with a greater emphasis placed on health promotion and disease prevention. Prevention was one of the two themes of the last OECD Ministerial health committee (7 and 8 October).⁹⁸ Some countries show a rather constant pattern over time (SE, NL, SI, DE, RO, HU, BG at medium to relatively high values and IT and LT at constant and relatively low values).

Some Member States appear to be doing better than others and to have been more successful in improving life-styles than others. Some countries (e.g. BE, DK, ES, SI, PL, SE and UK) appear to have been relatively more successful than others in decreasing smoking rates over time for example. Vaccination rates and screening rates for cervical and breast cancer show large variations across EU Member States. Large variations are also observed for preventable mortality.⁹⁹

Table 36 - Public expenditure on prevention and public health services

Public expenditure on prevention and public health services as a % of GDP

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium	:	:	:	:	:	0.1	0.2	0.4	0.4	0.4	0.3
Bulgaria	:	:	:	:	:	0.3	0.3	0.2	0.2	0.3	:
CzechRepublic	:	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2
Denmark	:	:	:	:	:	0.2	0.2	0.2	0.2	0.1	:
Germany	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Estonia	:	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2
Ireland	0.1	0.1	0.2	0.2	0.2	0.2	:	:	:	:	:
Greece	:	:	:	:	:	:	:	:	:	:	:
Spain	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2
France	0.1	0.2	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.1	0.1
Italy	:	:	:	:	0.1	0.1	0.1	0.0	0.1	0.1	0.1
Cyprus	:	:	:	:	:	0.0	0.0	0.0	0.0	0.0	0.0
Latvia	:	:	:	:	:	:	:	0.0	0.2	:	:
Lithuania	:	:	:	:	:	:	0.1	0.1	0.1	0.1	0.1
Luxembourg	:	0.1	0.1	0.1	0.0	0.1	0.1	0.2	0.1	0.1	0.1
Hungary	0.2	0.2	0.2	0.2	0.2	0.3	0.2	0.2	0.2	0.2	0.2
Malta	:	:	:	:	:	:	:	:	:	:	:
Netherlands	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Austria	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Poland	:	:	:	:	0.2	0.2	0.1	0.1	0.1	0.1	0.1
Portugal	:	:	0.1	0.1	0.1	0.1	0.1	0.1	0.1	:	:
Romania	:	:	:	:	:	0.3	0.3	0.3	0.3	0.3	0.3
Slovenia	:	:	:	:	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Slovakia	:	:	:	:	0.1	0.1	0.1	0.1	0.1	0.2	0.2
Finland	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3
Sweden	:	:	:	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
UnitedKingdom	:	0.1	:	:	:	:	:	:	:	:	:
EuropeanUnion	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
EuroArea	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2

⁹⁸ http://www.oecd.org/document/41/0,3343,en_21571361_44701414_46099689_1_1_1_1,00.html

⁹⁹ See European Observatory on the Social Situation in Europe (2010) at <http://ec.europa.eu/social/main.jsp?catId=676&langId=en>

Public expenditure on prevention and public health services as a % of total current health expenditure

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium	:	:	:	:	:	1.3	1.7	3.7	3.7	4.0	:
Bulgaria	:	:	:	:	:	3.5	3.6	2.8	3.1	3.7	:
CzechRepublic	:	2.1	1.6	1.5	1.6	1.8	1.8	1.4	1.8	1.9	2.3
Denmark	:	:	:	:	:	2.4	2.5	2.3	2.3	1.4	:
Germany	2.5	2.6	2.7	2.7	2.8	2.9	2.9	2.9	2.9	3.2	3.2
Estonia	:	2.0	1.8	1.7	1.6	2.2	1.5	1.8	1.9	2.2	2.6
Ireland	2.2	2.5	3.7	4.0	2.6	2.5	:	:	:	:	:
Greece	:	:	:	:	:	:	:	:	:	:	:
Spain	0.9	1.0	1.2	1.2	1.3	2.2	2.2	2.2	2.3	2.4	2.3
France	1.5	1.5	1.5	1.5	1.4	1.5	1.4	1.4	1.4	1.3	1.4
Italy	0.5	0.6	0.6	0.6	0.7	0.7	0.6	0.6	0.6	0.6	0.7
Cyprus	:	:	:	:	:	0.5	0.4	0.5	0.5	0.5	0.6
Latvia	:	:	:	:	:	:	:	0.2	2.7	:	:
Lithuania	:	:	:	:	:	:	1.8	1.7	1.3	1.9	1.4
Luxembourg	:	0.9	1.0	0.9	0.7	1.9	1.6	2.3	1.9	2.0	1.9
Hungary	2.6	2.6	2.5	2.6	2.7	3.4	3.0	3.0	2.8	2.7	2.7
Malta	:	:	:	:	:	:	:	:	:	:	:
Netherlands	2.6	2.6	2.5	2.4	2.4	2.7	2.4	2.4	2.5	2.6	2.4
Austria	1.4	1.4	1.4	1.6	1.6	1.7	1.8	1.7	1.7	1.7	1.6
Poland	:	:	:	:	3.3	3.2	1.5	1.8	1.8	1.7	1.5
Portugal	:	:	1.5	1.4	1.5	1.3	1.2	1.2	1.2	:	:
Romania	:	:	:	:	:	6.3	5.8	6.2	5.2	6.5	5.9
Slovenia	:	:	:	:	2.9	2.8	2.9	2.8	2.8	2.9	2.8
Slovakia	:	:	:	:	1.9	1.7	1.9	1.3	1.9	2.1	2.0
Finland	3.0	3.0	2.9	2.9	3.0	3.0	3.1	3.2	3.4	3.7	3.6
Sweden	:	:	:	2.6	2.8	2.5	2.4	2.7	2.3	2.7	2.7
UnitedKingdom	:	1.9	:	:	:	:	:	:	:	:	:
EuropeanUnion	1.8	1.8	1.9	1.9	1.9	2.0	2.0	2.0	2.1	2.2	2.1
EuroArea	1.8	1.8	1.9	1.9	1.9	2.0	1.9	2.0	2.0	2.1	2.1

Source: Eurostat and OECD databases and Commission services calculations.

Policy implications

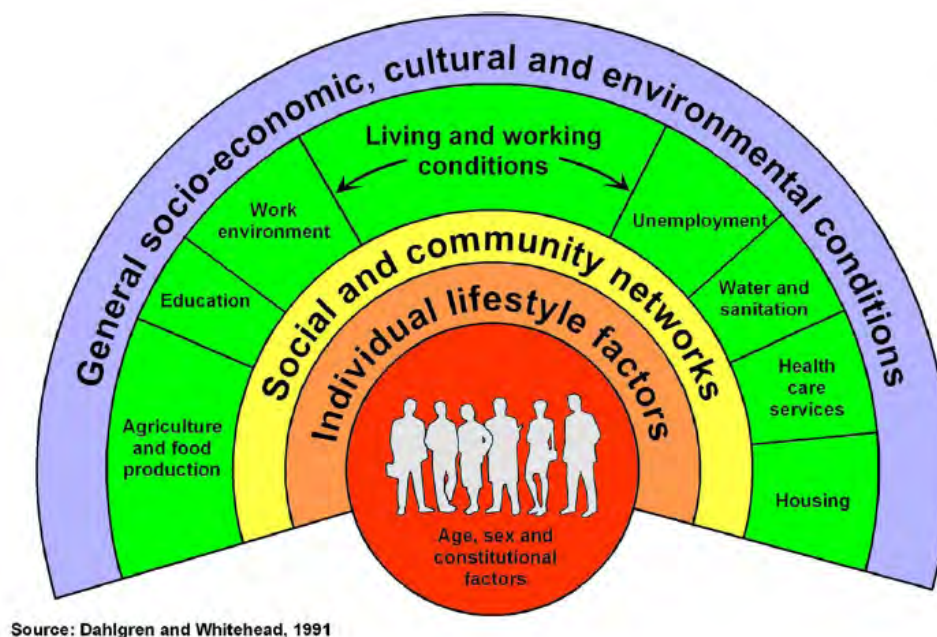
Whilst saving lives and restoring health may be one of the most important functions of the health system, more attention needs to be paid to preventing the onset of disease. In addition, to ensure a greater and effective adherence to health interventions may also have an impact on population costs and expenditure. This may be done with a greater use of ICT for patient follow up, a greater emphasis on care coordination and disease management and improved patient information.

The analysis suggests a number of reflections. Cultural habits aside, some Member States who appear to have been more successful have also given more priority to health promotion and disease prevention, spending more on prevention and public health services as a percentage of their resources. They have set public health priorities more explicitly, both nationally and sub-nationally. Some have introduced a number of health targets, implemented regular monitoring mechanisms and attributed more clearly the responsibility for the attainment of priorities and targets. In this view, the European Innovation Partnership on Active and Healthy Ageing may also provide further support for Member States in developing and implementing their strategies. However, given the specificity and targeted scope of the Partnership preliminary work activities would focus on disease prevention, health promotion, diagnosis and treatment addressing and combating aged related diseases (e.g. Alzheimer's, Parkinson's, comorbid conditions of chronic disease).

5.8. Social determinants of health: looking outside the health system

The model of Dahlgren and Whitehead (1993) (used also by the authors for WHO/Europe 1997) graphically shows that health is the result of a number of factors (and that differences in health are the result of systematic differences in the distribution of those factors). As can be seen many factors, in a variety of areas, can improve or harm health.

Graph 9 - Determinants of health and health inequalities



Source: Dahlgren and Whitehead, 1991

Source: Dahlgren and Whitehead (1993) and Dahlgren and Whitehead (1997) for WHO/Europe 2007

Health policies and health services availability and quality influence the likelihood of overcoming disease and avoiding mortality. However, there are many socio-economic determinants of health. These include a whole range of living and working conditions which can affect health through direct and indirect physical and psychological mechanisms. The lack of water and sanitation has an obvious link but the quality of the physical environment can affect health directly through other things like lack of central heating and insulation, exposure to dampness or the lack of green areas. Psychosocial factors such as negative life events and a combination of high effort and demands with a low reward and low control also contribute to one's health as does the lack of social networks.¹⁰⁰

Work environment can too have an impact on health. This includes not only the exposure to chemicals, accidents and physically hard work in the workplace but also job quality. Low physical pressure and stress, high decision ability and possibilities to develop new skills, a correct monetary reward and having prospects for personal progress contribute to good health status whereas lack of support at work and the feeling of job insecurity increase the risk of ill health, including depression. The link between type of work and health goes not only via income but also via the type of contract, method of work organization and occupational health and safety. While poor working conditions

¹⁰⁰ See <http://www.eurofound.europa.eu/pubdocs/2008/52/en/1/EF0852EN.pdf>

can have a negative impact on health, unemployment too is associated with an increased chance of poor mental health, social exclusion and suicide.

Education is an important direct and indirect determinant of health. Better education may mean better health literacy and better life-styles, more timely demand for care, better adherence to treatment. Education is also associated with better quality jobs and better incomes allowing for better living conditions and through that better health.

Economic growth can have a positive impact on health through its impact on the quality of jobs, levels of income and quality of living conditions and services of the whole society. Income distribution policies can have a positive impact on health of certain population groups via an increase in levels of income and quality of living conditions and services of those groups in particular.

Some factors operate over long periods: e.g. poor conditions in childhood can affect health later in life. Also, family socio-economic status (income, interest in education) can determine a child's education attainment, occupation, income and health. Maternal socio-economic deprivation is significantly associated with low birth weight and thus the person's health throughout his life.

Health-related behaviours e.g. quality of nutrition, level of physical activity, tobacco and alcohol use, sexual behaviour, themselves influenced by socio-economic and cultural factors, can explain part of the differences between social groups and between countries and areas.

Policy implications

As ill-health may be the result of a number of factors outside the health sector, but which the health sector has to tackle, to improve health systems financial sustainability also means to act upon the sources of ill-health therefore reducing the need for curative health services. This implies looking outside the health sector for cost-effective policies that can generate better health and reduce the demand for health services.

Measures to prevent ill-health are many fold. They can go from creating green areas and bike lanes to lifelong training and adult education or health and safety measures and occupational health practices at the workplace.

6. Main challenges ahead to contain costs and make the health systems more efficient

The previous analysis shows the complexity of health systems: their design can involve various sources of funding, types of provision and a multitude of actors that need to be integrated in a coherent framework, through regulation, contractual arrangements and decision-making procedures, in a context of ever changing socio-economic, demographic and technological conditions. As a result, health systems require attentive and regular policy attention in order to continuously adjust settings, decision-making flows and the incentive structures present in the system.

While Member States have implemented a number of reforms that aim to contain public spending and improve the way resources are used in the health sector, several challenges remain and there is room to improve the efficiency and effectiveness of health systems. This is particularly important when, in general, public spending on health is a large share of public budgets and GDP, and has been rising over time, often at a faster rate than GDP growth. This trend is, in fact, reinforced over the recent period when: a) GDP growth rates decreased and turned negative for the vast majority of Member States and are expected to be followed only by a timid recovery, and b) a number of Member States increased spending in the sector as part of their economic recovery programmes and the related fiscal stimulus.¹⁰¹

As a result of the severe economic crisis and a combination of reduced revenues and expansionary fiscal measures to support the recovery, many Member States have now a government budget deficit that goes well beyond the 3% of GDP, the threshold for excessive deficit procedures. As a consequence and from 2010, many Member States have adopted or will soon adopt fiscal consolidation measures which place restrictions on public expenditure and therefore on public health expenditure growth. Health spending would have to adjust to the available financial resources in systems that more directly depend on tax revenues.

The crisis has hit particularly hard a number of countries who, prior to the crisis and by EU standards, had a worse health status (lower life expectancy, higher premature mortality) and were spending a relatively small share of their GDP on health. Several of these have halted their plans to increase health expenditure as a share of GDP. Some have actually reduced planned and real expenditure in the sector.

Complex choices lay ahead. In addition to contain pressures for increased spending coming from ageing, technology developments, patient expectations, life-styles, globalisation, and climate change, the need to reduce public budget deficits and accumulating public debt puts countries in a difficult situation. They need to find additional revenues and control or reduce public spending, of which health spending constitutes a significant part, while continuing to ensure access for all to quality health services. This puts health systems in the spotlight and makes the need to increase cost-effectiveness in this sector more pressing. The economic situation further emphasises that the benefits of health care must outweigh its costs. It is known that public expenditure on health as a %

¹⁰¹ See Scherer, P. and Devaux, M., (2010, OECD).

of GDP or in per capita terms is associated with better health status. However, it is also shown that, for a similar level of expenditure, some countries appear to perform better (i.e. have better outcomes) than others. With all the usual caution that simple associations between inputs and outputs deserve, empirical analysis of efficiency in the health sector on one side, and the urgent need for fiscal consolidation on the other side, highlight the need for each Member State to assess the way its health system functions and find areas for improvement. “Spending on health should not be unconditional – rather it should always demonstrate value for money” (Thomson et al., 2009). This also points to the benefits of Member States looking at their peers to understand their success and find possible solutions that can be adapted to each national context.

Measures introduced in the last two decades aimed at improving value for money and slowing down the growth of health spending will likely need to be intensified or adopted by Member States in the immediate future and if the consolidation of public finances is to be achieved. Measures aimed at controlling expenditure growth include a wide range of measures, ranging from the simple cap on the overall health-care spending, to strict regulation of prices, labour and capital inputs into the sector as well as a variety of other incentives to users and providers. For example, in some countries the level of doctors or nurses (per inhabitants) is clearly far above the EU average and there may be scope for efficiency gains through a reduction in the overall supply of providers.

While the regulation of prices and wages can help contain costs in the short-medium run, their effectiveness can be eroded over time as suppliers circumvent price controls. Therefore, to ensure value for money in the system requires a combination of policies and their continuous adaptation to changing socio-economic, demographic and technological contexts.

It is difficult to draw general conclusions on the effectiveness of different types of cost efficiency measures, as much depends on the institutional structure of the systems concerned. However, based on the available empirical analysis and the extensive work carried out by international organisations, in particular by the OECD, this report identifies a number of areas where improvements could take place to increase the cost-effectiveness of health systems in the medium to the long run, as well as ensuring their long-term sustainability. Usual macro-type controls on resources and budgets need to be associated to incentive-based reforms, aimed at steering both demand and supply and enhancing micro-efficiency (see also OECD, 2009d). The main idea is that of letting micro-economic efficiency gains lead to higher macro-economic efficiency and ultimately to lower macro-spending on health (compared to the original growth rate).

Main measures include:

1. sustainable financing basis to the sector, a good pooling of funds and a resource allocation that is not detrimental to more vulnerable regions;
2. adjusting existing cost-sharing systems to ensure that they encourage a cost-effective use of care;
3. a balanced mix of different staff skills and preparing for potential staff needs due to ageing;
4. improving and better distribute primary health care services and reducing the unnecessary use of specialist and hospital care;
5. increasing hospital efficiency ;
6. cost-effective use of medicines while allowing for innovation in the health sector;
7. improving the general governance (coherence of decision-making and management) of the system;
8. improving data collection and information channels and using available information to support performance improvement;
9. using health technology assessment more systematically to help decision-making processes;
10. improvement in life-styles and access to more effective health promotion and disease prevention.

6.1. Ensuring a sustainable financing basis to the sector, a good pooling of funds and that resource allocation is not detrimental to more vulnerable regions

Measures can be undertaken on the financing side. While in some countries spending on health care has increased steadily over recent decades and is now at high level as % of GDP, some other countries (mostly recently acceded Member States: RO, EE, LT, PL, CY, LV, BG followed by HU and SK) spend a relatively small share of their resources (GDP) on health care by EU standards. In those where revenue and expenditure devoted to the sector must match every year (e.g. EE, LT), spending may be prone to large fluctuations when drops in revenues occur due to severe economic crisis. Limited resources may imply limited public coverage of services and goods, high levels of cost-sharing across all types of services, and/or long waiting times for surgery and/or extensive use of private (mostly unregulated) provision by a large part of the population that result in a large share of private expenditure.

In coming years, as the income and the expectations of the populations converge to those of richer EU countries, these countries will need to strike a better balance between the resources allocated to the sector and the demand for care. They also need to better coordinate private and public provision into the publicly funded system. In order to improve health sector financing, additional sources of funds to the sector may need to be considered (e.g. excise taxes, indirect taxes such as VAT) and/or to increase the revenue base to strike a better balance between the number of beneficiaries and the number of contributors. When bringing more resources into the sector, it is important to ensure pooling across time and risks. More generally, fighting tax evasion and reducing the informal economy, which may have increased during the economic crisis, can help generate additional and needed revenues.

Fighting tax evasion and/or obtaining additional sources of funds to the sector (e.g. excise taxes, indirect taxes such as VAT) apply more generally to other countries in the EU, especially in the current economic context.

A general concern regards the pooling and redistribution of funds across sub-national entities (regions or counties or districts or municipalities, depending on the country) responsible for the provision or purchasing of health services. Some regions/counties/districts/municipalities face more difficulties in raising revenue given the unfavourable population age structure or their economic activity but may face higher demand for health services due to the population age structure and morbidity/mortality patterns. If pooling is limited and resource distribution is weak, large disparities in terms of availability and quality of health services and goods across regions / counties / districts / municipalities can develop. Indeed, the more independent risks are pooled, the better the system is able to take good care of serious risks.

This could be reinforced by a sub-national structure of revenue collection to finance health services, if no redistribution mechanism is in place. In a large number of EU Member States, regional or local taxation revenue is used to complement central taxation revenue in the financing of the health sector. In some cases, national taxation is collected regionally. In compulsory social health insurance systems, social security contributions or risk premiums are sometimes collected at regional/district level or by different insurance funds. In such circumstances, countries need to have in place appropriate risk pooling and resource allocation /risk equalisation mechanisms.

Countries with a strong regional or local dimension and financed through taxation have put in place either a central Fund/Pool which gathers a part of the revenue collected regionally or locally to then redistributed across the regions/municipalities. In some social health insurance systems central pooling also takes place before redistribution. In other social health insurance systems a risk-equalisation formula is used to reallocate financial resources across funds. As the basis for such redistribution most Member States have been developing increasingly complex resource allocation formulas on the basis of population criteria (size, age, sex, mortality and morbidity rates). Some countries have supported these mechanisms with the establishment of an explicit basic package of care to be provided by all regions, the definition of minimum quality standards/requirements and the definition of clinical/treatment guidelines to reduce regional differences in service availability and quality.

These systems need now to mature and be fine-tuned so as to best to achieve equity in benefit packages, the fulfilment of the public insurance principles, the coherence of system governance and health system goals.

Good practices

- ***Search for new sources of funding and improve contribution collection*** (general income taxation, plus excise taxes and indirect taxes).

In SI a recently implemented revenue-related policy is directed towards more efficient recovery of contributions, changing the rules on inclusion of individual private entrepreneurs and partners in the compulsory insurance scheme.

- ***Define the minimum basket of publicly funded health goods and services.***

A number of countries (e.g. IT, ES) have defined the minimum basket of publicly funded health goods and services all regions have to provide or define explicitly the minimum benefit basket insurance funds have to provide to all patients (e.g. BE, NL, BG). In DE, a Federal Joint Committee – formed by the self-governing bodies of service providers and sickness funds – has wide-ranging regulatory powers to formulate and implement in detail which services will be provided and under which conditions within the benefit catalogue of the public health insurance.

- ***Define minimum quality standards to reduce variation***

The Quality Plan in ES.

- ***Introduce clinical/treatment guidelines to reduce variation***

In a number of countries (e.g. DE, LV, ES, EE) doctors' professional organizations, medical institutions and universities develop guidelines (in LV summarised in joint guidelines database, in ES they are compiled in the "Guia Salud"¹⁰²) to be used in doctors' everyday work with patients.

- ***Improve pooling of funds and resource allocation formulas***

In ES a balancing mechanism - the Fundamental Public Services Guarantee Fund - ensures sufficient and equal resources in terms of adjusted population to finance basic public services including health. In IT a balancing mechanism ensures sufficient and equal resources (*fabbisogno nazionale/regionale*) in terms of adjusted population to finance a minimum basket of health care services (LEA) over the entire national territory. In DE, a National Health Fund pools the income-related contributions of the members of the sickness funds and redistributes the contributions according to a morbidity-oriented risk adjustment mechanism.

6.2. Adjusting existing cost-sharing systems to ensure that they encourage a cost-effective use of care

Still on the financing side, many countries have already introduced in the past, to different degrees, some form of cost-sharing¹⁰³ that have shifted part of the financing directly to the users both 1) to raise finance/revenue to the sector and 2) send signals to patients either to encourage preferred/desired use of care or reduce the demand for certain health goods and services. Cost-sharing on purchases of pharmaceuticals is widespread due to the higher price elasticity of demand. It is also high for dental care and eye glasses, which sometimes are left outside the public basket health services and goods. Fees for general services provided by hospitals or doctors' consultations are also covered though to a lesser extent.

¹⁰² <http://www.guiasalud.es/home.asp>

¹⁰³ Cost-sharing stands for patients paying part of the costs for goods and services in the publicly funded basket. It typically takes 3 forms: co-payment which is a fix lump sum payment, co-insurance which is a share of the costs and deductible, a threshold up to which patients have to pay.

In the current situation of fiscal constraints and in view of demand pressures cost-sharing is likely to be used more extensively. Currently, most EU countries rely heavily on public finance and cost-sharing represents a very small amount of private expenditure. Using cost-sharing is also a hot policy issue because of the trade-off between equity and efficiency involved: charging patients may reduce unnecessary use of services but it may also reduce necessary use of services by low income groups who have a lower ability to pay or those with chronic or complex health conditions who would have above-average direct costs of care. This has raised patient equity issues associated with increased cost-sharing and Member States have all expressly agreed to further foster patient equity in their health policies. In addition, data shows that health expenses are highly concentrated, with about 5% of patients accounting for nearly half of all costs.¹⁰⁴ As a consequence, this raised concerns over cost-sharing's ability to induce revenues.

Nevertheless, while not realistically a major source of finance, cost-sharing can and should be used creatively as a signal of preferred behaviour (e.g. deterring non-attendance, choosing "preferred" providers, etc.). According to Smith, P. (2005) to achieve equity and efficiency, governments should subsidise services: a) that have high cost-effectiveness; b) for which charges would have a major impact on use (high price elasticities of demand) and c) that are used disproportionately by the poor. It is argued (Smith, P., 2009b, OECD) that countries should define a high quality health basket fully subsidised by public funds, based on cost-effectiveness criteria to a large extent. From that initial basket charges should be paid for not so cost-effective interventions (at different degrees and up to 100% of the costs depending on the degree of cost-effectiveness and the potential burden for the patient). While complementary insurance can be allowed, some small charges should not be covered by insurance - to signal preferred behaviour. Finally, appropriate measures (e.g. a system of exemptions) are needed to minimise the risks of negative impact in terms of equity, under-provision and lower quality of health services to the chronically ill, those more vulnerable and the less well-off groups of the population.

Good practices

In DE, the insured are obliged to contribute to the costs of their drugs by legally defined co-payments and the patient has to pay the additional cost, if the price of a generic drug is higher than the reference price. Yet, in order to minimise the risks of negative impact, the co-payment is limited to 2% of an annual household income (1% for the chronically ill). Health insurers may also exempt drugs from co-payment if they have contracted a discount with that pharmaceutical company.

¹⁰⁴ Stanton, M.W. and Rutherford, M.K. (2005) http://www.meps.ahrq.gov/mepsweb/data_files/publications/ra19/ra19.pdf and Avalosse, H., (2006).

6.3. Ensuring balanced mix of different staff skills and preparing for potential staff needs due to ageing

In the EU the number of physicians, general practitioners and nurses has consistently increase over the last decades (see Chapter 5). However, several Member States have relatively low numbers or report shortages in the number of practising physicians (especially GP) and nurses. This suggests that there may be important imbalances in the skill-mix of health staff in a large number of countries: BG, CZ, EL, CY, LV, LT, PL, PT, SK, SE, and to a lesser extent SI, DK, IE, HU and LU when considering the share of GPs, and BG, EE, IT, LV, LT, HU, MT, AT, PT and SK when looking at the nurses to physicians ratio.

Geographic disparities in the distribution of physicians or GPs are observed in many if not all countries, with typically the capital city offering a high concentration of health staff and rural, remote or less populated regions or municipalities having fewer or lacking staff. Interestingly, while almost all EU Member States regulate the number of students in medical schools, and some do so also by specialty, the location of physicians is regulated or financially encouraged in less than half of Member States (BG, AT, DK, DE, HU, IT, FR, RO, BE, ES and EL).

Relatively low numbers of GPs vis-à-vis other physicians or in some geographic areas may result in patients reporting difficulties in registering with a GP or a long-waiting time prior to a GP consultation. This, in combination with limited access to primary care after office hours, makes patients seek specialist and emergency care when not necessary (i.e. when in the presence of common illnesses). This may result in additional costs for the system through for example unnecessary consultations or unnecessary multiple medical tests. It can also result in higher costs to the patient if they seek private sector physicians.

In general in the EU, the difference between licensed and practising physicians or nurses is high (more than 100 physicians per 100 000 inhabitants), although some countries (RO, PT, SI, FI and PL) have a relatively small number of both licensed and practising physicians. These means that many have chosen to be professionally active elsewhere, perhaps attracted by a higher salary and easier working conditions in other sectors, or perhaps due to recruitment restrictions in the health sector. Relatively high numbers of licensed though not practising physicians means that there is room to implement policies related to career development opportunities and the use of monetary and non-monetary incentives (e.g. the attribution of responsibilities, flexible working arrangements), so as to retain and attract staff back into the sector. These may also be of policy relevance in face of the ageing of the health workforce.

The ageing of the health workforce is observable in all EU Member States. Available data indicates that, on average in the EU, more than 60% of all physicians have more than 45 years of age and about 25% have between 55-64 years of age. Ageing may affect the provision of health services and goods if it significantly reduces the number of practising physicians because a large number of physicians retire in the next decades and this is not compensated by young recruits or by bringing into the sector those who are licensed to practise but have chosen to be professionally active elsewhere. In a sector that is labour intensive and where wages constitute one of the biggest cost

items, a reduction in the number of practising staff may translate in cost pressures. Given the number of years (6+) to train a physician, Member States need now to prepare comprehensive human resources strategies for the medium and long-run in face of the ageing of the workforce.

In some Member States (e.g. RO, LV, LT, BG), staff migration to countries in need of qualified staff and offering higher wages than those of the country of origin poses an additional policy challenge for policy makers. Several countries pursue an active policy to recruit foreign workers (e.g. DK, UK, PT to a lower extent), a reasonable policy from the receiver's point of view, but one that can affect negatively the country of origin. In general, lack of practising staff, migration, uneven geographic distribution of staff and an unbalanced skill-mix, as a result of weaknesses in the planning of human resources for the sector, can place difficulties in ensuring an equitable, efficient, effective and cost-effective delivery of services.

Several strategies are at the disposal of Member States and many have recently started to implement them: using training mechanisms and regulations more actively as planning devices to adjust the skill-mix and the location of staff; working with financial and non-financial incentives in order to ensure sufficient numbers of practising staff and a more balanced mix of skills which is not detrimental to certain specialties or geographic areas.

Good practices

- ***Use staff regulation mechanisms as flexible human resources planning tools to ensure sufficient numbers of trained staff and a balanced skill mix:*** Some Member States (DK, FI, PT, SI) have increased the number of student places in medical schools. In LV there is a yearly revision of admitted number of students by specialisation to purposefully increase the number of residents in the specialisation of primary care family doctor. To attract necessary human resources, LV is implementing several activities to educate human resources of health care sector: improvement of general and professional knowledge and competences (e-health, health sector management, professional communication); requalification of medical personnel (doctor's assistant – nurse, midwife-nurse, etc.). It also provides an opportunity to gain specialisation for nurses and professional activities' renewal for nurses, doctors' assistants, midwives and other specialists, who have not been practicing for a longer time.

- ***Use regulation or financial and non-financial incentives to improve the geographic distribution of staff:*** Some countries are providing the doctors with additional financial or non-financial benefits to establish their practices in certain areas and performance-related bonuses to render the profession more attractive. In ES, primary health care staff is paid a capitation component of the salary which takes into account the demographic structure of the population covered by their services and another geographical dispersion component. In SI a scheme is in place for young GPs finishing their education to have their own patients while supervised by senior GPs. These young GPs will serve a smaller (one third of the standard) number of patients. The scheme aims to provide faster and more practical inclusion of young GPs into the working practice while decreasing GP shortages in remote areas and improving the accessibility to health services. In DE, an additional fee can be paid to physicians in under-supplied areas.

6.4. Improving and better distribute primary health care services and reducing the unnecessary use of specialist and hospital care

Encouraging the use of primary care remains a policy priority for many Member States. In a number of other countries, referral systems, whereby a GP/family doctor is the first point of contact when a person needs non-emergency care and acts as a gatekeeper/care coordinator to other types of care, are still in the early stages of development. This is the case of countries where, till recently, direct access to a freely chosen provider was the common practice, but it was felt that this resulted in an inefficient use of care (e.g. over- and unnecessary use of specialist and hospital care) with sometimes harmful consequences to patients (cost-ineffective). But even in countries where referral systems are theoretically compulsory, low numbers and uneven distribution of GPs and nurses and lack of primary care services after office hours render referral systems from primary to secondary care less effective. Patients bypass primary care and go straight to specialists' consultations if possible or to emergency services with the cost consequences just described. Still in a few other EU countries, a share of the population is not covered by health insurance, and gets only free access emergency treatment which reinforces this situation.

Ensuring a sufficient number of primary care physicians and nurses is fundamental for an effective combination of referral system and patient's choice of providers at each level of care. Choice of provider is seen as a way to encourage providers to improve their performance, while empowering patients, i.e. making patients part of the decision-making process that directly affects their health. Good choices require, in addition, appropriate access to indicators on providers' (e.g. health centres, hospitals) activity and quality of care which is currently lacking in many EU Member States.

To encourage the use of primary care it is also necessary to make it more attractive to both patients and physicians. It is important to match better informed patients and ever growing expectations with well trained primary care GPs and nurses. In addition, several Member States that use cost-sharing mechanisms should investigate if and how these can encourage primary care vis-à-vis other types of care such as hospital or emergency care when not necessary.

Moreover, GPs can be attributed the role of a care coordinator who defines an appropriate path of care together with the patient (particularly when dealing with chronic patients), takes care of patients' health promotion and disease prevention, ensures patient follow-up care after secondary care events, etc. GPs or primary care practices could then be partly rewarded for this role through a mix remuneration system that puts a wage premium on health promotion, disease prevention, disease management or treatment of vulnerable groups, for example. Only few countries have started to implement this policy.

To support care coordination, a number of ICT and e-health options (e.g. electronic medical file/record, e-prescribing) are available. However, such investment is costly in the short-term so that, under the present economic circumstances, the introduction of such systems remains a challenge for a number of countries. In a number of countries primary care practices could be better

equipped to conduct very basic surgical interventions so that patients would not have to be sent to hospitals.

To sum up, to have sufficient numbers of well trained primary care staff, adequately distributed across the country and to ensure effective referral systems and care coordination, while increasing patient choice, remains a significant policy challenge for the next decade for many EU countries.

Good practices

- *Use financial incentives to encourage patients to register with a GP/family doctor and to make use of a referral system*, for example by increasing the amount a patient is reimbursed for secondary specialist or hospital care if this has come as a result of a GP referral. In DE, sickness funds can offer financial incentives to their members for voluntarily enlist in gate-keeper-systems.

- *Increased opening hours in primary care health centres or have opened after-hours primary care centres or wards*. In LV family doctors' phone consultation service after family doctors' working time and on weekends is planned. In EE the family doctor phone consultation service is working daily for 24 hours. In IT coverage of primary care services in health centres is guaranteed over 24 hours, through the primary care out of hours (so-called "guardia medica")

- *Use more nurses in primary health care settings to pursue health promotion and disease prevention activities to compensate for lack of practising and licensed GPs*. In LV, to increase availability of primary care a second nurse has been introduced in family doctors' practices.

- *Introduce an element of performance-related payment when GPs act as care coordinators*. In EE and LV quality criteria are included in family doctors' remuneration and are taken into account when calculating funding for family doctors' practices.

- *Use cost-sharing or other financial mechanisms, which encourage the use of primary care in non-urgent circumstances*.

In IT unwarranted visits to emergency departments involve a fee, while in EE visits to emergency departments, which do not result with hospitalisation, may involve a co-payment.

- *Implemented ICT practices which support primary care staff in their role as the first point of access in the system and as care coordinator*.

In EE a nationwide electronic health record has been introduced. ES has introduced the electronic record within regions and there are pilots across the regions.¹⁰⁵ IT has introduced the patient e-card (*Tessera Sanitaria*) within regions. In DE, pilots have started in certain regions in order to prepare the nationwide introduction of the electronic health card.

- *Focusing on well-equipped and multidisciplinary primary care health centres (ES, PT)*

¹⁰⁵ ICT in the National Health System Ed. 2010
http://www.ontsi.red.es/articles/detail.action?id=4559&request_locale=en

6.5. Increasing hospital efficiency through increasing use of day-case surgery and concentrating some hospital services

To reduce the number of hospital beds whilst increasing bed use/turnover through a reduction in the length of stay and an increase in day surgery is another important challenge for the next decade for a large number of EU countries.

For the EU as a whole the number of acute care beds per 100 000 inhabitants has gone down significantly and consistently during the last 10 years (524.8 in 1987 to 353.1 in 2007), a trend visible in all Member States. However, there are still large differences across countries: the number of beds varies from 211 in FI and SE to 610.5 in AT. In general, high numbers of acute care beds reflect a tradition of using hospital care and in particular hospital inpatient care as the main care setting for most health interventions, a costly tradition that most Member States are trying to eliminate. The number and the share of hospital day case interventions vs. inpatient interventions is increasing but there is a large variation in the EU, ranging from less than 10% share in CZ, DE, CY, LT, HU, PT and SE, to more than 40% in BE, IE, NL, and UK. In addition, within the group of countries that show a limited use of day surgery, some have large numbers of inpatient discharges while others show a relative small number of hospital discharges overall, i.e. overall low hospital activity.

The analysis of the data and the comparison between resources and hospital activity suggest a number of shortcomings, which, if addressed, could improve hospital performance. In some countries, a larger number of beds and use of inpatient care relate to deficiencies in the provision of other types of care including primary care and outpatient specialist care that have not yet been fully addressed.

Other reasons for the low volume of hospital activity and for differences in the way inpatient and day case surgical procedures are used include the lack of access to and use of less-invasive equipment and surgery allowing for day-case procedures. This is a priority for the years to come, although the modernisation of hospitals is a costly procedure and it requires staff training so that the change from inpatient to day-case surgery is a gradual one. Yet another explanation is the lack of follow-up care at home or lack of long-term care or psychiatric care services. These two factors result in more patients following inpatient procedures, staying in hospital longer to recover, blocking acute care beds, and making other patients experiencing longer waiting times for non-urgent surgery.

Hospital activity may also be influenced by setting in place adequate financial incentives for hospitals. There is a wide variety of remuneration mechanisms from which to choose when paying or contracting hospitals for the delivery of hospital inpatient or day case care such as prospective budgets, per case/DRG, per diem, historic costs, bonuses for activity and outcomes. Some may be more effective in increasing hospital day case activity, while others (e.g. historic costs or per diem costs) encourage the use of inpatient care. Hospital activity can be influenced by the autonomy hospitals may have in managing their budget, plus the remuneration system of hospital staff (salary vs. fee-for-service, penalties for exceeding service thresholds), and the possibility for public sector

hospital specialists to practice in the private sector, balanced by, for example, the existence of monitoring mechanisms and enforcement of clinical guidelines on hospital interventions. Some countries appear to benefit from the introduction of some element of activity- and outcome-related remuneration to increase the overall volume of activity and reduce waiting times for non-urgent surgery. In others, remuneration is solely based on historic costs or per diem costs, which potentially encourages an excess of long inpatient stays when unnecessary and not necessarily encourages a constant update of procedures.

To find the right balance between hospital and other types of care, between inpatient and day case surgery, between discharges and readmissions will be a constant challenge in the next decade.

Finally, for some countries hospital inefficiency is associated with the duplication of publicly funded hospital services in small geographic areas, often as an effect of decentralisation, whereby all, often small regional or local governments, have to provide a full set of services. In some cases, duplication appears to be the result of past lack of planning, while in others it is perhaps the result of changes in transport and mobility which increases the pool of facilities with similar treatments at the disposal of patients. While this may be interesting to support patient choice it may make a number of (though not all) services cost-inefficient. The concentration of the provision of some services in a limited number of hospitals can help reducing costs without having too much negative impact on the range of treatments available at local level.

Good practices

- Combination of remuneration including an element of activity-based payment (per case/DRG payment) or activity and quality based element (pay for performance)

For instance, within the DRG system in DE, the law allows hospitals and sickness funds to negotiate reimbursement for additional costs in the form of a certain share of the respective DRG to be added or subtracted from normal payment in order to respond on the full diversity of facility-based services and patient types.

- National clinical/treatment guidelines for hospital treatment

- Monitoring of hospital activity and publication of data on activity and quality

In DE, hospitals have to publish a report on activity and quality every second year in an easily comprehensible manner for the public.

- Merging and specialisation of hospitals within geographic areas: ES is accrediting some hospitals and services as reference centres, services or units for specific diseases or procedures technologically very complex. At the moment there are 68 specialised services currently accredited that take care of 42 diseases and procedures. Accreditation is done by agreement in the Inter-regional council. In LV there is also concentration of day case services while developing ambulatory and home care services.

6.6. More cost-effective use of medicines while allowing for innovation in the health sector

In the context of medicaments, key EU objectives are to guarantee access to medicines at an affordable cost, ensure that they are safe and effective, and improve the quality and dissemination of information to citizens to enable them to make informed choices about their own treatment. These objectives are to be achieved along with the need to ensure innovation and competitiveness of the industry in EU, on one hand, and cost-containment of public spending on the other. Conflicting goals (social and health goals vs. industry goals vs. cost-containment goals) are present in this sector – patients and doctors appreciate innovation and access to medicines while for payers it may mean higher prices and expenditure which may mean good business opportunity for the industry – and therefore it is difficult to define a coherent pharmaceutical policy.¹⁰⁶ Moreover, these objectives are harder to achieve and trade-offs harder to balance under the current economic conditions.

New medicines regularly appear in the market creating a potential set of new interventions, which may increase the demand for care. As such, they may represent additional costs to the sector. However, innovation in this field also brings new medicines with fewer side effects, and change the methods to deliver care by allowing shorter treatments, or reducing the need for invasive and inpatient hospital treatment, which results in greater quality of life, especially for those with chronic illnesses, as well as potentially reducing the overall costs to the sector. In addition, the sector has seen an increase in the development of generic products which has contributed to less costly and more affordable medicines to patients and authorities.

Recent years have seen a large number of countries implementing policies to control directly and indirectly pharmaceutical expenditure. However, each Member State has its own unique mix of policies and there is significant variation in the number (presence or absence) of policies they implement. Policy areas to control spending include: direct price regulation, direct expenditure control, extent of coverage and cost-sharing, reference pricing for reimbursement, prescription guidelines, monitoring of prescription behaviour and other financial incentives related to the prescription of medicines, incentives to pharmacists, policies related to generic medicines, and information to doctors and patients.

A number of countries have developed treatment/clinical guidelines, in particular with reference to pharmaceuticals. However, even if existing, they are not necessarily compulsory, routinely monitored and accompanied with feedback or penalties to providers.

To control expenditure growth while ensuring access and cost-effective use of a growing number of medicines, and allowing for innovation of health interventions will remain an important challenge in the coming decades. Areas for improvement include:

a) generating and providing better access to quality information to patients, physicians and insurers;

¹⁰⁶ See Pharmaceutical Forum and the study funded by the European Commission (DG ENTR) "Analysis of differences and commonalities in pricing and reimbursement systems in Europe" by Espin and Rovira, 2007.

- b) improving pricing and reimbursement practices through a consistent package of supply and demand side practices which include price regulation and cost-sharing schemes and improving generic prescription;
- c) improving relative effectiveness assessment, through the use of agreed definitions and good practice principles and the exchange of information on effectiveness assessment to improve data transferability and availability.

Good practices

- *Use of ICT*

In ES, electronic medicament prescription is widespread in primary care for follow-up and avoiding over-prescriptions. PT has also adopted an electronic medicament prescription and on-line medical appointments. From the end of 2010 electronic prescriptions will be sent directly from doctors to pharmacies, increasing efficiency. EE started electronic medicament prescription this year nationwide for both primary and specialist care.

- *Use of generics drugs*

In ES generic medicaments increased after the reform of price regulation in 2003, from 8.9% of the prescriptions in 2003 to 23.8% in 2009 (an annual average increase of 25%) with a consequent reduction in expenditure. Autonomous communities are promoting generic medicaments as well. In PT, there is now “unit dose” drug sell, with prescription, on pharmacies and hospitals, in order to avoid waste and allow greater savings. In DE, reference prices using generics are established for more than 70% of prescribed drugs in outpatient care.

6.7. To improve the general governance (coherence of decision-making and management) of the system

While public expenditure on health administration and insurance in relation to GDP and total current health expenditure is typically small in the EU, there is considerable variation across countries (from 0.6% to 7.6% of total current health expenditure and from 0.1% to 0.7% of GDP).

Part of the explanation may be that a number of countries, both large and small ones, and with different levels of decentralisation or centralisation of responsibilities, may have in-built inconsistencies in decision-making. It can be unclear who is to buy which type of services, who buys high cost equipment and hospital beds, who is responsible for staff hiring and remuneration, for example.

In several EU Member States, decision-making is a complex process involving a wide range of actors. Such complex decision-making procedures have not always been accompanied by a clear definition of responsibilities and more than one of the many levels of decision-making is taking decisions on for example, staff numbers, equipment, numbers of hospitals and beds, health promotion and disease prevention. This is sometimes coupled with lack of managerial capacity and experience, lack of proper budgeting and accounting procedures, transparency and accountability of those in charge and weak information flows across levels of decision-making. A possible

consequence of such complex and decentralised decision-making procedures is that a large share of expenditure is retained by administration and the health insurance funds, rather than for the provision of health services and goods *per se*.

In other systems (DE, NL, BE), based on multiple independent or private health insurance funds, the complexity and additional administrative costs may be associated with the need to monitor costs, prices, contractual arrangements, activity, quality of services and market developments for example. This monitoring is particularly important in the context of competition between health insurers.

Recent decades have seen a decentralisation trend in the health sector, albeit with some recent readjustments in a number of countries. This has spurred much discussion on the advantages and disadvantages of decentralisation and in which circumstances the former (e.g. responsiveness to local needs, a better match between local needs and the set of services provided, and the transparency and accountability of health services and of those in charge) can outweigh the latter (e.g. diseconomies of scale and scope in the provision of services, weak pooling and redistribution of resources, variability in the availability and quality of health services). Several countries seem to have been quite successful in their decentralisation reforms and ensuring it is consistent with the overall cost-effectiveness of their health system.

This is likely due to the fact that independently of its level of centralisation or decentralisation and complexity, an optimal design of the governance of the system implies:

- a) clear and explicit setting of national overarching priorities and goals for the health system;
- b) a clear definition of responsibilities and strong coordination mechanisms;
- c) managerial capacity and experience;
- d) transparency and accountability of those in charge;
- e) good information flows across levels of decision-making;
- f) adequate and clear financing and budgeting mechanisms between central and sub-national governments and between sub-national governments, supported by the definition of minimum provision requirements and centralised standard-setting.

Countries which have been able to combine these elements may have been better able to ensure cost-effectiveness of their systems.

Good practices

- Reduce the fragmentation of the system and the dispersion of the decision-making process

Some countries (DK, SE, PT) have started to merge and reduce the number of regional health care agencies, integrating counties into a small number of regions, and merging municipalities, to create larger population and financing basis to increase the pooling of risks and explore economies of scale and scope. Others (IE, LV, DE, EE) have streamlined the number of health-related institutions by reducing the number of regional social health insurance offices, centralised social health insurance, or reduced the number of health-related institutes, organisations and departments.

-Decentralisation with clear definition of responsibility

In ES and IT, decentralisation has resulted in better accountability at regional level and a clear definition of responsibilities.¹⁰⁷

6.8. To improve data collection and information channels and to use available information to support performance improvement

Regular and comparable data, used appropriately, can improve access, quality and sustainability of health systems and is key to ensuring coherent governance of the system. Several countries still lag behind in their ability and institutional capacity to obtain routine information on many aspects of health services provision, such as health staff or equipment, health expenditure in particular areas, hospital admissions and discharges, clinical outcomes (readmission rates, survival rates), or patient satisfaction or experience with services, for example. Improving data collection remains a challenge for a number of countries.

An additional challenge is that, in countries where there is already a rich pool of information available, appropriate mechanisms are still needed to regularly assess the system over time with the purpose of identifying trends, good practices and areas for improvement. For many improving the purposeful use of data remains a priority for the near future.

To improve patient follow-up and coordination between types of health services and between health and social care, it is also important to have mechanisms in place that facilitate the flow of information across providers. While a few Member States have such mechanisms in place, for many their implementation is still lacking.

¹⁰⁷ Garcia Armesto, S., et al., (2010)

Good practices

- Develop health information systems

Develop a set of common indicators on various dimensions of performance (IT, NL, ES, UK, PT) on the basis of international and European databases and common indicators such as the European Community Health Indicators (ECHI)¹⁰⁸ or the common indicators under the social OMC.

- and make regular assessments of the health sector on that basis

NL is making regular use of the information by publishing and assessing a set of comparable indicators across hospitals and physicians. Other countries (DK, SE, UK, DE) publish and use this information to support choice and/or contracting and/or remuneration of providers or even to encourage providers peer reviews (UK, others...). EE and ES have improved the use of ICT at consultation level (electronic prescriptions and health records). PT has also adopted electronic prescriptions.

6.9. To use health technology assessment more systematically to help decision making processes

Given limited resources and growing demand for care, it is important that what is publicly provided/funded is safe, is effective in achieving the objective of better health and is cost-effective. Health technology assessment (HTA) can contribute to the assessment of different health interventions, and in doing so it can contribute to decisions regarding the definition of clinical guidelines and the set of goods and services publicly funded as it is done in a small number of countries.

While many Member States now have a central structure in place that is responsible for conducting or gathering information on HTA, such structure or department is still missing in others. This is explained by the current lack of administrative capacity and scientific know-how, especially in the case of small countries, where conducting HTA at national level may be currently too expensive. In other countries some HTA is conducted at various levels but in a fragmented way, without a central coordinator that promotes, coordinates, or finances HTA. This may limit the dissemination of information but may also have implications for comparability and validity of the data used and conclusions obtained.

HTA, though growing in importance, is still not commonly used in the EU to assess many high-cost equipment and health interventions and only a relatively small share of EU countries also take into account a cost-effectiveness measure of interventions. Therefore, to gradually increase the use of HTA to contribute to decisions regarding the definition of the benefit package, the extent of cost-sharing, the number of high-cost equipment units or clinical guidelines, as well as monitoring its compliance across providers, remains a major challenge for most of the EU Member States.

In this context the EUnetHTA Collaboration process can provide useful and needed support to encourage a wider and more systematic use of HTA.

¹⁰⁸ http://ec.europa.eu/health/indicators/indicators/index_en.htm

Good practices

- *Appropriate use of HTA*

Many countries have created an organisation that conducts, coordinates and gathers funding for health technology assessment. A number of countries use HTA to help define the public benefit basket (ES, DE, UK), cost-sharing and reimbursement schemes. Some have developed treatment/clinical guidelines, in particular with reference to pharmaceuticals. In LV there is a medical equipment joint register and medical equipment adequacy assessment and a surveillance system is used. In DE, the German Agency for Health Technology Assessment (DAHTA) and the Institute for Quality and Efficiency in Health Care (IQWiG) examine objectively the advantages and disadvantages of medical services for patients and, thus, support the work of the Federal Joint Committee (G-BA) to define the benefit catalogue.

6.10. Improving life-styles and access to more effective health promotion and disease prevention

In general, the increase in life expectancy has been accompanied by an increase in the number of years spent in good health (healthy life years). However, a large gap between life expectancy and healthy life years remains: on average this gap was about 20 years for women and 14.7 years for men in 2007. This gap is not necessarily decreasing and it may have increased in about half of the EU countries. In addition, differences between countries can reach almost 20 years for women and 18 years for men. This warrants attention because an improvement in the health status of the population that compensates for the increase in longevity could substantially reduce the potential increase in age-related expenditure in the future. The gaps indicate that, in some countries, an important part of the working population may face activity limitations due to ill-health with negative implications to labour market participation.

This is most important as one can observe somewhat worrying trends in life-styles, which may have a negative impact on health status in the future. Obesity, unhealthy diet, alcohol consumption, smoking and lack of exercise are associated with the main causes of mortality and morbidity in the EU, such as cardiovascular disease, cancer and dementia. Additional risk-factors are emerging such as the overconsumption of certain medicines (e.g. antibiotics) or non-compliance with treatments, which have resulted in bacterial resistance and have become a problem for health services.

Therefore, to accompany the increase in longevity with an increase in the number of years spent in good health and improving the health of those less well-off remains a policy challenge with potential significant repercussions on future expenditure trends. Focusing more strongly on developing effective health promotion and disease prevention actions that reach all segments of the population is put forward as one of the means to improve health.

The structure of health expenditure suggests that countries still pay relatively little importance to health promotion and disease prevention compared to curative care. Some countries have only recently set their public health priorities more explicitly, while mainly devoting health reforms in

the recent past to curative care. Whilst saving lives and restoring health may be the most important functions of the system, more attention may need to be paid to preventing the onset of disease.

Ups and downs observed in several countries regarding life-styles may suggest that health promotion and disease prevention requires continuous adaptation and creativity so that campaigns and actions do not become obsolete with the general population. Information exchange may therefore be useful to understand what makes health promotion and disease prevention more effective/successful.

Against this background, there are a wide array of health promotion and disease prevention measures which authorities can and should make use of in many different settings (at work, in school, in health institutions): from public information campaigns on the media to excise taxes on tobacco, alcohol, or soft-drinks, from bans and tighter regulation on labelling, advertising and selling, to stricter road safety, from health education in school curricula to financial incentives to patients and providers.

Good practices

- National disease strategies

National strategies for several chronic diseases, diabetes, cardiovascular diseases, cancer, chronic mental disease, etc (ES, PT) as well as communicable diseases such as HIV/AIDS (LV, EE) and tuberculosis (EE). In DE, so-called "disease management programs" (DMPs) include financial incentives for service providers as well as for sickness funds to focus on the treatment of chronically ill.

Improvements in road safety, legislation and advertising campaigns (ES, PT).

- Early detection and education campaigns

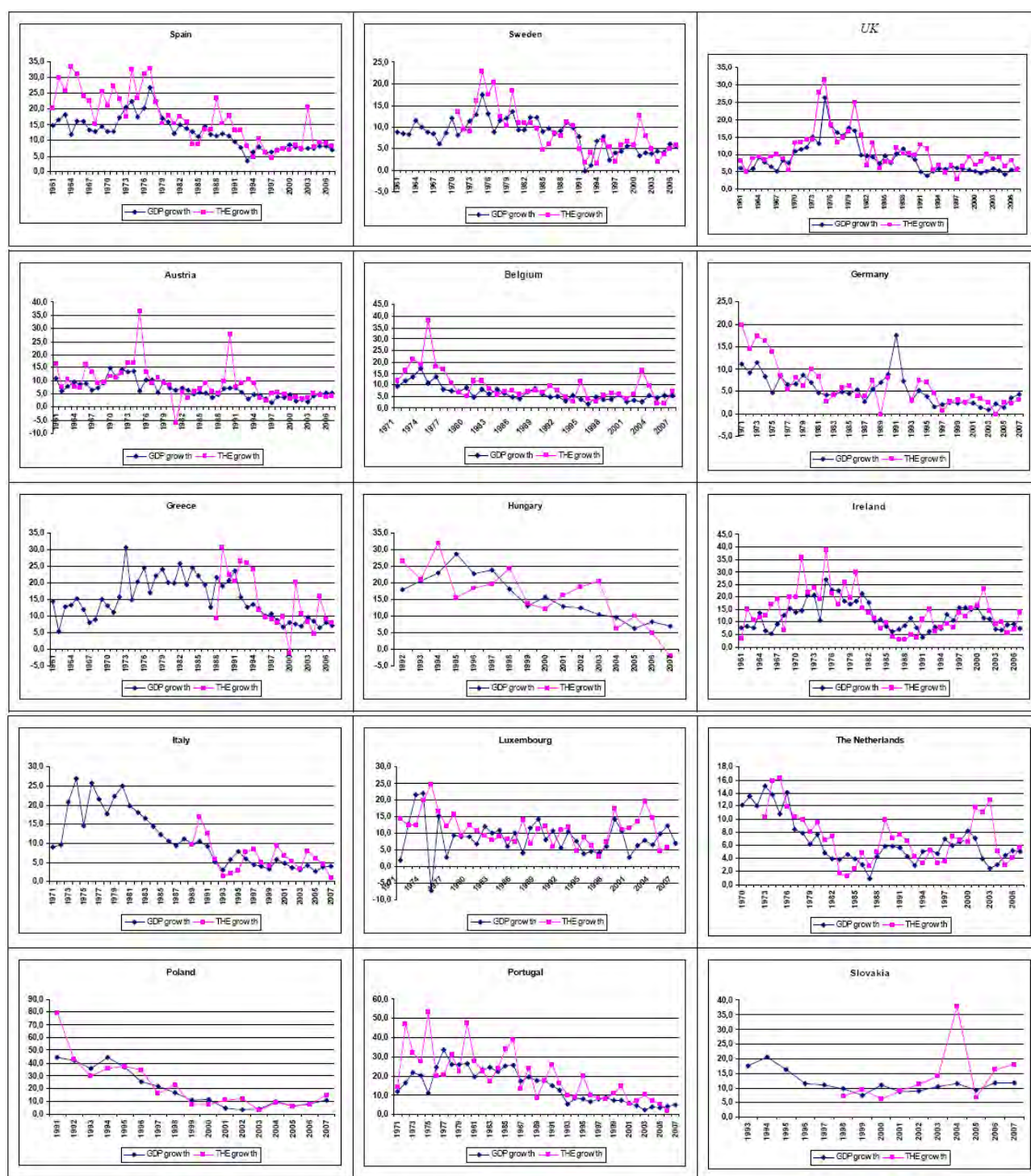
Cancer early detection campaigns (e.g. breast cancer, cervical cancer, colon cancer) (ES, LV, DE, EE and PT). Campaigns to limit smoking and alcohol usage.

Health care provision in mobile health units allowing to specific population groups with financial restrictions and difficulties in accessibility to have access to health care services (PT).

Education improvements regarding self-medication, anti self-medication campaigns and the adaptation of packages to each dose prescription (ES), guidelines for healthy nourishment (LV).

The new EU Directive Organ donation and transplant: will adopt the Spanish model, proved to be highly effective, doubling EU donations.

Annex 1: Health expenditure growth vs. GDP growth¹⁰⁹



¹⁰⁹ Joint Report on Social Protection and Social Inclusion (2010)
<http://ec.europa.eu/social/main.jsp?catId=757&langId=en>

Annex 2: Efficiency and effectiveness concepts and efficiency analysis

What is meant by effectiveness and efficiency?

There are various definitions of efficiency. For example, one notion of efficiency often used by policy makers is that of "the extent to which objectives are achieved in relation to the resources consumed" (Jacobs et al., 2006). This notion corresponds to the economic notion of cost-effectiveness and the popular notion of value for money.

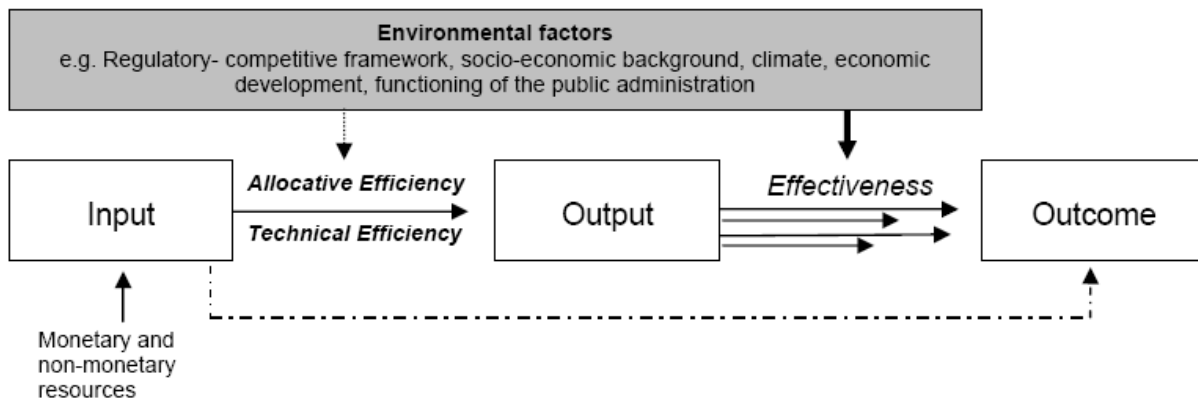
In general in economics, the notion of productivity of a producer refers to a ratio of its output(s) to its input(s) and productivity growth becomes the difference between output growth and input growth (Fried et al., 2008). Productivity is therefore seen as a residual and since Solow (1957) much analytical effort has been made to estimate that residual. Variations in productivity can be due to differences in production technology, scales of operation, operating environment and operating efficiency (OECD, 2001).

The notion of efficiency also describes a relation between input and output using two concepts: technical efficiency and allocative efficiency. Technical efficiency is defined as the situation where it is impossible for a production unit to produce more outputs with the inputs it is using at the current know-how /the existing technology. It refers to the idea of avoiding waste: maximising output for a given amount of inputs; or minimising inputs for a given output. In other words, the greater the output for a *given* input or the lower the input for a *given* output, the more efficient the activity is. According to the OCED a firm is technically efficient if it produces the maximum output possible given the level of inputs employed and existing technology. Hence, technical efficiency is about getting the most production possible from available resources i.e. you do not waste resources. It is a measure of the ability of an organization to produce the maximum output (of acceptable quality) with the minimum of inputs including time and effort. One company is said to be more (technically) efficient than another if it can produce the same output as the other with less inputs, *irrespective of the price factor*. Technical efficiency is about how well and quickly a machine produces high quality goods without considering the production costs (Financial times lexicon). The optimum here is defined in terms of production possibilities (Fried et al., 2008).

However, not every combination of inputs and outputs defined by technical efficiency may make economic sense in view of the costs and the benefits. Considering costs and benefits i.e. the ability to combine inputs and/or outputs in optimal proportions in light of prevailing prices (Fried et al., 2008) is captured by allocative efficiency. This involves weighting the inputs and outputs by their monetary values and taking into account consumer's preferences. Under this heading, two definitions are considered. A first concept is that of input allocative efficiency: a firm uses the right mix of inputs in light of the relative price of each input (Kumbhaker and Lovell, 2000). This is a measure of the ability of an organization to produce its product at the lowest possible cost. The second concept is output allocative efficiency: a firm produces the right mix of outputs given the set of output prices (Kumbhaker and Lovell, 2000). Allocative efficiency occurs when there is an optimal production and distribution of goods and services.

Finally, effectiveness relates the input or output to the final policy objective (or the outcome). The choice of outcome is directly influenced by political/societal choice. The effectiveness concept therefore refers to the broader assessment of the success in the use of public resources for achieving a given set of objectives.

Graph 10 - Efficiency vs. effectiveness



Source: EPC-EC (2008), *The Quality of Public Finances*

Efficiency analysis

Efficiency analysis, dating back to Koopmans (1951), Debreu (1951) and Farrell (1957), who were some of the first to address the question of how to measure efficiency and to highlight its relevance for economic policy makers, is concerned with measuring the competence with which inputs are converted into valued outputs (for surveys see Coelli et al., 1998; Kumbhakar and Lovell, 2000; Murillo-Zamorano, 2004; Fried et al., 2008). Koopmans provided a formal definition of technical efficiency: a producer is said to be technically inefficient when it can produce the same amount of output with less than at least one input, or when it can produce more of at least one output with the same amount of inputs. Debreu and Farrell provided a (mathematical) measure of technical efficiency.

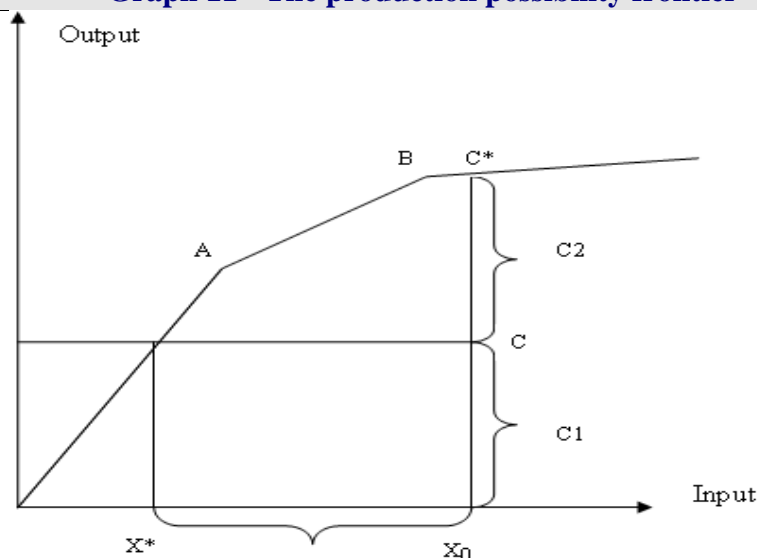
Efficiency analysis typically looks at a decision-making unit (e.g. a hospital in the case of the health sector). This unit consumes a certain set of inputs at a cost and produces outputs (with a value) through a certain technology i.e. production function which determines a production possibility frontier. The frontier production function or production frontier represents an ideal: the maximum output attainable given a set of inputs. Under this analysis, a technically efficient decision-making unit is one which is producing along that function i.e. that lies on that frontier. An inefficient unit on the contrary lies somewhere below or within that frontier.

The following figure illustrates the simple case of one input and one output. Units A and B are on the production possibility frontier and are therefore efficient. Unit C is inefficient as, with the current input, it produces only the amount C1 of output. For the unit to be efficient (and be on the frontier) with the current level of input, the unit production (output) should increase by C2 units and arrive at point C*. The ratio $C1/(C1+C2)$ is a measure of the unit's output efficiency level. One can also look at efficiency from the input perspective and ask how much input is "being wasted" to

produce the level of output given by C. The amount of input the decision-making unit could save is the distance between X^* and X_0 .

In efficiency analysis (Fried et al., 2008; Jacobs et al., 2006), the function of outputs or of input costs, i.e. the production function, or its counterpart, the cost function, is the basis to estimate efficient behaviour and, as a consequence, the level of inefficiency of each decision-making unit. Cost functions are often used in efficiency analysis because they allow the analyst to consider a model with multiple inputs and multiple outputs by simplifying the input side of the production function (Greene, 2008). The cost function indicates the minimum cost that an organisation can incur when seeking to produce a set of valued outputs so that inefficiency is defined as the extent to which the unit's costs exceed those predicted by the cost function (Jacobs et al., 2006). The cost function combines all inputs into a single metric (costs) and it can be very useful when only aggregate measures of costs are available. However, for these reasons it does not allow us to understand if inefficiency is technical or allocative in nature (i.e. if the level of inefficiency - excess cost - of a unit is due to insufficient output given the amount of inputs or an inefficient combination of inputs given relative input prices). The output or production function gives the maximum output a unit can achieve given its mix of inputs. Inefficiency is therefore defined as the extent to which output falls below of that predicted by the production function.

Graph 11 - The production possibility frontier



Source: St. Aubyn, M. et al., (2009), "Study on the efficiency and effectiveness of public spending on tertiary education"

Broadly, the process of efficiency analysis involves a) measuring outputs and inputs (notably costs), b) the specification of a relationship between the two either through the estimation of a cost function (parametric techniques – stochastic) or through deriving a non-functional efficiency frontier (non parametric techniques) using mathematical programming techniques (envelopment techniques) and then c) measuring the distance between the output of each decision-making unit and the optimum predicted by the production function or the frontier. That distance or part of that distance is called inefficiency. When estimating a cost function, a decision making unit that lies on

the frontier is at the minimum cost of producing an output given the prices of the inputs (Greene, 2008).

Note that in conducting such an analysis we do not observe true potential but rather best practice and variation across units so that "efficiency" measurement is indeed about a best-practice frontier. We identify best practice producers and benchmark other producers against those deemed the best practice producers (Fried et al., 2008).

Annex 3: Institutional features of health systems

Table 37 - Exemptions from copayments

Country	Q16. Are there exemptions from copayments?	If Q16 = Yes								Q17. Share of population at least partially exempted from copayment	Q18. Exemption mechanisms prevent from paying copayments at point of care?	Q19. Share of households exposed to catastrophic health expenditure
		for those with certain medical conditions or disabilities	for those whose income are under designated thresholds	for beneficiaries of social benefits	for seniors	for children	for pregnant women	for those who have reached an upper limit for out-of-pocket payments	other			
Australia	Yes		X					X		missing	Yes	missing
Austria	Yes	X	X					X		11	Yes	0
Belgium	Yes	X	X	X	X			X	X ⁽¹⁾	14	No	8
Canada	Yes	X	X	X	X					missing	Yes	missing
Czech Republic	Yes	X	X	X	X	X		X	X	3	Yes	missing
Danemark	Yes	X			X	X		X		missing	Yes	0
Finland	Yes					X		X		24	Yes	1
France	Yes	X	X	X			X		X ⁽²⁾	18	Yes	missing
Germany	Yes	X	X	X		X				missing	Yes	missing
Greece	Yes	X	X	X			X			missing	Yes	2
Hungary	Yes	X								missing	Yes	missing
Iceland	Yes	X		X	X	X	X	X		37	Yes	0
Ireland	Yes	X	X	X	X	X	X	X		30	Yes	missing
Italy	Yes	X	X		X	X	X			missing	missing	missing
Japan	Yes	X			X	X	X	X	X ⁽³⁾	missing	Yes	missing
Korea	Yes	X	X	X	X	X		X		missing	Yes	3
Luxembourg	Yes	X					X	X		missing	missing	missing
Mexico	Yes		X							missing	Yes	8
Netherlands	Yes					X	X	X	X ⁽⁴⁾	11	No	0
New Zealand	Yes	X	X	X		X	X	X		missing	Yes	0
Norway	Yes					X	X	X		20	Yes	0
Poland	Yes	X							X ⁽⁵⁾	missing	Yes	missing
Portugal	Yes	X	X	X	X	X	X			55	Yes	missing
Slovak Republic	Yes	X	X	X	X	X	X			30	Yes	missing
Spain	Yes	X			X					24	Yes	0
Sweden	Yes	X				X		X		missing	Yes	0
Switzerland	Yes	X	X	X	X	X	X	X		1	No	missing
Turkey	No	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.		n.a.
United Kingdom	Yes	X	X	X	X	X	X	X		62	Yes	0

Source: In Paris, V., et al., (2010), "Health systems institutional characteristics: a survey of 29 OECD countries". OECD Health working paper No. 50, OECD 2010.

Note that in SI there are exemptions from copayments for those with certain medical conditions or disabilities, for those whose income is under a designated threshold, for beneficiaries of social benefits, for children and for pregnant women. The exemption mechanisms prevent from paying copayments at the point of care.

Table 38 - Responsibilities in decision-making

Country	Setting the level of taxes which will be earmarked to health care							Setting the basis and level of social contributions for health						Setting the total budget for public funds allocated to health				Deciding resource allocation between sectors of care						Determining resource allocation between regions					Setting remuneration methods for physicians						Defining payment methods for hospitals					
	Parliament	Central/federal gov.	Regional/state gov.	Local/municipal gov.	Collective social health ins.	Individual health ins.	Collective providers	Individual providers	Parliament	Central/federal gov.	Regional/state gov.	Local/municipal gov.	Collective social health ins.	Individual health ins.	Collective providers	Individual providers	Parliament	Central/federal gov.	Regional/state gov.	Local/municipal gov.	Collective social health ins.	Individual health ins.	Collective providers	Individual providers	Parliament	Central/federal gov.	Regional/state gov.	Local/municipal gov.	Collective social health ins.	Individual health ins.	Collective providers	Individual providers	Parliament	Central/federal gov.	Regional/state gov.	Local/municipal gov.	Collective social health ins.	Individual health ins.	Collective providers	Individual providers
Australia	X	X								X								X	X							X	X							X	X					
Austria								X	X								X	X	X	X					X	X	X	X				X	X	X	X					
Belgium	X	X						X		X	X	X			X		X	X			X	X	X			X				X	X	X		X						
Canada	X	X	X							X	X	X					X	X	X						X	X	X													
Czech Republic		X						X										X				X	X					X							X	X	X			
Denmark	X								X			X		X			X	X	X	X					X					X	X						X	X	X	
Finland	X			X				X				X					X			X					X	X			X						X					
France	X	X						X									X								X				X					X						
Germany	X							X			X							X							X									X						
Greece		X							X									X								X				X					X					
Hungary	X							X									X																X							
Iceland	X							X										X								X								X						
Ireland																																								
Italy	X		X							X	X							X	X															X	X					
Japan									X			X																					X		X					
Korea	X							X				X		X												X								X			X			
Luxembourg																									X				X				X			X				
Mexico	X							X									X	X			X	X			X	X		X	X	X				X	X		X	X		
Netherlands		X								X															X		X							X						
New Zealand	X							X											X							X								X						
Norway	X							X								X								X								X								
Poland	X							X	X	X	X	X					X								X				X						X					
Portugal		X						X									X								X									X						
Slovak Republic	X							X													X	X							X							X				
Spain												X							X																	X				
Sweden		X	X	X				X	X	X	X								X															X	X					
Switzerland			X							X																														
Turkey	X	X						X	X										X						X									X						
United Kingdom	X	X	X					X	X	X						X		X	X						X	X			X	X				X	X					

Source: In Paris, V., et al., (2010), "Health systems institutional characteristics: a survey of 29 OECD countries". OECD Health working paper No 50.

Please note that in IT "Setting the total budget for public funds allocated to health" is a responsibility of the Parliament, "Determining resource allocation between regions" is a combined decision between Regional and State governments, "Setting remuneration for physicians" is a share responsibility between Central and regional governments. In SI the Parliament and the central government are responsible for setting the level of taxes earmarked to the health sector and setting the level of social contributions for health. Together with local governments they also set the total budget for public funds allocated to health. The central government sets the remuneration for physicians.

Table 39 - Responsibilities in decision-making

Country	Financing new hospital building						Financing new high-cost equipment						Financing the maintenance of existing hospitals						Financing primary care services						Financing specialists in out-patient care						Financing hospital current spending						Setting public health objectives							
	Central/federal gov.	Regional/state gov.	Local/municipal gov.	Collective social health ins.	Individual health ins.	Collective providers	Individual providers	Central/federal gov.	Regional/state gov.	Local/municipal gov.	Collective social health ins.	Individual health ins.	Collective providers	Individual providers	Central/federal gov.	Regional/state gov.	Local/municipal gov.	Collective social health ins.	Individual health ins.	Collective providers	Individual providers	Central/federal gov.	Regional/state gov.	Local/municipal gov.	Collective social health ins.	Individual health ins.	Collective providers	Individual providers	Central/federal gov.	Regional/state gov.	Local/municipal gov.	Collective social health ins.	Individual health ins.	Collective providers	Individual providers	Parliament	Central/federal gov.	Regional/state gov.	Local/municipal gov.	Collective social health ins.	Individual health ins.	Collective providers	Individual providers	
Australia	X	X						X	X						X	X							X						X	X						X	X							
Austria		X							X							X				X								X		X	X	X	X			X		X	X			X		
Belgium	X	X						X						X	X						X							X		X					X	X	X							
Canada		X	X			X			X	X			X	X		X							X					X									X	X	X			X	X	
Czech Republic	X	X	X			X	X	X	X	X			X	X	X	X	X	X		X	X			X			X	X						X	X		X	X	X					
Denmark	X		X					X		X					X		X						X													X								
Finland			X				X			X					X			X																	X	X		X						
France				X								X							X																X									
Germany		X											X					X																										
Greece	X							X					X	X						X			X						X															
Hungary	X							X								X	X						X		X																			
Iceland	X														X		X						X		X					X						X	X							
Ireland	X							X							X																													
Italy	X	X						X	X						X	X							X	X						X	X					X								
Japan	X	X					X	X	X					X	X	X						X															X		X	X				
Korea				X								X									X						X										X							
Luxembourg	X										X							X								X									X	X								
Mexico	X	X		X	X			X	X		X	X			X	X		X	X				X	X		X	X		X	X							X							
Netherlands							X							X						X														X		X								
New Zealand ^(*)	X	X						X	X								X					X														X								
Norway		X							X									X						X												X								
Poland	X	X	X					X	X	X					X	X	X			X						X										X	X	X						
Portugal	X							X	X						X	X							X	X					X	X							X							
Slovak Republic					X								X														X									X	X	X			X	X		
Spain		X							X								X						X						X								X							
Sweden	X	X						X	X								X						X																					
Switzerland		X	X				X		X	X					X		X										X			X	X							X	X					
Turkey	X							X							X								X			X										X								
United Kingdom	X	X					X	X	X						X	X	X					X	X	X				X	X	X					X	X	X							

Source: In Paris, V., et al., (2010), "Health systems institutional characteristics: a survey of 29 OECD countries". OECD Health working paper No 50.

Please note that in IT, "Financing primary care service" is a shared responsibility of the regional and State governments. In SI the central government is financing new hospital building, new high-cost equipment and the maintenance of existing hospitals. Collective social insurance is responsible for financing primary care services; financing specialists in outpatient care, financing hospital current spending. The central government sets public health objectives.

Table 40 - Consequences of reaching (exceeding) health expenditure targets in the past five years

	Q70. Consequences of reaching spending target			Q71. Consequences of cost-containment pressure										
Country	Budget deficit created or increased	Social contributions, premiums or taxes increased	Cost-containment policies implemented	Increased waiting time for appointments with a PCP	Increased waiting time for appointments with a specialist	Increased waiting time for diagnostic care	Increased waiting time for elective surgery	Delisting of medical goods and services	Increase in patients' OOP payments or users' fees	Implementation of policies to promote purchase of private/voluntary health insurance	Increase in health care institutions' deficits	Reduction in physicians' fees	Partial refund to health insurance or the NHS from the pharmaceutical industry	Partial refund to health insurance
Australia										X				
Austria		X			X				X		X			
Belgium			X					X	X				X	X
Canada		X						X			X			
Czech Republic	X	X			X	X	X	X	X		X			
Denmark														
Finland		X	X						X					
France	X		X					X	X		X			X
Germany			X					X	X					
Greece	X								X		X			
Hungary	X		X		X	X	X				X			X
Iceland			X	X					X		X			
Ireland														
Italy	X	X	X		X	X	X	X	X		X			X
Japan														
Korea		X						X						
Luxembourg		X	X					X	X					
Mexico	X		X											
Netherlands	X	X	X									X	X	X
New Zealand			X											
Norway			X								X			
Poland	X	X	X		X	X	X							
Portugal			X						X					X
Slovak Republic	X								X					
Spain	X										X			
Sweden	X		X						X					
Switzerland									X		X			
Turkey	X		X					X		X				
United Kingdom														

Source: In Paris, V., et al., (2010), "Health systems institutional characteristics: a survey of 29 OECD countries". OECD Health working paper No. 50, OECD 2010.

In SI, the consequences of reaching (exceeding) spending targets included the implementation of cost-containment policies, resulting in increased waiting times for appointments with specialists, for diagnostic care and for elective surgery, as well as delisting of medical goods and services, an increase in out-of-pocket payments or user fees and an increase in health care institutions deficits.

Table 41 - Patient choice of provider

Country	Q39: Choice of a primary care physician	Q43: Choice of a specialist	Q44: Choice of a hospital
Australia	free	free	incentives
Austria	incentives	incentives	limited with exceptions
Belgium	incentives	free	free
Canada	free	free	limited with exceptions
Czech Republic	free	free	free
Denmark	limited	limited	free
Finland	limited	limited	limited
France	free	free	free
Germany	free	free	incentives
Greece	incentives	incentives	incentives
Hungary	free	free	free
Iceland	free	free	free
Ireland	free	incentives	incentives
Italy	free	free	free
Japan	free	free	free
Korea	free	incentives	free
Luxembourg	free	free	free
Mexico	limited	limited	limited
Netherlands	limited	incentives	free
New Zealand	free	limited	limited
Norway	free	free	free
Poland	free	free	free
Portugal	limited	limited	limited with exceptions
Slovak Republic	free	free	free
Spain	limited	limited	limited with exceptions
Sweden	free	free	free
Switzerland	free	free	limited with exceptions
Turkey	free	free	free
United Kingdom	limited	free	free

Source: In Paris, V., et al., (2010), "Health systems institutional characteristics: a survey of 29 OECD countries". OECD Health working paper No. 50, OECD 2010..

In SI, there is free choice of primary care physician, of specialist and of hospital.

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