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THE LONG-TERM SUSTAINABILITY  
OF EUROPEAN HEALTH CARE SYSTEMS

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# THE LONG-TERM SUSTAINABILITY OF EUROPEAN HEALTH CARE SYSTEMS

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## **Abstract**

Over the past thirty years, health expenditure has grown at a faster rate than the economy in almost every OECD country. The main drivers of public health spending are income growth, insurance coverage, demographics, and, above all, technological change. According to the projections of the major international institutions (European Commission, OECD, International Monetary Fund), public health spending for the of EU-15 countries could significantly increase by 2050. These projections vary in an extremely wide range, between +27% and +84%, depending on the assumptions made. However, the big challenge will be the growth of public spending on long-term care which could more than double over the 2010-2050 period, owing to the sharp rise of frailty and disability at older ages, especially amongst the very old (aged 80+) which will be the fastest growing segment of the EU population in the decades to come.

The European countries are facing a common challenge: the need to secure the economic and financial sustainability of their health care systems without undermining the values of universal coverage and solidarity in financing. Command and control policies aimed at expenditure restraints and largely operating through regulatory controls (controls over inputs and wages, budget caps, etc.) are widely used during periods of recession. They can hold expenditures down in the short term. However, they do little or nothing to moderate the underlying pressures which push health spending up over the long-run. Other policies to guarantee both economic and financial sustainability in the long-run should be explored: 1) the adoption of new regulation tools on supply and demand side; 2) a new balanced mix of public and private financing, strengthening the role of supplementary private health insurance, to allow investment and innovation, without imposing unsustainable burdens on public budgets and without denying care to the disadvantaged. The former policies focus on economic sustainability, improving the way health systems address the rise in chronic disease and seek to incentive and reward patients, providers and buyers for healthy behaviour, quality and efficiency of care. The latter policies could ensure long-term financial stability of the health care systems but may determine negative effects in terms of equity and, therefore, they must be carefully designed.

**Keywords:** health care expenditure; health care systems; projection models; sustainability; health care policy.

## Introduction

Over the past thirty years, health expenditure has grown at a faster rate than the economy in almost every OECD country. Focusing on the EU-15 countries, in the 1980–2009 period, the share of health care expenditure over the gross domestic product (GDP) has increased more than 50%. Several factors exert upward pressure on health spending, both on the demand and on the supply side: population expectations, increased incomes, population ageing, increased burden of chronic diseases and dementias, technological change, relatively higher labor intensity in the health care sector, and female labor participation. For most European countries, these factors will continue to drive health spending higher in the future. According to the projections of the major international institutions (European Commission, OECD, International Monetary Fund), public health spending for the of EU countries could increase between 40% and 60% by 2050, depending on the assumptions made.

Moreover, over the last decades, the solidarist bonds of public health protection systems of developed countries appear to have slackened, at least at the psychological level, and this has undermined the traditional pillars of public health care. The causes usually cited by scholars can be summarised as follows: a change in the economic environment with lower growth rates and the uncertainties caused by globalisation; the extension of health protection to therapeutic sectors increasingly distant from the core of necessary and sufficient treatment; the more visible individual responsibility for “diseases of affluence” due to voluntary behaviours increasingly remote from situations of poverty and social degradation. This development has generated a growing political debate on the relationship between individual responsibility and social solidarity, and on how to fund and organise health care systems in order to encourage more responsible behaviour.

According to this framework, the European countries are facing a common challenge: the need to secure the economic and financial sustainability of their health care systems without undermining the values of universal coverage and solidarity in financing. The challenge is even more salient for those countries (like Italy) which are characterised by high public debt levels.

Command and control policies aimed at expenditure restraints and largely operating through regulatory controls (controls over inputs and wages, budget caps, etc.) are widely used during periods of recession. They can hold expenditures down in the short term. However, they do little or nothing to moderate the underlying pressures which push health spending up over the long-run. Other policies to guarantee both economic and financial sustainability in the long-run should be explored along two main directions:

- a) the adoption of new regulation tools on supply and demand side (empowerment of primary care to enhance appropriateness; promoting integration between hospital and community services and between health and social care; fostering cost-effective technology adoption through health technology assessment; cost-sharing with carefully crafted exemptions; prioritisation of waiting lists; incentivising citizens’ healthy lifestyles);
- b) the implementation of a new balanced mix of public and private financing, strengthening the role of supplementary private health insurance, to allow investment and innovation, without imposing unsustainable burdens on public budgets and without denying care to the disadvantaged.

This contribution aims at analysing these issues, focusing on the European health care

systems. Firstly, it begins by clarifying the nature of the sustainability problem (section 1). It then examines and discusses the main projections of public health care expenditure for the European countries carried out by the OECD, the International Monetary Fund (IMF) and the European Commission's Ageing Report (section 2). Finally it explores some policy tools to secure both financial and economic sustainability of public health care expenditure in the long-run (section 3).

## **1. The sustainability problem: understanding trends in health care expenditure**

### *1.1 Economic and financial sustainability*

Over the past thirty years, health expenditure has grown at a faster rate than the GDP in OECD countries. In Europe the increase in health care expenditure has been mainly driven by the public component. In light of the widespread conclusion that spending cannot grow faster than GDP indefinitely, together with cost pressures and budgetary constraints brought about by current economic crisis, the main challenge facing the EU countries is to secure the sustainability of their health systems without undermining the basic values these share: universal coverage, solidarity in financing, equity of access and the provision of high-quality health care (Thomson et al., 2009). However, assessing how much public resources should be spent on health care at a given point in time can depend on two different notions of sustainability which are often confused: economic sustainability and fiscal sustainability (Thomson et al., 2009; OECD, 2010).

Economic sustainability refers to growth in health spending as a proportion of GDP. Health care expenditure is economically sustainable when its value exceeds its opportunity cost, that is the value that would have been gained by spending on other areas (either in the private sector or for other components of public spending). As long as this is the case, a growth in health spending is justified in terms of social wellbeing and a health care system guarantees "value for money" (i.e. cost-effectiveness) of health care spending. Ensuring economic sustainability is the long-term challenge that all countries face. Under this respect, there is considerable scope for efficiency and effectiveness gains across OECD health care systems (OECD 2010).

Financial (or fiscal) sustainability generally refers to the extent to which public spending growth matches growth in measures of a society's resource base.<sup>1</sup> Therefore, financial sustainability of a health system relates specifically to the financing of public expenditure on health care. A health system may become financially unsustainable when the government is unable to finance the existing level of health care coverage because of an inability to generate sufficient revenues (from taxes or mandatory health contributions) to pay for it, and when it cannot allow any further crowding out of other forms of government spending.

It is possible for health spending growth to be economically sustainable (i.e. the benefits would exceed the costs) and yet not financially sustainable if public revenue is insufficient to meet public expenditure. There are three ways to cope with the problem of fiscal sustainability

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<sup>1</sup> More generally, four dimensions of financial sustainability may be delineated which tend to overlap: (i) solvency (the ability of government to pay its financial obligations); (ii) growth (fiscal policy that sustains economic growth); (iii) stability (the capacity of government to meet future obligations with existing tax burdens); (iv) fairness (the capacity of government to pay current obligations without shifting the cost to future generations). For more details, see Schick (2005).

(Thomson-Foubister-Figueras et al., 2009). A first way could be to increase public revenue to the point at which health system obligations can be met, but this may be politically difficult when the level of fiscal pressure is high, like in many EU countries. A second approach could be lessening health system obligations through a coverage reduction (de-listing, increasing cost-sharing, reducing access for specific population groups) but this might put at risk the basic values of most of EU health care systems. A third possibility is to improve the ability of health systems to create value through specific reform interventions aimed at increasing efficiency, effectiveness and quality of health care by enhancing the incentives facing patients, providers and regulators. However, it is necessary to acknowledge that last approach, while it may guarantee economic sustainability of health spending, it often produces positive effects in terms of financial sustainability only in the medium-long run. When fiscal constraints are binding (mostly for countries with high levels of debt and large deficits), health spending which produces benefits greater than their costs (e.g. investments in prevention) will have to be postponed because of the economic conditions. Several OECD and EU countries now find themselves in this situation. They face a dilemma: short-term financial priorities call for “command and control” policies (budget caps, controls on prices and volumes) which often do little or nothing to moderate the underlying pressures which are pushing health spending up over the longer term; on the other hand, long-term priorities aim at increasing value for money (economic sustainability) but they often requires new investments upfront. According to Auerbach (2011), “... *policy measures that attack long-term imbalances, such as reforms of unfunded public pensions or gradual modifications of systems of public health care provision, may have little impact on short-term fiscal measures, and measures that attack the rate of debt accumulation over the next several years may have little impact on longer-term fiscal imbalances*”. This trade off could be somewhat mitigated if one considers that health can positively affect economic growth through a number of channels (Figueras et al., 2008; European Commission, 2010). This means that governments could sometimes use the health system as an instrument to promote economic growth in wider economic policies. For example, in the recent recession, spending on health has acted as an automatic stabiliser to the economy, and has been a source of jobs growth when most other sectors have been in decline (OECD, 2010).

In the following section, I start from the analysis of past and current trends of health care spending in advanced economies in order to understand the main drivers of the growth of public health care expenditure and to provide some insights on the long-term economic and financial sustainability of EU health care systems.

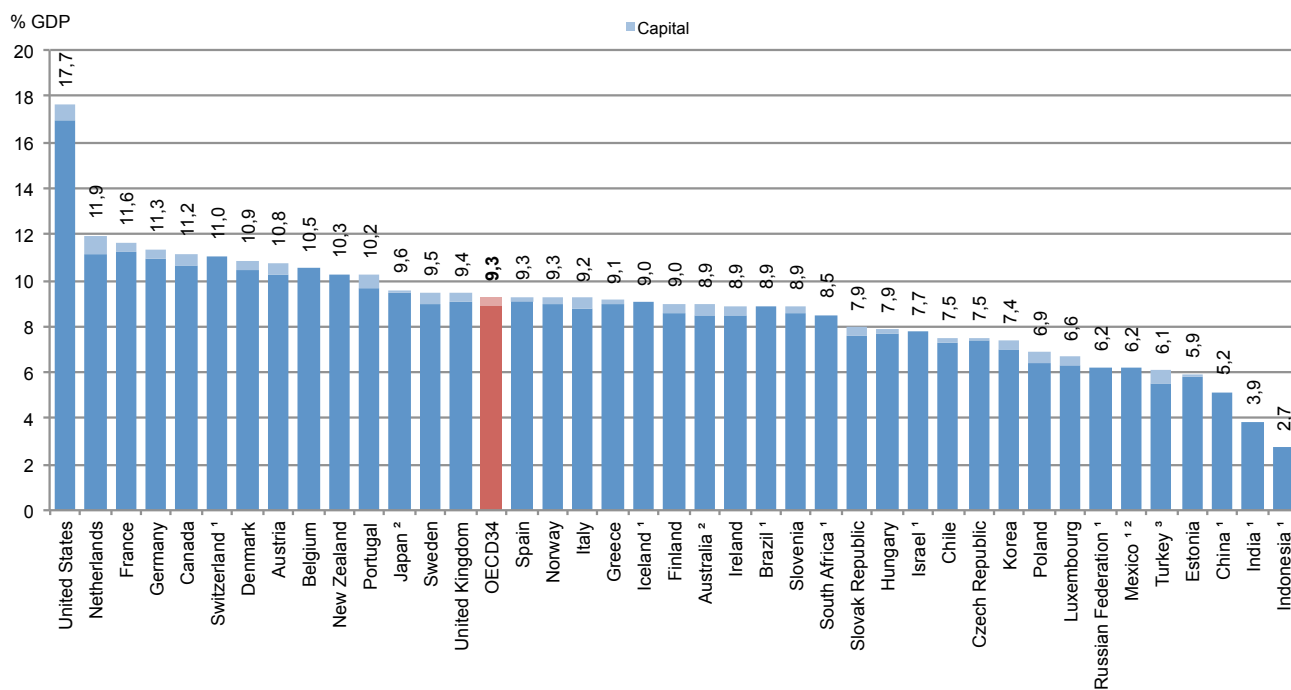
## *1.2 Current levels and past trends of health care expenditure in developed countries*

Health systems play an important role in promoting, protecting and restoring population health. More resources devoted to health systems in recent decades have led to better health status in the developed countries. Good health contributes to economic prosperity through improving work participation and productivity making it crucial in the context of an ageing society and longer working lives. Moreover, health systems create demand for a number of medical goods and industries which are often associated with frontline research and innovation (European Commission, 2010). However, health spending absorbs a significant share of countries' resources measured by GDP and is expected to grow further due to an ageing society, technology innovations and population growing expectations.

In 2011 (the most recent year for which figures are available), on average OECD countries spent 9.3% of their GDP on health care (3,322 US dollars adjusted for purchasing power parity in terms of health spending per capita) (Figure 1). The United States outspend all other

OECD countries by a wide margin, with a 17.7% share on GDP and spending on health per capita of \$8,508, two-and-a-half times more than the OECD average. In the European Union (EU-27) total expenditure on health care equalled around 9% of GDP (10.4% for the EU-15 countries). The public sector is the main source of funding in all countries (the public share for all OECD and for the European countries was respectively 72.2% and 76%) except the United States, Mexico and Chile. In 2011, the share of public spending on health among OECD countries was the lowest in Chile, Mexico and the United States (46.9, 47.3 and 47.8% respectively) and the highest (above 80%) in several Nordic countries (Denmark, Iceland, Norway and Sweden), Czech Republic, Luxembourg, UK, Japan and New Zealand.

**Figure 1 Total health expenditure as percentage of GDP - public and private - OECD countries, 2011 (or nearest year)**



(1) Total expenditure only. (2) Data refers to 2010. (3) Data refers to 2008.  
 Source: OECD Health Data 2013

With the exception of Bulgaria, Iceland and Luxembourg, annual growth in health spending outpaced GDP growth in all European countries over the decade 2000-2010 (Figure 2). This explains why the share of GDP allocated to health increased from 7.3% to 9.0% during that period (OECD, 2012).

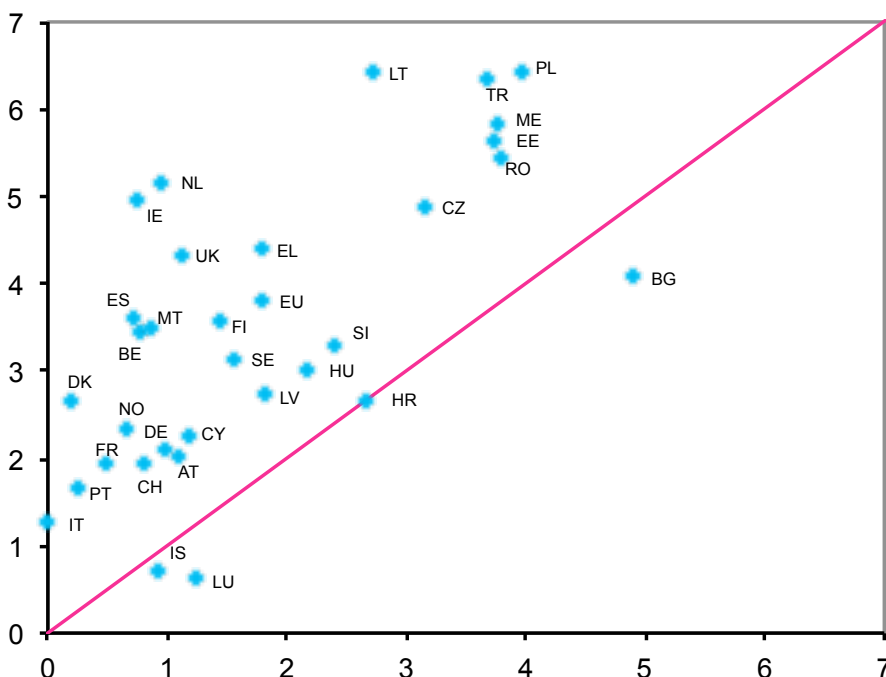
Focusing on a sub-set of 24 OECD countries<sup>2</sup>, Figures 3 and 4 report the trends of total and public health care spending (both current expenditure and investments) over the 1960-2010 period, making a comparison between the U.S., EU-15<sup>3</sup>, and other OECD countries

<sup>2</sup> I consider countries for which data on health care spending are available at least since the 1980s. I do not consider health care systems, such as those of Czech Republic, Slovak Republic, Hungary and Poland, that have recently been characterised by deep transformations (passing from a former very centralised public system to a social health insurance) that are not concluded yet.

<sup>3</sup> Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain, Sweden and the United Kingdom.

(Australia, Canada, Iceland, Japan, Korea, New Zealand, Norway, Switzerland). During the 1960s and 1970s, public and private health care expenditure rose rapidly, triggered by an increase in population coverage and improvements in the provision of the health services associated with populations' higher expectations and their willingness to pay more for better health care services. Figure 3 shows that the U.S. has committed a higher share of GDP to health care than European and other OECD countries since 1960; focusing on the 1980–2010 period, in the U.S the share of health care expenditure over GDP has almost doubled (passing from 9% to 17.6%), while in the EU-15 countries it increased more than 50% (from 6.9% to 10.4%).

**Figure 2 Annual average growth in real per capita expenditure on health and GDP - OECD countries, 2000-2010 (or nearest year)**

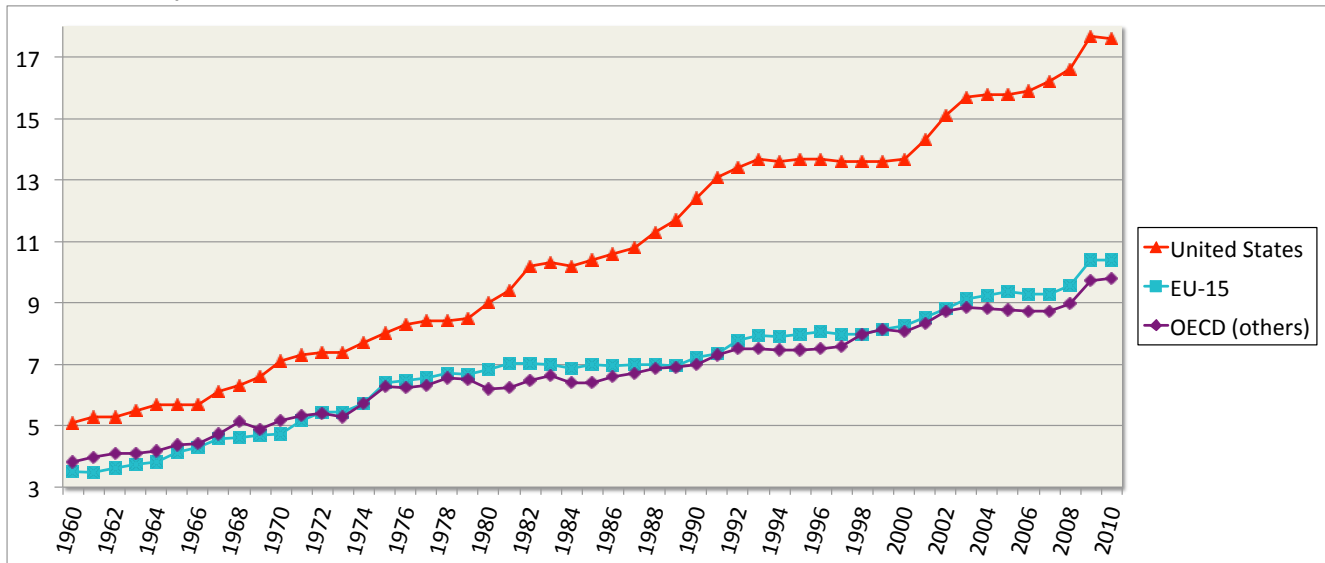


Source: OECD (2012)

The public share of health care expenditure increased constantly for the EU-15 up to the early 1980s (owing to the widening in public coverage), then it decreased between 1981 and 2006, and started again to increase from 2007, reaching in 2009 the same level (78.6%) of 1985. Other OECD countries have shown a somewhat different trend: a sharp (and irregular) increase between 1960 and 1979, a decrease between 1980 and 1994 and a slight increase since 1995, reaching 72.5% in 2009. The U.S., with lower levels of public spending, have seen a very strong increase in the public share between the mid-1960s and the mid-1970s and a steady increase after the mid-1970s. In the 1980s, the growth of public expenditure on health slowed down in the EU (Figure 4). This was largely due to budgetary consolidation efforts, as growth in health care expenditure was perceived as too strong (European Commission, 2012). Public expenditures again began to accelerate in the early 1990s, before another period of containment in the second half of the decade. The slowdown in spending growth reflected reforms in both the United States and Europe as part of a broader restraint of total government spending. In the late 1990s and especially in the first decade of the 21st

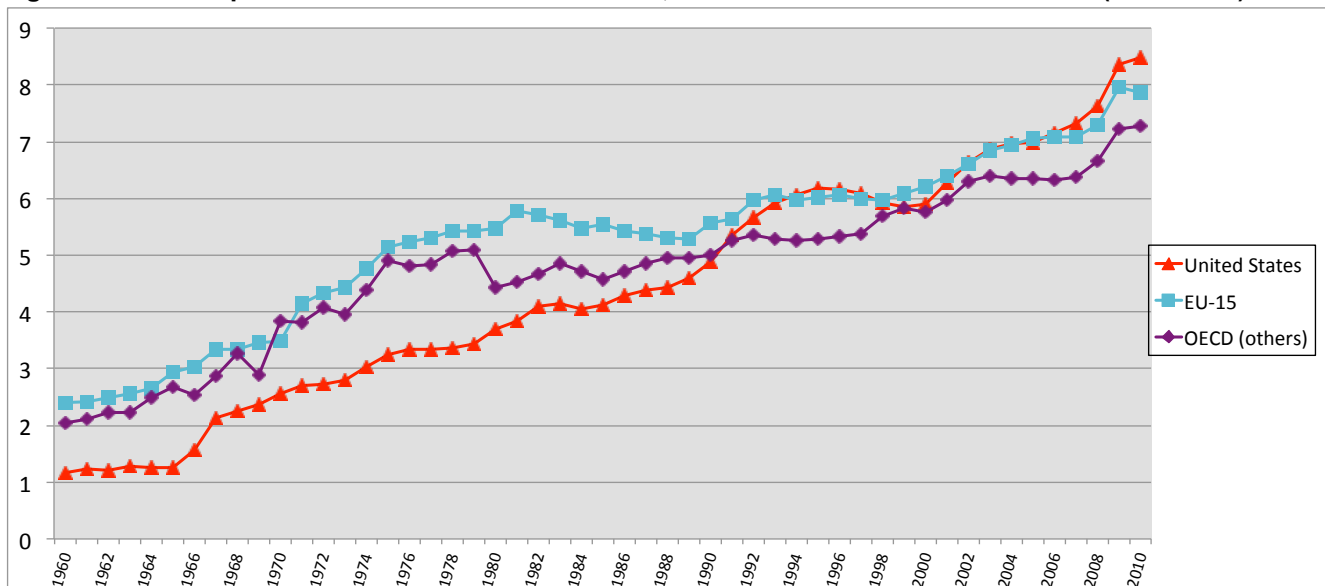
century, public health expenditure growth in the EU-15 and in the U.S. picked up again, overcoming 8.5% of GDP in 2010. Between the mid 1960s and the mid 1990s, the rate of growth of the share of GDP allocated to public health care expenditure was particularly high for the U.S. which reached the same percentage of the EU-countries (6%) in 1993. After then, the U.S. and EU-15 countries have shown a similar path of growth of the share of public health spending on GDP which has strongly increased for all countries.

**Figure 3 Total expenditure on health as % of GDP in the U.S., EU-15 and other OECD countries (1960-2010)**



Source: OECD Health Data 2013

**Figure 4 Public expenditure as % of GDP in the U.S., EU-15 and other OECD countries (1960-2010)**



Source: OECD Health Data 2013

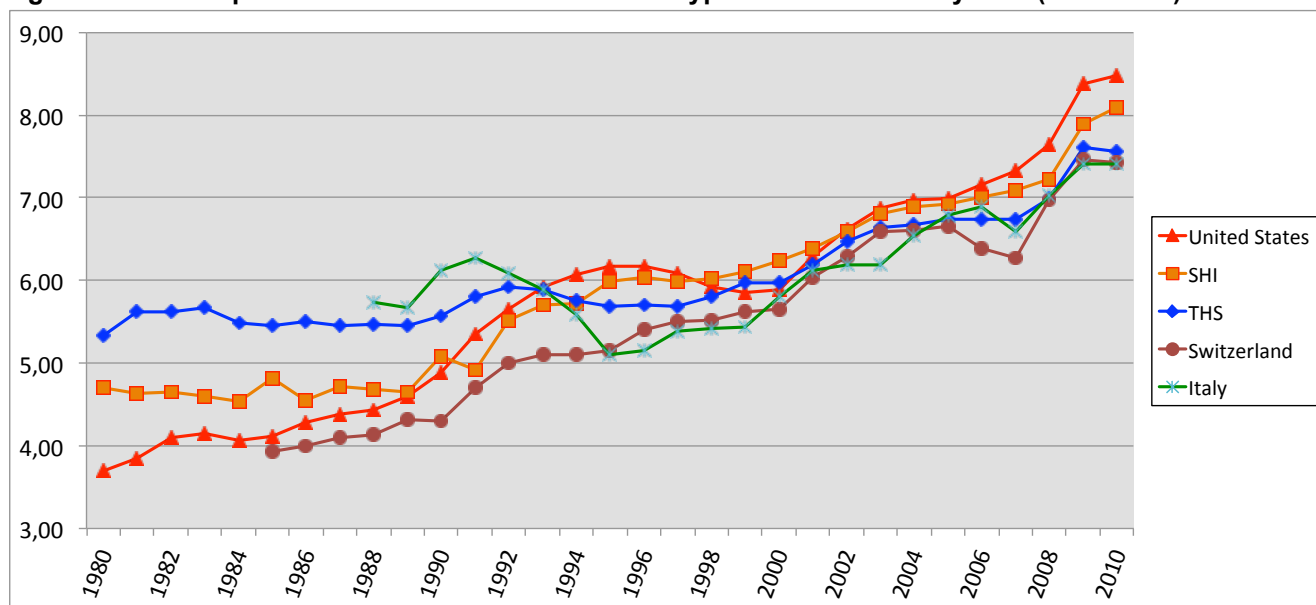
Recent sharp increase is partly due to the economic crisis started in 2007. In general, in economic recessions or weaker downturns health expenditure tends to grow faster than GDP during the slowdown (owing to a simple computational effect but also to need to protect those vulnerable populations which are particularly hard-hit) to then grow at similar growth rates of



GDP when upturn starts (owing to public authorities contracting their spending as a lagged reaction to the economic crisis). By contrast, over the long run economic downturns experimented by EU countries from 1970 to 2007 had no significant effect on health spending in per capita terms and as a percentage of GDP (European Commission, 2010).

One can group the set of selected OECD countries according to four different types of health care system<sup>4</sup>: (i) tax-based health care systems – THS (Australia, Canada, Denmark, Finland, Greece, Iceland, Ireland, Italy, New Zealand, Norway, Portugal, Spain, Sweden, United Kingdom); (ii) social health insurance systems – SHI (Austria, Belgium, France, Germany, Japan, South Korea, Luxembourg, Netherlands<sup>5</sup>); (iii) private mandatory health insurance systems (Switzerland); (iv) private voluntary health insurance systems (United States). Figure 5 represents the trend of public health care spending for these four types of health care systems and for Italy<sup>6</sup>; it considers only the 1980-2010 period because after the 1980s many countries reformed the institutional settings of their health care systems.

**Figure 5 Public expenditure as % of GDP in different types of health care system (1980-2010)**



Source: OECD Health Data 2013

In particular, the U.S. (+4.8 percentage points) and the SHI systems (+3.4 p.p.) have shown the strongest increase in the share of GDP devoted to public expenditure on health. After 15 years where the THS countries were characterised by a higher public share of health care expenditure than the SHI systems, since the mid 1990s these two systems converged to a similar proportion of public expenditure on health, in a range between 75-78%, at least until 2007. This convergence was the result of two different phenomena: (i) the introduction of quasi-markets and managed competition in several THS countries between the end of the eighties and the early nineties (in particular, in the UK and Sweden), which determined a

<sup>4</sup> For more details see Muraro and Rebba (2008).

<sup>5</sup> After the 2006 reform, the Dutch system can be classified as private mandatory health insurance system (likely Switzerland). However, I decide to consider it as a SHI since the the Dutch system kept its characteristics of social insurance for almost the entire 1980-2009 period.

<sup>6</sup> For Italy, the OECD database provides data only since 1988. For Switzerland data on public expenditure are available only since 1985.

slowing of public expenditure share until the beginning of the new century; (ii) the growth of the proportion of public expenditure in the SHI countries in the same period. Since the early nineties, the U.S. and Switzerland exhibited a trend of growth of the weight of public health care expenditure, likely the SHI countries.

Table 1 shows a certain variability across OECD countries in the share of public health spending on GDP, ranging from 4.1% in Korea to 10.2% in the Netherlands in 2011. Public spending as a share of GDP increased in virtually all advanced countries over the last three decades. Between 1980 and 2011, the highest increases in the share of public health spending on GDP were registered in the U.S. and the Netherlands (+4.8 percentage points of GDP), Portugal and New Zealand (+3.4 p.p.). Since 1980, 16 out of 24 countries have experienced an increase in their public health spending ratio by 2 percentage points of GDP or greater (3 percentage points of GDP or more in Austria, France, Japan, Korea, the Netherlands, New Zealand, Portugal and the United States), whilst Ireland (-0.7 p.p.) and Sweden (-0.5 p.p.) decreased their public health spending ratio. In 2011 (or nearest year), the share of public spending on GDP was the highest in the Netherlands (10.2%), Denmark (9.3%) and in two SHI countries: France (8.9%) and Germany (8.7%). Excluding Korea, where spending as a share of GDP increased from 0.8% in 1980 to 4.1% in 2011, over the last three decades the spread in the public spending ratios (the gap between the lowest spending country and the highest spending country) markedly decreased.

According to Table 1, over the 2000-2011 period, across OECD countries public health spending per capita in real terms has grown on average by 4.1% annually; the average annual rate of growth was lower for EU-15 (+3.4%) and THS countries (+3.7%) and higher in the U.S (+5%). The average annual real rate of growth was higher for public spending than for total spending on health in all the selected OECD countries but in France, Germany, Iceland, Ireland, Portugal and Sweden. In the 2000-2011 period, some countries experimented very high rates of growth of public spending per capita: Korea (+10.2%), the Netherlands (7.4%), New Zealand (5.6%) Ireland (5.1%) and the U.S. (5%). However, between 2009 and 2011, per capita public expenditure on health decreased in real terms especially in EU-15 and THS countries. This has been the result of the adoption of policies to control spending by several European countries (in particular, Greece, Ireland, Portugal, Spain and Luxembourg) after the global financial and economic crisis that began in 2007 (see section 3.1).

Many of the selected OECD countries have shown a stable or even increasing ratio of public health care expenditure to total public expenditure through time, notwithstanding the decreasing ratio between the total public expenditure and GDP in some periods (in particular during the eighties of 20<sup>th</sup> century) (Muraro and Rebba, 2008).<sup>7</sup> This means that the crisis of the welfare state and the effort to decrease public expenditure after the 1980s did not proportionately sacrifice resources devoted to public health care, which therefore increased its incidence in relation to total public expenditure.

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<sup>7</sup> Considering all 27 EU Member States with available data, in 2009 public spending on health care accounts on average for 14.6% of total government spending, ranging from 7.2 (Cyprus) to 18.8% (Slovak Republic). 75% of the EU Member States spend between 11 to 15% of their public resources on health care (European Commission, 2012).

**Table 1 Public expenditure % of GDP (1980-2011) and annual growth rate of total and public expenditure on health (2000-2011) for 24 OECD countries**

	Public expenditure on health, % GDP					Annual growth rate of total expenditure on health, in real terms				Annual growth rate of public expenditure on health, in real terms			
	1980	1990	2000	2010	2011	2000/09	2009/10	2010/11	2000/11	2000/09	2009/10	2010/11	2000/11
	Australia	3,8	4,4	5,3	6,1		4,5	1,4		4,2	4,8	0,4	
Austria	5,1	6,1	7,6	8,4	8,2	2,7	0,8	0,3	2,3	2,8	0,2	0,9	2,4
Belgium			6,0	7,9	8,0	4,3	1,5	1,9	3,8	4,6	0,5	3,0	4,0
Canada	5,3	6,6	6,2	8,0	7,9	4,5	3,0	0,8	4,1	4,7	2,8	0,3	4,1
Denmark	7,8	6,9	7,3	9,4	9,3	3,6	-1,9	-0,8	2,7	3,8	-1,8	-0,6	2,9
Finland	5,0	6,2	5,1	6,8	6,8	4,3	1,3	2,9	3,9	4,9	0,7	3,8	4,4
France	5,6	6,4	8,0	9,0	8,9	2,8	1,2	1,3	2,5	2,4	1,1	1,1	2,2
Germany	6,6	6,3	8,3	8,9	8,7	2,0	2,4	1,1	2,0	1,6	2,3	0,7	1,6
Greece	3,3	3,6	4,8	6,4	5,9	5,7	-11,2	-11,0	2,4	7,3	-13,2	-13,3	3,2
Iceland	5,6	6,8	7,7	7,5	7,3	3,1	-7,5	0,0	1,8	3,2	-9,3	-0,1	1,7
Ireland	6,7	4,3	4,6	6,5	6,0	8,9	-7,7	-3,0	6,2	8,5	-11,5	-6,6	5,1
Italy		6,1	5,8	7,4	7,2	2,2	1,8	-1,6	1,8	2,9	1,3	-2,4	2,3
Japan	4,6	4,5	6,1	7,9		2,9	5,3		3,1	3,0	6,1		3,3
Korea	0,8	1,5	2,2	4,1	4,1	9,8	9,2	4,7	9,3	11,3	8,6	2,7	10,2
Luxembourg	4,8	5,0	6,4	6,0		3,8	-7,4	-5,7	1,5	3,6	-8,5	-7,2	1,5
Netherlands	5,4	5,7	5,3	10,4	10,2	5,9	3,2	-0,1	5,1	8,7	3,3	-0,2	7,4
New Zealand	5,1	5,6	5,9	8,5	8,5	5,8	1,7	1,9	5,1	6,5	1,9	1,3	5,6
Norway	6,0	6,3	6,9	8,0	7,9	3,7	-0,2	3,8	3,3	4,0	0,0	4,0	3,6
Portugal	3,3	3,7	6,2	7,1	6,7	2,3	1,8	-6,7	1,4	2,2	0,9	-8,0	1,1
Spain	4,2	5,1	5,2	7,1	6,8	5,6	-0,5	-2,8	4,3	6,1	-1,2	-4,3	4,5
Sweden	8,2	7,4	7,0	7,7	7,7	3,9	1,5	3,7	3,7	3,4	1,5	3,8	3,3
Switzerland		4,3	5,7	7,1	7,1	2,8	1,9	3,2	2,7	4,7	1,4	2,6	4,2
United Kingdom	5,0	4,9	5,5	8,0	7,8	5,7	-1,9	-0,4	4,5	6,2	-0,7	-1,2	4,9
United States	3,7	4,9	5,9	8,4	8,5	4,4	2,5	1,8	4,0	5,5	3,3	2,2	5,0
<b>OECD</b>	<b>4,7</b>	<b>5,0</b>	<b>5,5</b>	<b>7,1</b>	<b>7,0</b>	<b>4,8</b>	<b>0,3</b>	<b>0,2</b>	<b>4,0</b>	<b>4,9</b>	<b>-0,2</b>	<b>0,0</b>	<b>4,1</b>
<b>OECD-24</b>	<b>5,0</b>	<b>5,3</b>	<b>6,0</b>	<b>7,7</b>	<b>7,7</b>	<b>4,4</b>	<b>0,1</b>	<b>-0,2</b>	<b>3,6</b>	<b>4,9</b>	<b>-0,4</b>	<b>-0,8</b>	<b>3,9</b>
<b>EU-15</b>	<b>5,5</b>	<b>5,6</b>	<b>6,2</b>	<b>8,0</b>	<b>7,9</b>	<b>4,2</b>	<b>-1,0</b>	<b>-1,4</b>	<b>3,2</b>	<b>4,6</b>	<b>-1,7</b>	<b>-2,0</b>	<b>3,4</b>
<b>SHI</b>	<b>4,7</b>	<b>5,1</b>	<b>6,2</b>	<b>7,9</b>	<b>8,1</b>	<b>4,3</b>	<b>2,0</b>	<b>0,5</b>	<b>3,7</b>	<b>4,8</b>	<b>1,7</b>	<b>0,1</b>	<b>4,1</b>
<b>THS</b>	<b>5,3</b>	<b>5,6</b>	<b>6,0</b>	<b>7,6</b>	<b>7,5</b>	<b>4,6</b>	<b>-1,3</b>	<b>-1,0</b>	<b>3,5</b>	<b>4,9</b>	<b>-2,0</b>	<b>-1,8</b>	<b>3,7</b>

Source: OECD Health Data 2013.

Previous analysis show a convergence in public spending ratios of more advanced economies. According to IMF (2010), this was determined neither by an income convergence across the countries (the correlation between initial per capita GDP in 1980 and the increase in spending ratios over 1980–2008 was low) nor by changes in relative age structures which have been slow. Indeed, controlling for income and demographics, regression analysis performed by IMF (2010) indicated significantly higher spending growth for countries with below-mean spending to GDP ratios. A possible explanation was that convergence could be driven by “imitation” effects, borrowing from other countries some features of the public health system that appeared appealing (in particular, the provision of health services previously not covered). This implied changes in institutional settings and health policies, including factors that determine the development and diffusion of medical technology.

Summing up, since the 1960s, all economically advanced countries have consistently increased both the part of GDP devoted to health care and the public share of the total expenditure on health. Health spending continues to rise faster than economic growth in most high-income countries. In the EU15 countries the public health spending per capita in real terms has grown on average by 3.4% annually over the 1980-2011 period. The dynamics of public health care expenditure is particularly strong in the U.S. and in the SHI countries. This raises questions about how countries will pay for their future health care needs. The issue is particularly acute in the U.S., where both private and public health expenditures are growing at rates which outpace other OECD countries.

From previous discussion, therefore, it is crucial to identify and analyse the main drivers of health care expenditure in advanced economies. In the following, I consider these drivers, making a focus on the European health care systems.

### 1.3. *The main drivers of health care expenditure*

Several factors continue to exert upward pressure on public health spending, both on the demand and on the supply side of health care goods and services. Population size and structure, its health status and expectations, the individual and national income and other socio-economic variables (in particular education levels and female labor participation) can be considered as key determinants of demand. On the supply side, the key determinants include the availability of health care goods and services, the characteristics of delivery of health care services (degree of efficiency and labour intensity), the framework regulating the provision of those goods and services and, most important, technological innovation. Moreover, institutional features and legal settings regulating how health care is provided and financed play an important role both on the demand and on the supply side. I briefly examine the relationship between these factors and public spending on health care.<sup>8</sup>

#### 1.3.1 Drivers on the demand side

##### (i) *Population ageing*

Over the last decades, developed countries have experienced a strong ageing process, as a consequence of lower fertility rates and of higher life expectancy, largely due to improved living condition and medical progress. This trend is going to strengthen over the next decades, involving not only the European area. The UN projects an old-age dependency ratio (ratio of population aged 65 and over to population aged 15-64) of 50% in the EU-27 in 2050, which is much larger than in the rest of the world with the exception of Japan, where it is projected to reach 69.6%.<sup>9</sup> Another demographic indicator, the effective economic old-age dependency ratio, allows us to assess the impact of ageing on budgetary expenditure. It is calculated as the ratio between the inactive elderly (65+) and total employed population (15-64). The effective economic old age dependency ratio is projected to rise significantly from around 39% in 2010 to 71% in 2060 in the EU-27 (Figure 6). In the euro area, a similar increase is projected from 42% in 2010 to 72% in 2060. Across EU countries, the effective economic old age dependency ratio is projected to range in 2060 from less than 55% in Denmark, the United Kingdom, Norway and Ireland to more than 90% in Hungary, Slovakia, Poland and Romania in 2060.

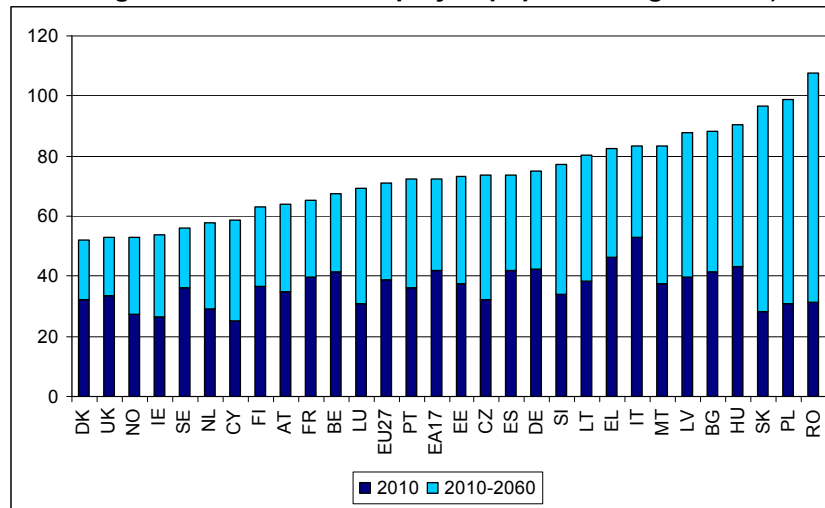
Population structure, and ageing in particular, is often considered as one of the main drivers of increasing health care expenditures. The relationship between the age of an individual and his/her demand for health care is usually represented by the so-called “age-related expenditure profiles” (Figure 7). Health spending generally increases with the age of a person, notably from the ages of 55 and more for men and 60 and more for women, coinciding naturally with higher morbidity at older age (European Commission, 2012).

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<sup>8</sup> Recent in-depth analyses of the main drivers of public health care expenditure can be found in European Commission (2010), European Commission (2012), Pammolli et al. (2012), Przywara (2010).

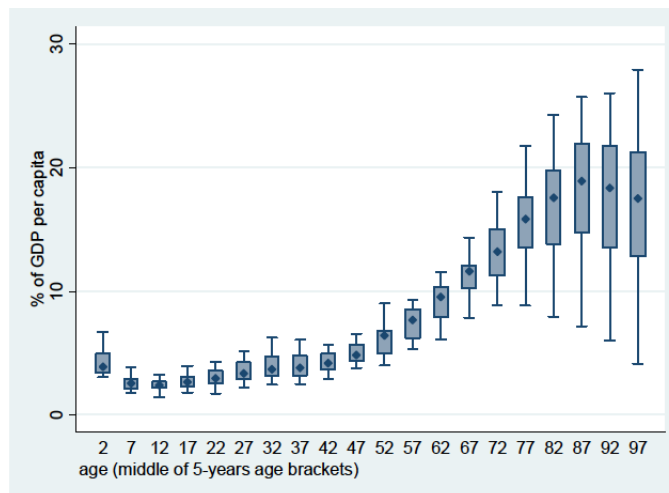
<sup>9</sup> Restricting the working-age population within the range 20-64, the the old-age dependency ratio should increase from 28% to 58% in the EU as a whole over the 2010-2060 period.

**Figure 6 Effective economic old-age dependency ratio in EU-27 and euro area, 2010, 2060 - (ratio of non active population aged 65 and over to employed population aged 15-64)**



Source: European Commission, 2012

**Figure 7 Age-related expenditure profiles of public health care (public health care expenditure as % of GDP per capita by age groups) – OECD countries <sup>1</sup>**



1. The figure shows the dispersion of health care expenditure across countries by age groups. The diamonds represent the median. The boxes are the 2nd and 3rd quartiles of the distribution of expenditure across countries. The whiskers are the 1st and 4th quartiles.

Source: de la Maisonneuve and Oliveira Martins, 2013a.

Population ageing may put at risk the sustainability of health care financing in two ways. First of all, ageing will lead to increasing demand for health care services over a longer period of lifetime, increasing total lifetime health care expenditures and overall health care spending (Zweifel et al., 2005). This effect might be mitigated by “healthy aging” (over time longevity gains may correspond to more years in good health) and by the consideration of the so-called “death-related costs”. The former factor is related to the “compression-of-morbidity” hypothesis and I come back to it soon in next paragraph (ii). As regards the latter mitigating factor, many studies have shown that proximity to death is a more important determinant of health expenditure than ageing per se: a large share of lifelong expenditures on health occurs in the last year before death; therefore, age alone is not a good predictor of rises in health care spending, whilst proximity to death (independent of decedent age) must also be used as

a predictor of health care expenditure (Palangkaraya A, Yong J., 2009; Raitano, 2006; Stearns and Norton, 2004; Zweifel et al., 1999; Zweifel et al., 2004). However, an ageing population will have a strong upward impact on public spending for long-term care (LTC). This is because frailty and disability rise sharply at older ages, especially amongst the very old (aged 80+) which will be the fastest growing segment of the population in the decades to come. Secondly, ageing leads to an increase in the old-age dependency ratio; consequently, in the future fewer people will contribute to finance public health care, while a growing proportion of older people may require additional health care goods and services. This second effect can be offset by “active ageing”, i.e. longer working lives accompanied by a healthier working population. Under this respect, it is crucial to promote occupational health and safety in workplaces.

(ii) *Health status*

The dynamics of health expenditure is strictly linked to the evolution of the population's health status. Future changes in morbidity and disability will depend on the impact of three main factors: a) ageing (whether longevity will be accompanied by more good health or less), b) life-styles (unhealthy behaviour has a strong impact on the incidence of many non-communicable diseases), c) climate change and globalisation.

a) Old age itself is not associated with increased medical spending. Rather, it is the disability and poor health associated with old age that are expensive. So the fundamental question is whether people will age in a healthier way than before (and medical spending will not increase as rapidly as ageing). Three major hypotheses have been developed to explain changes in population health and to predict a possible future interaction between the evolution in life expectancy and changes in the prevalence of morbidity (and disability): 1) expansion of morbidity (Gruenberg, 1977), 2) compression of morbidity (Fries, 1980), and 3) dynamic equilibrium (Manton 1982) theories. 1) The first theory proposes declining health status (claiming that the decline in mortality is largely due to a decreasing fatality rate of diseases rather than due to a reduction in their prevalence/incidence and therefore a higher proportion of people with health problems survive at an advanced age), 2) the second improving health status (people are expected to live not only longer, but also in better health since disability and bad health are compressed towards the later period of life at a faster pace than mortality)<sup>10</sup> and 3) the third a net status quo (under this hypothesis healthy life expectancy grows at the same rate as total life expectancy and the number of years spent in bad health remains the same). Empirical research has not come to a decisive conclusion regarding which of these hypotheses is more valid: in developed countries, health may continue to improve, but at the same time some causes of disability may become more prominent. For example, higher levels of some disabling conditions (dementia, musculoskeletal diseases) go along with decreasing rates of prevalence of others (cardiovascular and chronic respiratory diseases) (European Commission, 2012). In particular, cognitive decline has emerged as one of the greatest health threats of old age (Bishop et al. 2010; Abbott, 2011). Increasing longevity carries a high risk of dementia, a condition that is so far neither preventable nor curable. According to the World Alzheimer Report 2010 (Alzheimer's Disease International, 2010), when Alzheimer's disease is conflated with other dementias with similar

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<sup>10</sup> Several analyses argue that educational attainment, high socioeconomic status, an older retirement age, and accessible medical care have improved the health and quality of life of seniors. Disability decline determines economic benefits such as an increased rate of seniors in the workplace, relief for the health care system and care-giving families, and reduced medical expenses for the elderly themselves (Cutler and Wise, 2009).

clinical profiles, it covers an estimated 35.6 million people — around 0.5% of the global population. Nearly 90% of the global costs in 2010 (estimated US\$ 604 billion) are borne by rich countries — about 70% in Western Europe and North America — and less than 1% by low-income countries, where there is greater reliance on unpaid home care.<sup>11</sup> These figures are about to get worse: the number of people with dementia is set to double in the next 20 years, with a very strong impact in terms of demand for long-term care. Based on demographics, the report foresees an 85% increase in cost by 2030, with developing countries bearing an increasing share of the economic burden.

b) The economic and medical progresses that have extended life spans have accompanied certain lifestyle trends that contribute to the development of chronic diseases such as diabetes, heart disease and cancer (OECD, 2010). The increase in life expectancy in Europe 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; moreover, inequalities in life expectancies and healthy life years between socio-economic groups of the population still persist within EU countries (Mackenbach et al., 2006; Jagger et al., 2008). High rates of obesity, poor diet, harmful alcohol consumption, smoking and insufficient physical activity persist and are associated with increasing incidence/prevalence of non-communicable diseases, which represent the main causes of mortality and morbidity (cardiovascular diseases, cancers, diabetes and respiratory conditions) (WHO, 2011; Wagner and Brath, 2012)<sup>12</sup> and determine high social costs in terms of health care spending and losses in economic growth (Thorpe et al. 2004; Sturm, 2002; Allender et al., 2008; Massi-Benedetti, 2002; Economist Intelligence Unit, 2007).<sup>13</sup> Data shows that there is room to improve life-styles and tackle some risk factors to induce longer as well as healthier lives, allowing to meet the target of increasing participation of older people into the labour force (Jagger et al., 2008).<sup>14</sup>

Table 2 gives the WHO's list of the ten risk factors with the greatest incidence in terms of impact on health and health care (i.e. *disease burden*) in the developed countries of North America, Europe and the Asian Pacific. An improvement in life-styles increases population health and help control expenditure growth, whatever the impact of demographic change on health. The European countries who appear to have been more successful in improving life-styles have given more priority to health promotion, spending relatively more on prevention, even though total and public expenditure on “prevention and public health services” 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) (European Commission, 2010; Srivastava, 2008).

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<sup>11</sup> A report commissioned by the UK Alzheimer's Research Trust (Luengo-Fernandez et al., 2010), estimated that the annual national cost of dementias was £23 billion (US\$38 billion), nearly twice that of cancer (£12 billion) and far more than the costs of heart disease (£8 billion) and stroke (£5 billion).

<sup>12</sup> The WHO estimates that 60% of deaths are due to chronic diseases worldwide (not including HIV/AIDS) and for 86% of deaths in the European region.

<sup>13</sup> Thorpe et al., 2004 found that heart disease, pulmonary conditions, mental disorders, cancer, and metabolic syndrome —the five most expensive chronic conditions—accounted for about 52 percent of the growth in health spending of the U.S. Medicare program between 1987 and 2002. Avoidable health inequalities represent also 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 (Mackenbach, et al., 2007).

<sup>14</sup> One of the targets added to the Lisbon Strategy by the European Council in 2001 is that the employment rate for older workers (aged 55-64 years) should reach 50% by 2010.

**Table 2 Top 10 risk factors in developed countries expressed as a percentage of total Disability Adjusted Life Years (DALYs)**

<i>Risk factor</i>	<i>% of total DALYs</i>
Tobacco consumption	12.2
High blood pressure	10.9
Alcohol consumption	9.2
Cholesterol level	7.6
Obesity/Overweight	7.4
Diet with little fruit and vegetables	3.9
Physical inactivity	3.3
Consumption of illicit drugs	1.8
Unsafe Sex	0.8
Iron deficiency	0.7

Source: Cappelen - Norheim (2005)

c) 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. In addition, globalisation has implications for health as ill health can travel fast across countries determining pandemic situations and the outbreaks of communicable diseases such as tuberculosis (European Commission, 2010).<sup>15</sup>

*(iii) Income and growing patients' expectations*

A number of empirical studies attempted to estimate the correlation between income and health expenditure. Most of the earlier studies (e.g. Newhouse, 1977, and Leu, 1986) led to the conclusion that “health care is an individual necessity and a national luxury” (Getzen, 2000). In other words, health spending seems highly inelastic at an individual level, but at the national level its elasticity with respect to income (per capita GDP) exceeds unity (as national income grows, the optimal composition of total spending shifts towards health). A recent study on EU-15 countries (Pammolli et al., 2009) provides evidence of public (and total) health being a “luxury good”, whereas estimated elasticity for the private component of the expenditure is below unity. However, many studies, in particular the earlier ones, are subject to two main methodological problems: first, they generally do not consider that increase in health care spending is not determined by income alone but by other factors (e.g. education) that happen to be correlated with income; second, their estimates are probably affected by endogeneity problems because health – and therefore also health care expenditure – is likely to positively affect economic growth via an increase of human capital (labour productivity and education attainment) (European Commission, 2010, 2012). More recent empirical studies attempted to overcome these problems and estimate the causal effect of income on health care expenditures, finding lower levels of income elasticity at the national level (e.g., Acemoglu et al., 2009). The general effect, however, remains that as national income or wealth increases, population expectations will rise and health spending will also rise, regardless of changes in needs. In affluent societies, populations seek the benefits of newer,

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<sup>15</sup> Simultaneously tackling climate change, achieving true environmental sustainability and reducing economic and health inequalities call for implementing policies beyond health care. On these issues see Global Health Watch (2011).



more effective and possibly expensive health technology and this takes to an extension of health protection to therapeutic sectors increasingly distant from the core of necessary and sufficient treatment.<sup>16</sup> Moreover, citizens have become more aware of medical errors, and are more prone to complain and litigate in cases of negligence or miscommunication by health professionals. (European Commission, 2010). This attitude has amplified “defensive medicine”, the practice of diagnostic or therapeutic measures (tests, prescriptions, hospitalisations) without (or with negligible) expected benefits for patient health, which are conducted primarily as a safeguard against possible malpractice liability (Anderson, 1999), a particularly important phenomenon in the U.S which is also growing in the EU.

#### *(iv) Female labor participation*

Alongside the ageing of the population, the European countries are characterised by deep socioeconomic transformations with a weakening of the support provided by family networks – which traditionally bore the burden of caring for the aged in the Mediterranean countries – and an increased participation of women to the labor force. These phenomena will strengthen in the future and might determine a substitution between informal and formal health care and presumably an increase in aggregate and public health care spending, especially in the long-term care component (Pammolli et al., 2012). On the other hand, some studies have also shown that growth in healthy old-age longevity might increase the supply of healthy elderly people who can provide care at home, hereby reducing the pressure on health care spending (Lakdawalla and Philipson, 2002).

### 1.3.2 Drivers on the supply side

#### *(i) Relative medical price inflation: the Baumol’s effect*

According to the Baumol “cost disease model” (Baumol, 1967), productivity is thought to lag in service industries such as medical care (“non progressive” industries). It follows that lower productivity in medical care relative to other less labour-intensive (“progressive”) sectors shift the relative prices of medical care upwards; when prices rise, spending increase owing to the low elasticity of health care demand. There is yet no solid consensus on the importance of this effect for health spending growth at an aggregate level. This may depend on the fact that the productivity factor is difficult to analyse, owing to serious measurement problems related to the medical care consumer price index and to the prevalence of non-market pricing (in the health care sector, wages are often covered by collective agreements and pharmaceutical prices are regulated). Moreover, whereas lagging productivity characterises high labour-intensity types of care, such as long-term and home care, acute care has changed so much, owing to technological innovation in the treatment of the most common causes of death (heart disease, cancer and stroke), that it does not seem reasonable just to assume that its productivity lags behind the economywide rate of increase (Newhouse, 1993).

Newhouse (1992) have questioned the existence of a relevant effect of relative factor price inflation on health spending growth, whilst other authors have found evidence of the Baumol effect (e.g. Cutler, 1995; Smith et al. 2000). Pammolli et al. (2012) seem to confirm the Baumol’s hypothesis for the EU-15 countries: the growth rate of nominal health care

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<sup>16</sup> According to Hall and Jones (2007), health spending might well be a superior good, since it allows individuals to live longer and purchase additional periods of life and utility. As income grows and people get richer, the most rewarding channel for spending is to purchase additional years of life, and health expenditure share grows along with income.

expenditure is driven by the imbalance between labor productivity and wage at the global level.

*(ii) Physicians' incentives: induced demand and defensive medicine*

Since the seminal article by Arrow (1963), a traditional argument in health economics is that owing to particular incentives and substantial information asymmetries between patients and physicians (the latter are better informed), physicians may “induce” demand and, sometimes, engage in defensive medicine. In both cases physicians may recommend treatments whose social costs outweigh their medical benefits (Dranove, 2007). Several factors may push doctors to induce inappropriate demand: economic incentives (e.g., fee-for-service instead of capitation in physician remuneration), professional interests, the fear of malpractice lawsuits. In this scenario, more physicians could induce ever more demand for their services and increase health spending. Again, the issue is somewhat disputed also because the growing number of physicians could partially reflect any of the three other causes – i.e. more elderly, more insurance coverage, and more income - rather than being an independent cause of growth of health care expenditure.<sup>17</sup> It is also difficult to estimate the cost of defensive medicine and almost all the existing estimates have been developed only for the U.S. Early studies estimated a tiny fraction (around 1%) of the U.S. total spending in 1984 (Reynolds et al., 1987). More recent studies find a stronger (even though limited) effect of defensive medicine (e.g. Mello et al., 2010 estimate that total cost of medical malpractice, including defensive medicine, is about 2.4% of the U.S. annual health care spending, and defensive medicine accounts about 80% of that total).

*(iii) Other supply side factors*

There are many other supply side factors which may have an effect on the increase of health spending. Some are related to the organisation and efficiency of health care services (e.g. a high ratio of inpatient to outpatient care, the lack of integration between hospital and primary care and between acute and long-term care, excessive administrative costs) others to financial incentives faced by providers (physician remuneration mechanisms based on “fee for service”, simple retrospective reimbursement of provider costs, unsuccessful adoption of managed competition). These factors are strictly linked to the specific institutional and regulatory setting of each health care system (see next section 1.3.3) and it is extremely difficult to measure their actual impact on expenditure growth (Gerdtham and Jonsson, 2000).<sup>18</sup>

*(iv) Technology innovation in health care*

Empirical research suggests that development and diffusion of medical technology are primary factors in explaining the persistent positive difference between health spending and overall economic growth.<sup>19</sup> Technological innovation in health care includes new medical and surgical procedures, drugs, medical devices, physical capital and equipment, as well as new

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<sup>17</sup> A number of studies have attempted to find a statistical correlation between the size of medical staff and health expenditure, but the results are not conclusive (e.g. Newhouse, 1993; Getzen, 1990).

<sup>18</sup> The impact of avoidable administrative costs on health spending growth seems not negligible in the U.S. (Smith et al, 2000; Cutler, 1995; Zuckerman and McFeeters, 2006).

<sup>19</sup> Oliveira Martins and de la Maisonnette (2006) point out that since over the last decades health care spending has grown faster than the aggregate income, the effects of technology and relative prices seem to significantly affect the health care expenditure development.

support systems (e.g. electronic medical records and transmission of information, telemedicine).

While a particular new technology may either increase or decrease health care costs<sup>20</sup>, researchers generally agree that, taken together, advances in medical technology have contributed to rising overall health care spending in developed countries. Most of technological change has expanded the scope of what is medically possible by enhancing diagnostics and treatments. This has increased the cost of medical services, reflecting improvements in quality (e.g., the diffusion of angioplasty or the use of MRIs instead of X-rays).

Different authors attribute 27% to 75% of health expenditure growth in the industrialised countries to technological change.<sup>21</sup> In particular, Newhouse (1992, 1993) argues that the main driver of the aggregate increase of health care spending in industrial countries since the World War II was new technology and its ability to increase the capabilities of medicine, while other factors on the demand side (the increase in the elderly population, increased income, the spread of health insurance coverage) and on the supply side (relative medical price inflation; physician-induced demand, defensive medicine, low labour productivity and administrative costs) accounted only for a minor part of the total increase of health care costs. In other terms, the other commonly mentioned causes of increased spending most likely would not account for very much of the increase if the capabilities of medicine (medical technology in the broad sense) had remained constant. Under this respect, increased longevity, income growth, wider health insurance coverage, increased prices in the health sector and other supply-side drivers exerted an upward pressure on health care expenditure only indirectly, via newly developed technologies, whilst they did not appear to be important independent drivers of increased spending.<sup>22</sup>

However, evaluating correctly the impact of new innovation on health care expenditure is rather complicated due to several measurement problems. Health economists have used three main indirect approaches to try to estimate the impact of new technology on the cost of

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<sup>20</sup> Whether a particular new technology will increase or reduce health care spending depends on its impact on unit cost, its level of use and whether the treatment complements or replaces the existing methods (Gelijns and Rosenberg, 1994; European Commission, 2012). If technological development leads to a more cost-effective treatment of previously treated medical conditions, the new technology is likely to replace the old one less efficient ("substitution effect"), thereby reducing the unit cost of treatment. If the number of individuals treated do not change, the health care system-wide costs decrease. However, if treatment with the new technology becomes more frequent, expenditure may stay constant or increase. If medical innovations allow for treating conditions which were not treated previously for scientific or economic reasons, then expenditures may rise ("extension mechanism").

<sup>21</sup> Recent estimates suggests that medical technology explains 27 to 48% of health care spending growth since 1960 (Smith et al, 2009). Earlier studies found that technology explained a larger fraction of the increase, 50 to 75%. See e.g.: Newhouse (1992); Cutler (1995); Smith et al., 2000; Okunade and Murthy (2002); Oliveira Martins and de la Maisonneuve (2006).

<sup>22</sup> Technology does not expand independently of socio-demographic and institutional factors. Smith et al., 2009 show that that medical innovation is fueled by rising incomes and more generous insurance coverage. According to Weisbrod (1991), "new medical technologies have driven up both costs of care and the demand for insurance, while also expanding the range of services for which consumers demand insurance. At the same time, expanding insurance coverage (...) has provided an increased incentive to the R&D sector to develop new technologies (...)". In addition, several pieces of evidence suggest that many changes in medical technology (e.g., joint replacement surgery, cataract surgery, nonsteroidal anti-inflammatory and antihypertension drugs) were quite important to increase longevity in good health (Cutler, 2001) and this have increased the number of healthy old age people demanding for new treatments or medication once unavailable or unsafety to the elderly: a sort of "Sisiphus syndrome" of medicine (Zweifel et al. 2005).

health care at the macro level (Pammolli et al., 2005):

- a) the “residual approach”, where the impact of changes in other factors (such as prices, income, demographic changes, and utilization) is quantified, and the residual not accounted for is attributed to changes in technology (e.g. Newhouse, 1992; Smith et al., 2009; OECD 2006; Jenkner et al., 2010; European Commission, 2012),<sup>23</sup> it is the most widely-used approach, adopted by the European Commission, the IMF and OECD to project future trends of health care spending in developed countries; see next sections 1.3.4 and 2);
- b) the “proxy approach”, where a proxy (such as R&D spending, the stock of available high-tech medical devices, or time) is used to measure the impact of technology (e.g. Okunade and Murthy, 2002; Pammolli et al., 2012);
- c) “case studies of specific technologies”, to determine their effects on the cost of treating a particular condition; they can explain the impact of certain medical advances on health care costs, but it is difficult to generalize from them to an aggregate level (e.g. Cutler and McClellan, 2001; Skinner et al., 2006).

Apart from the methodological difficulties of empirical evaluation of the impact of technological innovation, the real issue for the sustainability of health care systems is whether our societies are willing to pay for all the various enhanced capabilities of medicine. Under this respect, the societal and political pressures to implement more cost-effective and to discard ineffective technologies are increasing. Evaluations are more and more based on health technology assessments (HTA), which measure the additional cost-benefit of an innovation relative to given treatment options (see next section 3.2.1).

### 1.3.3 Institutional and regulatory arrangements defining insurance coverage and access to health care

Levels of health spending are the result of the interaction between demand side factors and supply side factors associated with the funding and delivery of health services i.e. the institutional and organisational features of health systems. Legal settings and institutional arrangements regulating funding and provision of health care play an important role in defining the levels of access to health care services and therefore health care utilisation and costs. The institutional setting defines the financial and non-financial incentives patients and providers face. Legal provisions, such as strict spending constraints defined by public authorities may restrict at different degree the introduction, coverage and use of services and new technology. In addition, human and physical capital resources devoted to the health care sector are determined by policy decisions (e.g. qualitative limits and requirements on the access to medical schools or professional certificates, decisions on the location of facilities, legal regulations on the density of health care staff per number of population) (European Commission, 2012) (see also section 3.1).

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 whilst recent efforts to

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<sup>23</sup> In Smith et al. (2009), the residual for technological advances explains between one-third and one-half of the increase in total health spending over 1960–2007 for the U.S., depending on assumptions about income elasticity and medical care productivity. The remainder is due to changes in income, the Baumol effect, the rise of insurance coverage, and demographics. The contribution of insurance is likely to differ, with less of a push from increasing generosity of coverage and more of a push from changes in provider payment.

improve access to health care explain an increase in public expenditure on health and a reduction in the share of out-of-pocket expenditure observed in several EU countries since 1998 (see previous section 1.2). Health insurance coverage is universal or almost universal in all Member States through compulsory social health insurance (SHI) or national/local health service provision (THS). Moreover, 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-15 while the share of out-of-pocket expenditure in total health expenditure is relatively low on average. In general, private health insurance remains a small though growing share of total health expenditure (European Commission, 2010).

Institutional and legal features regulating provision and access to health care services are thought to have a strong influence on public health spending. A number of such variables (e.g., the type of system financing, the implementation of reform measures, the role of general practitioners as an independent entity and gatekeeper, the existence of cost-sharing schemes; the adoption of public budget constraints and cost containment measures) have been tested in the empirical literature for assessing their impact on health expenditure, but these studies did not reach unequivocal conclusions (Gerdtham and Jonsson, 2000; Christiansen et al., 2006; Pammolli et al., 2012).

In addition, there have been several attempts to specify the relationship between different health care models (SHI versus THS) and the spending on health care, but no conclusive evidence has been available so far as for their impact on total and public expenditure or their relative allocative efficiency. A broad and simplified rule of thumb is that SHI countries tend to spend slightly more on health care than the THS ones (see e.g. Busse et al., 2007; Thomson et al., 2009). This may be due to a number of features, characterising each function of the national health system, from the collection of resources through pooling them to the remuneration of providers (Przywara, 2010), even though we have seen (in section 1.2) that both SHI and THS countries are characterised by a convergence in total and public spending ratios on GDP since the mid-2000s. Therefore there is not conclusive evidence of a clear effect of the different institutional features of EU health care systems on the level and dynamics of public spending on health.

Generally speaking, improved access has been a major driver of spending on acute health care in past decades for the EU-15 and it could represent a not negligible driver of future expansion of public spending only for the new Member States (EU-12 countries<sup>24</sup>) even though current economic crisis will bring about, in the short to medium term, a period of budgetary constraints.

On the contrary, a widening of public coverage for long-term care (LTC) will likely take place in many EU countries. Since the support provided by the family and other informal carers, which traditionally bore the burden of caring for the aged has been (and will be) decreasing - due to decreasing fertility rates, increasing female labor-force participation rates, and increasing delay in the time of retirement - the demand for formal LTC services is likely to grow in all EU Member States. This is expected to put pressure on governments to provide more LTC services because very old people (growing faster than any other segment of the population) often develop multi-morbidity conditions, which require not only long-term medical care but social assistance with a number of daily activities. Some European countries (Germany, the Netherlands, Luxembourg, Belgium, Sweden, Finland, Denmark and Norway)

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<sup>24</sup> EU-12 Member States, that joined the EU on and after 1 May 2004, are: Bulgaria, Czech Republic, Estonia, Cyprus, Latvia, Lithuania, Hungary, Malta, Poland, Romania, Slovenia, Slovakia.

have already built up national schemes of social protection for dependent people providing basic levels of LTC services to be defined explicitly and guaranteed across the country. Other countries, with low levels of public funding of LTC, will probably follow this way. Hence, one can expect an upward pressure on public expenditure for LTC in many EU countries. However, if on the one hand, the foreseen evolution of demand and supply will likely increase the needs and the costs of LTC, on the other hand the political and fiscal constraints on public finance will often make quite difficult to take the burden off the families, guaranteeing an adequate level of coverage for future generations.

#### 1.3.4 The Excess cost growth (ECG) in health care expenditures

Non-demographic drivers of public health care expenditure are also sometimes referred to as “excess cost growth” (ECG) (Smith et al. 2009). The ECG is measured as the excess of growth in per capita health expenditures over the growth in per capita GDP after controlling for the effect of demographic change. Thus, whereas the income elasticity should capture changes in health care expenditure due to changes in income only, ECG estimates may also capture effects due to other factors than income, such as technological innovation, Baumol’s effect, health policies and institutional setting.<sup>25</sup> The precise breakdown of the role of these different drivers has varied across studies, as very few consider all of these factors simultaneously. The literature has primarily focused on the drivers of total health spending, rather than public health outlays.

Considering the public share of health spending, the IMF (Jenkner et al., 2010; Soto et al., 2012) estimates an ECG of 1.2% for 27 advanced economies over the period 1980-2008 with a wide variability across EU countries (between -0.9 % of the Czech Republic and 2.4 % of Luxembourg). OECD (2006) finds ECG to be 1% percent for 1980–2005 using a decomposition approach, whilst Hagist and Kotlikoff (2009) estimate an ECG of about 1.5 percent over 1970-2002 for ten OECD countries. More recently, de la Maisonneuve and Oliveira Martins (2013a,b) estimate a residual expenditure growth around 2 percentage points per year on average across OECD countries; the residual expenditure growth is computed by subtracting the age effect and the increase in income (using an elasticity of 0.8) from the increase in real health spending (with an income elasticity of one, the residual on average for the OECD would still be around 1.5% per year).

ECG represents a particular application of the residual approach which is typically used to estimate the impact of new technology on health care spending (see previous section 1.3.2). Recent methodology used for projecting public spending ratios for advanced economies is based on country-specific econometric estimation of ECG (OECD, 2006; Jenkner et al., 2010; European Commission, 2012; de la Maisonneuve and Oliveira Martins, 2013a,b).

Table 3 summarizes the major, important, and minor factors explaining past and current trends in public health expenditures in European countries. It also reports the potential burden of non-communicable diseases as a new driver for consideration, especially if the occurrence of multiple chronic conditions will increase among the elderly population. If better life-styles and effective preventive actions will slow down the underlying dynamics of prevalence of chronic illnesses, however the effect on spending growth could be small. Higher level of

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<sup>25</sup> A positive ECG should not be interpreted to mean that the costs of public spending have exceeded its benefits, because technological advancements — the main component of the ECG — have yielded enormous improvements in health status and well-being in advanced societies.

public coverage for LTC will probably become another potentially strong driver of public spending for many EU countries

**Table 3 The main drivers of public health care spending in the EU**

Impact	Driver	Type of driver
Major impact	<ul style="list-style-type: none"> <li>• Technological innovation</li> </ul>	Supply side
Important impact	<ul style="list-style-type: none"> <li>• Income growth</li> <li>• Citizens' expectations</li> <li>• Population ageing (<i>Long-term care</i>)</li> <li>• Providers' incentives (induced demand; defensive medicine; payment schemes)</li> </ul>	Demand side Demand side Demand side Supply side
Minor impact	<ul style="list-style-type: none"> <li>• Female labour participation (<i>Long-term care</i>)</li> <li>• Relative medical price inflation: "Baumol's effect" (<i>Long-term care</i>)</li> <li>• Public coverage for health care (<i>EU-12 countries</i>)</li> </ul>	Demand side Supply side  Institutional
To explore (new drivers)	<ul style="list-style-type: none"> <li>• Prevalence and cost of life-style related non-communicable diseases</li> <li>• Public coverage for Long-term care</li> </ul>	Demand side  Institutional

The drivers reported in table 3 are not independent: technological innovation is fueled by income growth and more generous coverage; in its turn, technological innovation in medical care may increase longevity in good health; enhanced economic conditions and better medical capabilities may change citizens' expectations, and so on.

According to most of empirical studies conducted since the 1990s, the major factor responsible for the growth of public health spending is technological innovation, while other factors - related to the demand and the supply of medical care and to institutional characteristics of health care systems – are less relevant even though not negligible. Among these other factors, income growth plays an important role for health care budget sustainability in the long run: a high income elasticity of public expenditure could imply that policy actions to sustain health care budget cannot simply rely on an increase in GDP since this increase might lead to a more than proportionate increase in public spending on health (Pammolli et al., 2012). Under this respect, policies should mainly guarantee the *economic sustainability* of health care expenditure.

Population ageing (via a potential increase in disability and dementia prevalence), the increase in female labour participation (via a higher demand for formal services to the disabled) and the Baumol's effect might drive an increase of long-term care spending. Different providers' incentives (via induced demand, defensive medicine and specific payment schemes) represent supply-side drivers which are strictly linked to the specific institutional and regulatory setting of each health care system. Their aggregate impact may be significant for health spending growth even though empirical analyses insofar did not reach unequivocal conclusions. Finally, a widening of public coverage for acute health care (in terms both of percentage of population covered and of size of the benefits basket) could represent a minor driver of future expansion of public spending only for the new Member States.

Projecting the potential impact of the determinants of public health care spending reported in Table 3 over the next years, according to different scenarios, may provide useful insights to

define future strategies for improving the sustainability of health care systems. In next section 2, I discuss the main projections of public healthcare expenditure for the European countries carried out by the Ageing Working Group of the European Commission, the OECD and the International Monetary Fund (IMF).

## **2. Sustainability analysis of public health care expenditure in Europe: the main projection models**

International institutions (OECD, IMF and the European Commission) and many national governments use time series analysis of past trends in order to project future potential scenarios of evolution of public spending on health care.

Projecting public spending on health care over the long-run is a rather difficult exercise, given the uncertainties regarding future trends in the drivers of spending and the complex institutional settings of national health care systems. Most of the existing simulation models projecting future trends of public health care spending take into account the main drivers examined in previous section 1.3 which are often distinguished between demographic factors (size and age structure of the population, including healthy life expectancy) and non-demographic factors (aggregate income growth, technological development, labour force change, relative prices in the health care sector). Other important drivers, such as different providers' incentives are generally not explicitly considered within the models. Usually a series of scenarios are developed to test the potential impact of the different determinants of public health care spending on the basis of hypothetical assumptions (a "what if" situation).

Many countries provide national projections of public spending on health, taking into account differing assumptions of demographic, labour force and productivity changes as well as different health and policy scenarios.<sup>26</sup> I consider here the main projections of public health care expenditure of advanced economies developed by the OECD, the International Monetary Fund (IMF) and the European Commission's Ageing Report. In these projections future levels of public health care spending are modelled to a large extent exogenously. In other terms, in most scenarios future policy reforms and behavioural changes by individuals are not taken into account ("no-policy change" scenarios). Therefore, they do not provide a forecast of future levels of expenditure on health but rather they suggest different scenarios that allow to analyse the potential dynamics of public spending on health in absence of changes in the current setting of the health care system. As such, they may help inform future health policy reforms which aim at improving the sustainability of health care spending.

When quantifying the impact of technology, these projections are based on an econometric analysis that decomposes the past growth of public health spending into three components: ageing effect, income effect and the remaining residual assumed to represent a country-specific excess cost growth (ECG) (see section 1.3.4). In both the OECD and the European Commission models, the residual is assumed to proxy technological developments, while in the IMF model ECG estimates capture effects jointly due to technological innovation, Baumol's effect, health policies and institutional setting. In this way, the projections incorporate endogenously past policy interventions, reflecting varying success of countries in containing the growth of health spending over the past. OECD and European Commission projections are made for both acute and long-term care (LTC) apart since the factors driving

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<sup>26</sup> Surveys of national long-term projections of public spending are reported in OECD (2010, chapter 1) and Astolfi et al. (2012) .



the two components are somewhat different.

### 2.1. *The OECD projections*<sup>27</sup>

OECD simulation model is based on several hypotheses on both demographic and non-demographic factors (GDP growth, elasticity of health spending with respect to income, effects from technology and relative prices) (OECD, 2006; Oliveira Martins and de la Maisonneuve, 2006). As regards the changing age structure of the population, OECD projections are based on the assumption that the average health care cost per individual in older age groups should fall over time for two reasons. First, the projections assume lengthening of lifetimes, thereby putting off the high costs in the period just prior to death into the future; and second, the effect of population ageing is also reduced because it is assumed that the longer life spans will be healthy ones. However ageing-related effects are stronger for LTC: on one hand, dependency rates will tend to rise as the share of old people in the population increase (the effect is mitigated somewhat by the likelihood that the share of dependents per older age group will fall as longevity increases due to the assumption of “healthy ageing”); on the other hand, expenditures are likely to increase owing to a possible “Baumol” effect (OECD, 2010).<sup>28</sup>

Figure 8 reports a synthesis of OECD projections over the period 2005-50. It suggests that public expenditure on health and LTC could rise to almost double current levels in EU-15 – from 6.9% of GDP in 2005 to 12.8% by 2050 – assuming that growth in the residual, which proxies technological innovation remains unchanged throughout the period (cost-pressure scenario). Alternatively, if governments were successful in reducing the size of the residual by half over the projection period (cost-containment scenario), public health and LTC spending would still increase by 3.4 percentage points of GDP to reach around 10.1% of GDP. Projections are quite similar for the OECD area as whole with a relatively lower weight for the LTC component both in the cost-pressure and in the cost-containment scenarios.

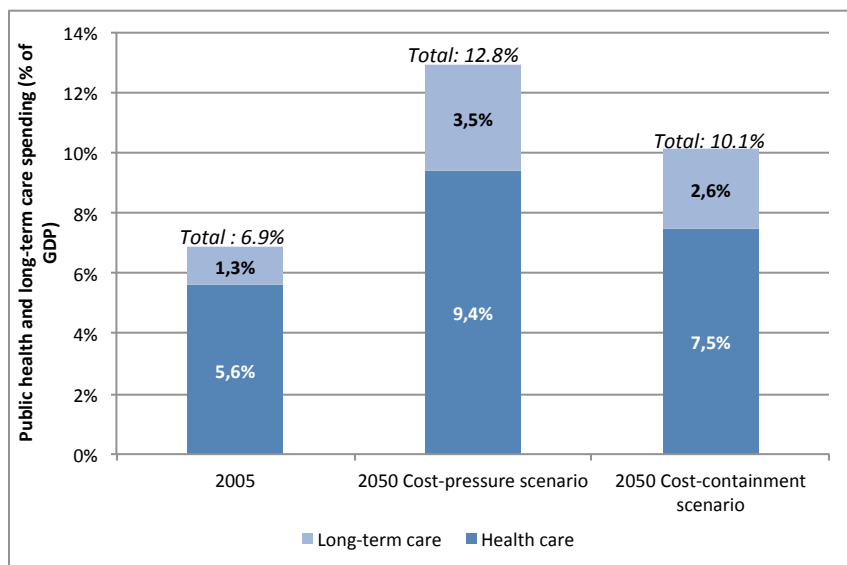
Against these average results, projections are quite different across OECD countries. For example, in the cost-containment scenario, a group of countries stands out with increases of health and long-term care spending at or above 4 percentage points of GDP, over the period 2005-50. This group includes rapidly ageing countries (Italy, Japan, Spain), countries that will experience a dramatic change in their population structure (Korea, Mexico, Slovak Republic), and countries with currently low labour participation, which may face a substantial increase in the demand for formal LTC (Italy, Ireland, Spain) As regards the U.S., according to OECD projections (which do not incorporate the effect of the 2010 projected reform), government spending on health and LTC should rise over the period 2005-2050 from 7.2% either to 12.4% (in the cost-pressure scenario) or to 9.7% (in the cost-containment scenario).

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<sup>27</sup> I consider here the projections developed by OECD in 2006 (OECD, 2006; Oliveira Martins and de la Maisonneuve, 2006). In 2013, OECD have produced new projections over the period 2006-2060 (see: de la Maisonneuve and Oliveira Martins, 2013a,b).

<sup>28</sup> The projections for spending on LTC are sensitive to the future development of labour market participation for the working-age population as higher participation reduces the capacity for informal care. An alternative scenario, where participation rates in countries where they are currently low converge towards levels in high-participation countries, has spending on long-term care rising by an additional 1-2% of GDP on average, but much more in some countries (OECD, 2006; OECD, 2010).

**Figure 8 OECD Projections of public health and long-term care spending - EU-15 - 2005-50**



Source: OECD (2006).

## 2.2. The IMF projections

The IMF projections are based on retrospective analysis of country spending trends between 1980 and 2008 and incorporate the effect of demographic changes on future health care spending (Jenkner et al., 2010; Soto et al., 2012). The simulation model considers both 27 OECD countries (“advanced economies”, including all EU-15) and 23 emerging economies (including 7 EU countries).

According to the IMF “baseline scenario”, public spending on health care in EU-15 countries (without LTC) is projected to rise on average by 2% of GDP over the period 2010-2030, and by 4.5% over the period 2010-2050 (Figure 9).<sup>29</sup> For the aggregate of the EU countries, this expected growth is stronger than in the OECD “cost-pressure scenario” (see section 2.1) and in the European Commission’s projections (see section 2.3).

For all advanced economies the public ratio is projected to rise on average faster than in the EU countries: by 3% of GDP over the period 2010-2030, and by 5% over the period 2010-2050. For the U.S., public health spending is projected to rise by about 5% of GDP over the period 2010-2030 and by over 11% over the 2010-2050 period, the highest growth of the advanced economies.

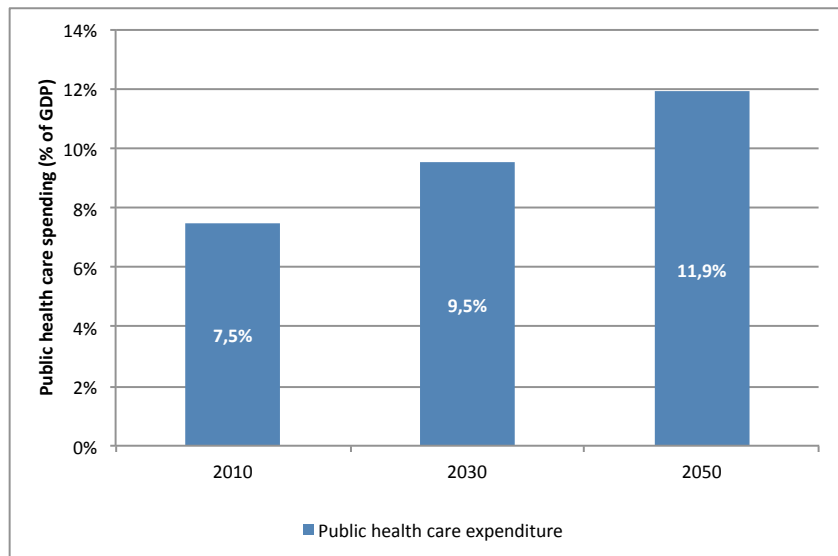
On average, expected growth in public spending for health care is lower for the European THS countries (+1.8 p.p between 2010 and 2030; +4.1 p.p. between 2010 and 2050) than for the SHI ones (+2.5 p.p between 2010 and 2030; +5.4 p.p. between 2010 and 2050). In seven EU countries (Austria, Greece, Luxembourg, Portugal and the U.K.), public spending is expected to rise by more than 3 % of GDP over the first 20 years (a time when countries will need to reduce budget deficits and public debt ratios in the wake of the global financial crisis) and by more than 6.9% over the entire 2010-2050 period.

Around one-third of the increase projected over the 2011-2030 period would be due to the

<sup>29</sup> IMF also develops other two scenarios for the 2010-2030 period: optimistic and pessimistic. See Jenkner et al. (2010).

effects of population aging, a slightly higher share than in the past. The remaining two-thirds would be due to excess cost growth (ECG), reflecting technological change, income growth, the Baumol effect, and health policies.<sup>30</sup> Estimated ECG varies substantially across different advanced countries. For EU countries, such as the U.K., Greece, Portugal, Austria, Portugal, the Netherlands and Luxembourg ECG explains a significant proportion of the projected growth in public health care spending.

**Figure 9 IMF Projections of public health care spending - EU-15 - 2005-2030-2050 (Baseline Scenario)**



Sources: Jenkner et al. (2010); Soto et al. (2012).

### 2.3. The projections of European Commission’s Ageing Report

The European Commission’s Ageing Report projects the budgetary impact of an ageing population in the 27 EU Member States and Norway over next fifty years. The report presents every three years the expenditure projections covering pensions, health care, LTC, education and unemployment transfers for all Member States. The work was carried out since 2001 by a joint Commission consisting of the EPC Working Group on Ageing Populations (AWG), which gathered experts from the 27 Member States and Norway, and the European Commission represented by the Directorate-General for Economic and Financial Affairs (DG ECFIN). The projections of all government expenditure items are made on the basis of common macroeconomic assumptions endorsed by the EPC and a “no policy change” assumption, i.e. reflecting only already enacted legislation (European Commission, 2012). The Ageing Report reports separate projections for: (a) acute health care and (b) LTC.

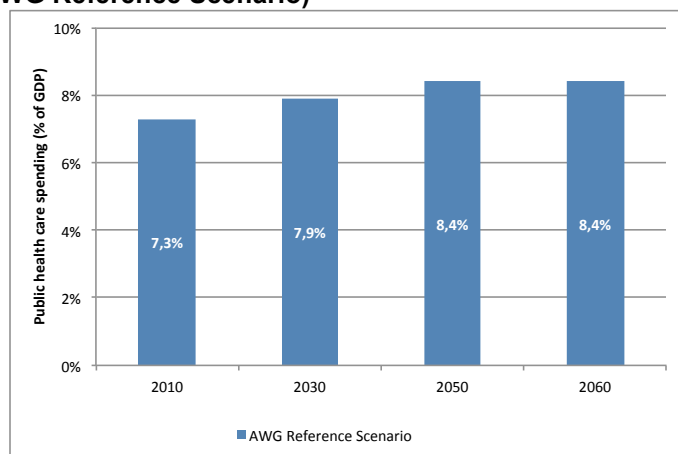
<sup>30</sup> The IMF model provides country-specific estimates of ECG in real per capita health expenditures over the growth in real per capita GDP after controlling for the effect of demographic change. ECG is estimated using 1980–2008 data to reflect the varying success of countries in containing the growth of health spending over the last three decades which exhibit periods of both accelerated growth and cost containment. The average ECG arising from the model is about 1 percent, which is comparable to the estimates from previous studies (Jenkner et al., 2010, p. 14; Soto et al., 2012).

(a) *Projections of public spending on acute health care over the 2010-2060 period*

As regards acute health care, the simulation model attempts to quantify the impact of demographic changes and, in addition, the possible evolution of non-demographic drivers on public health care expenditure.<sup>31</sup> The 2012 Ageing Report develops eleven different scenarios which simulate changes in the demographic structure, life expectancy and health status of the population, the importance of health care costs in the last years of life, an income elasticity of demand for health care higher than one but converging to 1 at the end of the projection period, different patterns of unit cost evolution for the health care sector and the cost-convergence of age profiles across the EU27 Member States (European Commission, 2012, p. 168). In the following, I focus on the baseline “AWG reference scenario”<sup>32</sup>, and on two other scenarios: the “Non demographic determinants scenario” and the “AWG risk scenario”.<sup>33</sup> In particular, the “AWG reference” and the “AWG risk” scenarios assume that per capita spending at older ages will decline in the future owing to the assumption that half of the future gains in life expectancy are spent in good health.

According to the “AWG reference scenario”, public health care expenditures are projected to increase from 7.3% of GDP in 2010 to 8.4% of GDP in 2060 for the EU15 (from 5.1% to 6.7% of GDP for the EU22) (Figure 10a).<sup>34</sup> Individual countries’ major increases over the 2010-2060 period are projected for Malta (+2,9 p.p. of GDP), Slovakia (+2.1 p.p.), Poland (+1.9 p.p.), Czech Republic, (+1.7 p.p.) and Austria (+1.6 p.p.).

**Figure10a Ageing Report 2012 - Projections of public acute health care spending - EU-15 - 2010-2030-2050-2060 (AWG Reference Scenario)**



Source: European Commission (2012).

“AWG Risk” and “Non-demographic determinants” scenarios project for EU countries a stronger growth of public spending on health care over the 2010-2060 period than the “AWG reference scenario” (Figures 10b and 10c). The former scenario attempts to take into account

<sup>31</sup> For an exhaustive presentation of the projection methodology used both in the 2009 and in last 2012 Ageing Report, see European Commission (2012) and Przywara (2010).

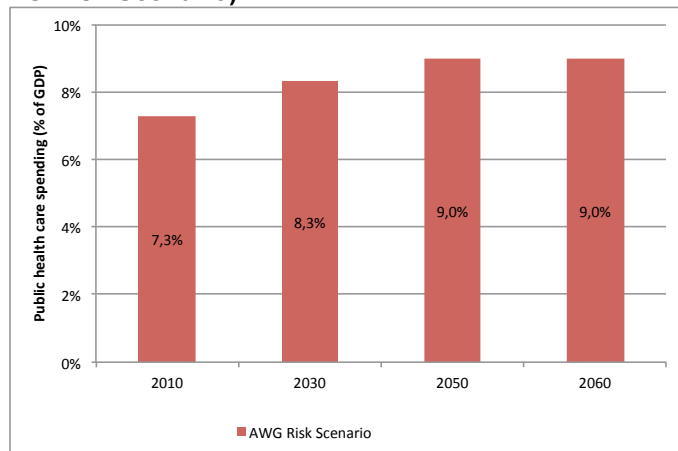
<sup>32</sup> The AWG reference scenario assumes that: (i) half of the increase in life expectancy is spent in good health; and (ii) the elasticity of health care spending with respect to income converges from 1.1 in 2010 to unity in 2060.

<sup>33</sup> The 2009 Ageing Report considered 9 scenarios, including the “AWG reference scenario” and a “technological scenario” quantifying the impact of technology on health care expenditure on the basis of an econometric analysis of past trends (European Commission, 2009, pp. 211-223).

<sup>34</sup> In the Ageing Report, the EU averages are weighted according to GDP.

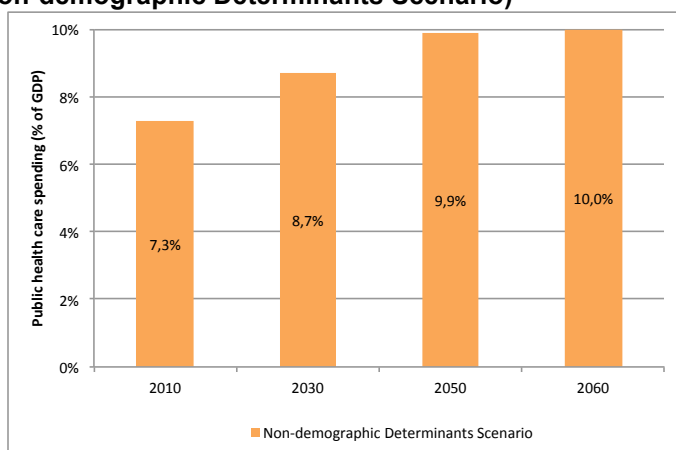
technological changes and institutional mechanisms (e.g. universalization of coverage or devolution to regions) which have stimulated expenditure growth in recent decades. The latter attempts to estimate the long-term impact of non-demographic “excess of cost growth” (ECG) factors on health care spending, alike the OECD and IMF projection exercises, improving methodologically the “technological scenario” of the 2009 Ageing Report. According to the “AWG risk scenario”, public spending is projected in the EU15 to be 9% of GDP by 2060, i.e. an increase of over 1.7 p.p. of GDP relative to 2010 (+ 2.2 p.p of GDP for the EU12). The projected excess cost growth through technological and institutional changes therefore adds around 0.6 p.p. of GDP to the AWG reference scenario both for the EU15 and EU12. In the “Non-demographic drivers scenario”, on average, the increase in public expenditure on health care is projected to be 2.7 p.p. of GDP for the EU15: from 7.3% of GDP in 2010 to 10% of GDP in 2060 (+3.4 p.p. of GDP for the EU12). Individual countries’ major increases over the 2010-2060 period are projected for Malta (+5.1 p.p. of GDP), Slovakia (+4.4 p.p.), Poland (+3.9 p.p.), Czech Republic, (+3.8 p.p.), Austria (+3.4 p.p.), Germany and France (both 3.3 p.p.). The results highlight the potential impact of non-demographic drivers on health care expenditure, such as innovations in medical technology, institutional settings and individual behaviour which add around 1.4% p.p. of GDP in EU15 (+1.6 in EU12) to the impact of rising income levels, as modelled in the “AWG reference scenario”. (European Commission, 2012, p. 182). These projections shows lower (higher) spending projections for the EU15 (EU12) than the “technological scenario” of 2009 Ageing Report.

**Figure10b Ageing Report 2012 - Projections of public acute health care spending - EU-15 - 2010-2030-2050-2060 (AWG Risk Scenario)**



Source: European Commission (2012).

**Figure 10c Ageing Report 2012 - Projections of public acute health care spending - EU-15 - 2010-2030-2050-2060 (Non-demographic Determinants Scenario)**



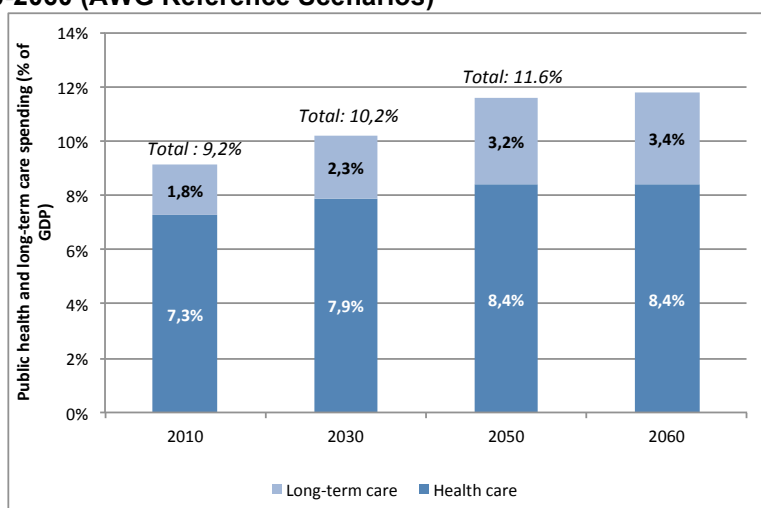
Source: European Commission (2012).

**(b) Projections of public spending on long-term care over the 2010-2060 period**

The 2012 Ageing Report presents nine scenarios for LTC expenditure. According to the “AWG reference scenario” based on current policy settings<sup>35</sup>, public spending on LTC is projected to double, increasing from 1.8% of GDP in 2010 to 3.4% of GDP in 2060 in the EU15 (and in the EU as a whole). The projected increases varies across different countries reflecting very different approaches to the provision/financing of formal care. The stronger increase of public ratios (more than 2 p.p. of GDP) are projected in Belgium, Denmark, the Netherlands, Finland, Sweden and France.

Figure 11 reports the aggregate variations of both acute health care and LTC over the 2010-2060 period for the EU15 countries, considering the “AWG reference scenarios”.

**Figure 11 Ageing Report 2012 - Projections of public health and long-term care spending -EU15 - 2010-2030-2050-2060 (AWG Reference Scenarios)**



Source: European Commission (2012).

<sup>35</sup> The AWG risk scenario assumes that: (i) half of the increase in life expectancy is spent in good health; and (ii) there is an upward convergence of the relative age-gender specific expenditure profiles per beneficiary (as percentage of GDP per capita) of all countries below the corresponding EU27 average to the EU27 average (European Commission, 2012).

Previous analysis has shown that OECD, IMF and the European Commission have developed quite different projections of the increase of public health care spending. Table 4 reports a synthesis of these projections for the EU area and for seven European countries (France, Germany, Italy, the Netherlands, Spain, Sweden and UK). It shows that the three simulation models provide very different pictures of future trends of public spending on health over the next 40 years. Differences stem from a different base year for starting the projections (the base year for OECD is 2005, while IMF and European Commission projections start from 2010) and obviously depend on different scenario assumptions. It follows that comparing correctly these projections should call for a careful consideration of different hypotheses. However, table 4 suggests that, according to different projections, EU countries are expected to experiment on average a significant increase of the public share of GDP allocated to health care and LTC, in a range between 2.5 p.p and 6 p.p of GDP, i.e. an increase between 28% and 88% of current levels of public spending for the EU27 (between 27% and 84% for the EU15).

The projected increase is particularly strong for the LTC component of public spending, which should more than double over the 2010-2050 period, owing the sharp rise of frailty and disability at older ages, especially amongst the very old (aged 80+) which will be the fastest growing segment of the EU population in the decades to come. In this case the projected increases by the EU Ageing Report are significantly stronger than the change predicted by the OECD (2006), in particular in the "Coverage convergence scenario" (the upper bound of the projections of LTC spending) which assumes that the exchange of best practices across Europe and growing expectations of the populations will result in an expansion of publicly-financed formal care provision. The increase of acute health care spending is projected in a range between 1.1 and 3.8 p.p. of GDP for the EU27, i.e. an increase between 15% and 65% of the current level (in this case both the IMF and the OECD project stronger increases, owing to a relatively higher weight attached to the non-demographic drivers).

**Table 4 Projected increase of public health care spending for selected EU countries over the 2010(5)-2050 period (variations as p.p. of GDP)**

	IMF - 2010		OECD - 2006						2012 EU Ageing Report					
	Health care		Health Care		LTC		Total		Health Care		LTC		Total	
	Base Year 2010	Variation in Baseline Projections	Base Year 2005	Range of variation (1)	Base Year 2005	Range of variation (1)	Base Year 2005	Range of variation	Base Year 2010	Range of variation (2)	Base Year 2010	Range of variation (3)	Base Year 2010	Range of variation
France	9.0	2.6	7.0	1.7-3.6	1.1	0.9-1.7	8.1	2.6-5.3	8.0	1.4-3.0	2.2	1.8-3.7	10.2	3.4-6.7
Germany	8.1	1.5	7.8	1.8-3.6	1.0	1.2-1.9	8.8	3.0-5.5	8.0	1.5-3.2	1.4	1.6-3.5	9.4	3.1-6.7
Italy	6.9	1.1	6.0	1.9-3.7	0.6	2.2-2.9	6.6	4.1-6.6	6.6	0.6-1.6	1.9	0.8-2.0	8.5	1.4-3.6
Nether.	7.6	4.9	5.0	1.9-3.8	1.7	1.2-2.0	6.8	3.1-5.8	7.0	1.1-2.4	3.8	3.8-4.2	10.8	4.9-6.6
Spain	6.6	3.5	5.5	2.3-4.1	0.2	1.7-2.4	5.6	4.0-6.5	6.5	1.2-2.4	0.8	0.5-1.5	7.3	1.7-3.9
Sweden	7.8	0.5	5.3	1.4-3.2	3.3	0.1-1.0	8.6	1.5-4.2	7.5	0.6-2.0	3.9	2.0-2.3	11.4	2.6-4.3
UK	7.3	8.2	6.1	1.8-3.6	1.1	1.0-1.9	7.2	2.8-5.5	7.2	1.1-2.5	2.0	0.6-1.5	9.2	1.7-4.0
EU15	7.5	4.5	5.8	1.9-3.7	1.3	1.3-2.2	7.0	3.2-5.9	7.3	1.1-2.6	1.8	1.4-2.8	9.1	2.5-5.4
EU27 (4)	6.4	3.8	5.8	2.0-3.8	1.1	1.3-2.2	6.8	3.2-6.0	7.1	1.1-2.6	1.8	1.4-2.5	8.9	2.5-5.1

Notes:

(1) Range of variation between the "cost-containment scenario" and the "cost-pressure scenario"

(2) Range of variation between the "AWG reference scenario" and the "Non-demographic determinants scenario"

(3) Range of variation between the "AWG reference scenario" and the "Coverage convergence scenario" (the latter assumes that the exchange of best practices across Europe and growing expectations of the populations will result in an expansion of publicly-financed formal care provision).

(4) Jenkner et al. (2010) and Soto et al. (2012) consider the unweighted average for 25 countries (without Cyprus and Malta). OECD (2006) considers the unweighted average for 19 countries (without Cyprus, Malta, Bulgaria, Estonia, Latvia, Lithuania, Romania and Slovenia).

Sources: OECD (2006); Jenkner et al. (2010), Soto et al. (2012); European Commission (2012).

Projections for individual countries are quite variable according to the three different simulations considered. According to OECD projections, major increases over the 2010-2050 period should be experienced by Italy (with a total increase between 62 and 100% of 2005 health and LTC expenditure) and Spain (with an increase between 71 and 116% of 2005 spending), especially in the LTC component of their public spending. On the contrary, the IMF projects the stronger increases in acute health care spending for the U.K. (with a more than double share of health care spending on GDP in 2050 with respect to 2010), the Netherlands and Spain; as said before, for the U.K. and the Netherlands a significant proportion of the projected growth in public health care spending is explained by the “excess of cost growth” factor which incorporates technology change, relative prices effect and past health policies. Finally, the EU Ageing Report projects a strong increase in public spending for the Netherlands (mostly for LTC), and for France and Germany (both for health and LTC care) and. Differently from the OECD projections, according to the 2012 EU Ageing Report, Italy, Spain and UK should experience a relatively lower increase of public health care expenditure than other EU countries.

### **3. Policies for the sustainability of public health care**

Past trends of growth and future projections of health care expenditure pose serious concerns about the long-term sustainability of EU health care systems. The challenge facing the EU countries is the need to secure the economic and financial sustainability of their health systems respecting the principle of universal access to basic health services.

The current global economic slowdown that started in 2007 places further serious constraints on the capacity of financing the health sector in the short to medium term. The sharp deterioration in the public finances means that the reduction of public sector deficit (i.e., short-term fiscal sustainability) is currently considered a priority in many countries. However, faced with the uncertainty regarding longer-term recovery prospects for the global economy, governments need also to improve cost-effectiveness of health systems implementing the necessary reforms. In other words, long-term financial sustainability calls for improving the ability of health systems to create value through specific reform interventions aimed at increasing efficiency and effectiveness, that is long-term financial sustainability depends strictly on economic sustainability.<sup>36</sup>

In the following sections, I briefly examine the main health policy options available to control spending in the short-term (section 3.1) and to achieve economic sustainability of the health care systems in the future (section 3.2).<sup>37</sup>

#### *3.1 Short-term policies to control spending in times of crisis*

Short-term policies aim at expenditure restraints and largely operate through regulatory

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<sup>36</sup> Governments may pursue long-term financial sustainability of health systems not only through direct interventions in the health care sector but also through other more general economic policy actions, such as raising the retirement age, reforming the labour market (to reduce unemployment) and encouraging immigration (Medearis and Hishow, 2010). A positive contribution both to economic growth and spending control can be provided also by policies aimed to the reduction of income and education inequalities.

<sup>37</sup> A complete survey of different health policies to control spending both in the short and in the long term is provided by OECD (2010), chapter 2.



controls at the macro-level, such as:

- budget caps (limits on overall health care spending or on sub-sectors, such as hospitals or pharmaceuticals);
- controls on volumes of inputs (e.g., quotas for medical students, rationing high-tech capital equipment, defining positive lists for drugs) and of outputs (e.g., ceilings to the number of inpatient treatments to control the providers' incentive to increase the volume of treatments when they are paid with prospective case-related tariffs);
- price controls on inputs and health services (e.g., wage controls for health care professionals, price controls on specific treatments, reference pricing for drugs);
- increasing cost-sharing by users.

These policies, while often subject to debate, are relatively easy to introduce and have been utilised widely across EU countries. They appear to be most successful particularly in THS countries with integrated health financing and supply.

Budgetary caps or spending constraints at the national or regional level have been used by all European Union OECD countries, with the exception of Austria (OECD, 2010). Wage and physicians' fees controls have more commonly been implemented in THS countries and those with salary-based remuneration for specialists (e.g., Denmark, United Kingdom, Ireland, Italy, Finland, Spain and Sweden). Even in fee-for-service environments, most governments have maintained oversight over price-setting or set prices administratively, sometimes in response to a break-down of negotiations with providers (e.g., Belgium, France, Luxembourg). Volume-price adjustment mechanisms – where health fees are automatically adjusted in function of care volumes when a set level of expenditure is reached – exist in Germany, Austria, Hungary, and Belgium (OECD, 2010). Recent cost-containment efforts in Europe have also addressed spending on pharmaceuticals. For example, Ireland and the United Kingdom have taken steps to effectively reduce the prices paid for pharmaceuticals. Prescription practices were tightened in France, Germany, and Ireland; while reimbursement methods were altered in Germany, Italy, and Ireland (Jenkner et al., 2010). Requiring patients to pay for a larger share of the health care they receive is a widespread way to control health care consumption (i.e., to control a “moral hazard” effect determined by the insurance coverage) reducing the level of public spending. Drug delisting from the benefit package is another widely used way to shift costs to citizens to reduce pressure on public budgets. Both cost-sharing and delisting increase the level of out-of-pocket (OOP) spending and may reduce access to care especially for more vulnerable individuals (low income and chronically ill). During the 1990s, the share of OOP spending in total spending increased in many EU countries but this increase appears to have been marginally reversed in last years. Greater increases in cost-sharing have mainly concerned pharmaceutical drugs while increased private payments for specialist visits and diagnostics have been less widespread (France Germany, Italy, Sweden). In a number of cases, flat-rate payments per prescription have been introduced (the Czech Republic, France, Germany, the United Kingdom, Italy). Pharmaceutical reference price systems (i.e., increased cost-sharing for individuals using branded or higher cost products) have been introduced in most countries. In general, the very limited changes in cost-sharing over recent decades for most countries and the widespread exemption for vulnerable groups have produced a very limited effect on the demand for care (OECD, 2010, pp. 70-71).

All these types of top-down macro-level controls are effective in reducing expenditure in the short term, but they often led to undesired side-effects on the access to care (e.g., longer waiting lists for essential procedures, poorer quality of provided treatments) while doing little or nothing to guarantee long-term economic and financial sustainability of health systems,

moderating the underlying long-term pressures which push health spending up. It is even possible that measures taken to restrict costs in the short run, with little (or no) regard for the value of health, can increase long-run spending – if necessary investments are delayed and desirable prevention policies are not implemented (Mladovsky et al., 2012).

The IMF have measured the relative effectiveness of different measures implemented by advanced economies (including 18 EU countries) to contain spending growth (reducing the excess cost growth) over the 1995-2008 period (Jenkner et al., 2010; Tyson et al., 2012). The results of the IMF analysis suggest that restricting the supply through price and volume controls appear ineffective in controlling health spending; these controls are often eroded by supplier responses such as increasing volumes or directing patients to higher-cost services. Demand control through copayments show to be effective only in the short run while they can raise equity and access concerns. Among macro instruments, only budget caps and central oversight are rather effective tools for reducing spending growth even though they can also limit access to health care. According to the IMF analysis, more substantial control of health spending (reductions in ECG) are obtained however from two types of micro-level reforms: introducing incentives for patients, purchasers and providers to avoid excessive demand and over-supply of health care service and to enhance the productive efficiency in the health sector; improving public sector management and coordination (e.g. through gate-keeping and “pay for performance” schemes) (Jenkner et al., 2010; Tyson et al., 2012).

These results confirm that the long-term sustainability calls for health policies aimed to enhance health system efficiency and effectiveness controlling the main drivers of health care spending growth. These policies regulating both supply and demand side are generally more difficult to implement than traditional command and control measures and often require in-depth reforms to health care systems before being fully introduced. In some cases, long-term sustainability could also require a greater reliance on private financing, especially of supplementary health care outside public package. In the following section I consider both these policies.

### 3.2 *Policies for the future*

Several measures introduced in the last two decades by several EU countries aimed both at slowing down the growth of health spending and improving value for money. Many of these policies share two common features. First, they focus on improving the way health systems address the changes in epidemiology and the rise in chronic disease. Second, they seek to reward patients, providers and buyers for quality and efficiency of care.

According the European Commission and other international institutions (OECD, IMF) these policies should be intensified in the immediate future to achieve the needed consolidation of public finances in Europe without compromising the values of universal coverage and solidarity of European health systems (European Commission, 2010<sup>38</sup>; OECD, 2010; Jenkner et al., 2010; Tyson et al., 2012).

Under this respect, considering the lessons drawn from several European countries, two main directions might be explored:

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<sup>38</sup> The Joint Report on health systems prepared by the European Commission and the Economic Policy Committee (AWG) outlines ten main policy challenges for the EU countries to be addressed resolutely in the coming years to contain spending in an efficient and equitable manner and provides country specific recommendations which have been endorsed by Member States (European Commission, 2010).

1. the adoption of regulation tools on supply and demand side to increase cost-effectiveness of health systems;
2. the implementation of a new balanced mix of public and private financing, strengthening the role of cost-sharing and supplementary private health insurance.

### 3.2.1 Policy tools on demand and supply side

A first set of policies are associated to micro-type incentives-based measures both on the demand and the supply side.

#### Demand-side policies

##### 1. *Disease prevention and healthy lifestyles incentives*

Preventable illness linked to individual behaviour accounts for a higher burden of morbidity and mortality and determine high social costs in terms of health care spending and losses in economic growth (see section 1.3.1). In general public health systems currently give equal access to health services to everyone, irrespective of the individual choices and behaviours. This equal access policy is in some cases accompanied by policies aimed at encouraging individuals to behave in health-promoting ways. 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) (European Commission, 2010; Muraro and Rebba, 2010):

- information (e.g., public information campaigns on the media);
- education (e.g., from health education in school curricula);
- empowerment of occupational medicine to tackle some risk factors at the workplaces through appropriate interventions for occupational health and safety;
- and incentives such as corrective taxes and subsidies and “libertarian Paternalism” interventions.

Muraro and Rebba (2010) have argued that many forms of public intervention aim at affecting individual choices towards healthy lifestyles while respecting freedom of choice. Most of these different types of government intervention lie along a continuum of actions where distinctions are necessarily conventional: information merges into education, which tends to become libertarian paternalism, that is, the introduction of “positive rules with limited and costly exceptions”; in its turn libertarian paternalism may use outright non monetary and monetary incentives and disincentives intended to promote appropriate behaviour, making exceptions to it atypical and costly.

In particular, corrective excise taxes on tobacco, alcohol, high-fat and high-sugar food may provide a “double dividend”: on one hand they reduce the unhealthy consumption; on the other they can increase financial resources for funding health care.

The striking and contradictory expression “libertarian paternalism” (introduced by Thaler and Sustein, 2003, 2008) denotes a large and heterogeneous set of measures whose shared feature is the pursuit of improved health, introducing a system of rules that impose some objective penalty for damaging behaviour and/or some reward for virtuous behaviour. The cost may be monetary (adopting the exception entails an outlay) or non-monetary (the time or inconvenience of adopting the exception, even if this is only the psychological cost of deviating from the norm). This principle has been widely applied in the context of health policies. For example: provisions in collective agreements for an exercise period where

employers are required to offer a time during the working week for their employees to exercise, but which employees could opt out of if they wished (several companies in the UK – e.g., Unilever and Cadbury Schweppes – have been involved in this scheme; see Le Grand and Srivastava, 2008); agreements with supermarkets for the prominent display of healthy foods and visible warnings for those that are potentially harmful; free distribution of fresh fruit in primary schools and the involvement of firms in similar schemes for their employees (an example is the Change4Life program in the United Kingdom; see Oliver, 2009).

A current debate in the literature is whether policies for health promotion really contribute to lower costs for the health care system in the long-run. However, since these interventions may extend and improve quality of life, health promotion measures should be assessed more properly focusing on cost-effectiveness (i.e., in terms of “cost per quality-adjusted life year” gained) not merely on cost-savings (Srivastava, 2008). New evidence produced by the OECD through micro-simulation analysis does show favourable cost-effectiveness and distributional profile for health promotion policies such as obesity prevention (OECD, 2010).

## 2. *Steering and selecting demand: empowerment of primary care*

Encouraging the use of primary care remains a policy priority for many Member States. In most European countries, referral systems - whereby a General Practitioner (GP) 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 compulsory or encouraged by financial incentives. However, in several 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 (European Commission, 2010, p. 151). Empowerment of primary care may help guide the patient through the health system, thereby improving care co-ordination and reducing inappropriate demand.

Other policies can regulate and steer health care demand, increasing appropriateness: the definition and implementation of appropriateness criteria according to Evidence Based Medicine (EBM), adopting diagnostic and therapeutic paths and guidelines; the definition of priority criteria for managing waiting lists of inpatient and outpatient services. In particular, prioritisation aims at regulating access to health care services according to clinical severity, emergency, or to other relevant variables, through either priority classes (homogeneous waiting groups) or priority indicators (Mullen, 2003; Mariotti et al., 2008).

These policy tools for indirect control of health care demand can be used for regulating the consumption induced by health care producers and have become increasingly important since in many cases the derived demand of health care is influenced by the provider (in first place the doctor) who affects consumer’s preferences and choices.

## 3. *Better communication between patients and providers*

Better two-way communication between doctors and their patients regarding the cost and potential benefits of treatment might be beneficial.<sup>39</sup> Moreover, with an increasingly educated population and rising chronic disease, self-care and prevention become more and more important. “A better understanding by patients as to when they should make contact with the health system – e.g. through better health education and widespread dissemination of

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<sup>39</sup> Mulley (2009) provides evidence that patients may be less willing than their doctors to choose highly invasive and intensive forms of treatment if they are better aware of the chances of success and/or serious longer-term side effects.

*information on early warning signs – is desirable. Such policies, however, would need to be structured within the context of broader efforts aimed at disease prevention and health education and promotion” (OECD, 2010, p. 72).*

### Supply-side policies

1. *Implementing new models of care to cope with the emerging epidemiological landscape*  
Population ageing with the increased prevalence of chronic diseases, and often multiple chronic diseases, calls for improved care co-ordination and integration between health and social services. Improving care co-ordination requires policies aimed at: overcoming the segmentation in health care and the lack of co-ordination between health and social care by pooling human and financial resources for LTC (most notably between medical care on the one hand and social services on the other); adoption of network budgeting and new kinds of fee-per-case payments covering the continuum between medical treatment and nursing care, including rehabilitation; reconfiguration of provider systems (particularly at the primary care level) with appropriate and explicit incentives for care co-ordination; improved information transfer between different providers and provider levels in order (OECD, 2010, pp. 72-73 and chapter 5). Particular attention needs to be given to transitions between acute hospital care and long-term care services. Community services, such as health teams or group practices combining both doctors and nurses, and case-management are promising directions for change towards a more cost-effective treatment and monitoring of patients with chronic conditions. All these measures entail the adoption of patient-centered models of care such as disease management, and CCM (Chronic care model) (Wagner, 1998; Ham, 2010). Despite the perceived importance of improved care co-ordination, available evidence suggests that, while improved co-ordination will enhance care quality, however there is no clear evidence that specific forms of care co-ordination – such as disease management – will lead to overall cost savings at least in the short run (OECD, 2010, p. 73).

Moreover, several EU countries should intensify the successful increase in the proportion of day case surgery and explore models of primary or ambulatory care to enhance the supply of follow-up care for long-term care patients to reduce the unnecessary use of acute care settings for this type of patients.

Lastly, use of telehealth remote monitoring technologies can improve clinical management of chronic diseases, increase cost-savings, and expand access to quality health care services, even though the evidence base for the value of telemedicine in managing chronic diseases is on the whole weak and contradictory (Wooton, 2012, Henderson et al., 2013).

### 2. *Changing incentives to providers*

In many countries, significant incentives to efficiency have been obtained passing from retrospective payment of providers (in particular hospital services) to prospective case-based payment like capitation or DRG tariffs. Prospective payment however may also incentive providers to reduce quality or to increase the volume of treatments, requiring careful control by purchasers.

Achieving value from health care provision will also require reforms in provider payment mechanisms. “Pay-for-performance” (P4P) rewards providers for improving patients’ health, or for providing high-quality care while in many countries most health care providers are still rewarded for activity, or responsibility. In particular, P4P schemes may be useful to promote modes of primary and ambulatory care better adapted to long-term care patients. Considering the OECD countries, there has been a diffusion of such schemes in the past few years in the

United States (both public and private sector), the United Kingdom (Quality and Outcomes Framework), New Zealand (Performance Based Management), Brazil and Australia (Practice Incentives Program), to mention a few (OECD, 2010, chapter 4). Generally, these schemes are used in primary care and encourage greater attention to be given to prevention and to following clinical guidelines according to Evidence Based Medicine (EBM), for example for chronic care. In many cases, financial rewards are given to providers meeting predefined health-service performance targets.

OECD and IMF assign an important role in setting efficiency incentives to providers from an increased use of market mechanisms. Such arrangements have become increasingly popular in a number of countries (Germany, the Netherlands, United Kingdom, Switzerland and the United States). Examples include the creation of internal markets (e.g., where primary care physicians purchase services from hospitals), separating the purchase of health services from provision (thus allowing competition among providers), and promoting patient choice (e.g., where patients can choose among primary care providers and hospitals) (OECD, 2010; Jenkner et al., 2010; Tyson et al., 2012). However, introducing competitive mechanisms has often proved difficult because purchasers often lack the information needed to write and monitor contracts, a process that can be very costly.

Lastly, there is increasing agreement, mostly in the United States, that to cut down the cost of defensive medicine and encourage physicians to practice EBM requires malpractice liability reforms. The issue is quite complex, involving a change in the legal system, and it cannot be solved only by health policy measures.

### *3. Fostering cost-effective technology adoption through health technology assessment*

The effective management of biomedical innovations and new technologies seems crucial to counterbalance the additional costs of meeting additional demand for new and better treatments with potential expenditure savings resulting from lower unit costs (through faster, less invasive and more efficient care). As described earlier, the development and diffusion of new medical technology is probably the most significant contributor to the rapid growth in health care spending. Therefore, the challenge to health systems for the next several decades is to develop systems to reduce the amount and share of spending that is allocated to ineffective and inappropriate (wasteful) treatments and that exceeds societal willingness to pay. To this aim, several countries have adopted explicit structures or processes to help purchasers make informed decisions on coverage of pharmaceuticals or costly new technologies. Evidence-based medicine (EBM) and Health-technology assessment (HTA) have already increased the transparency of decision-making and helped to ensure that new investments are cost-effective. HTA examines short and long term consequences of the application of a health-care technology (Sorenson et al., 2008), while EBM provides clinical evidence analysis for individual decision-making practice guideline, and policy decision-making. Underlying these concepts is the demand for information on the comparative effectiveness of health-care interventions when used in actual practice. (O'Donnell et al., 2009). Use of the cost-effectiveness findings could be implemented at the health plan level or through a centralized, institutional process, such as Britain's National Institute for Health and Clinical Excellence (NICE). The method to control the use of inappropriate technology could be through coverage and reimbursement decisions, by using financial incentives for physician and patients to use cost-effective treatments.

More should be done to generate and diffuse evidence about the relative merits of health-care alternatives. Only a few countries produce and actively disseminate clinical guidelines to inform decision-making at the doctors and patient level (OECD, 2010, chapter 3). Cost-

effectiveness analyses can encourage the purchase of “good value for money” but using thresholds to define cost-effective care (e.g., €40,000–€80,000 per quality-adjusted life year, or QALY) sometimes may greatly underestimate the value of gained health through medical innovations (Hirth et al., 2000; Gelijns et al., 2005).<sup>40</sup>

#### 4. *Improving data systems and information transfer to promote quality of care*

The adoption of information technology and computerisation of providers’ practice (in particular GPs) may improve “*the scope for care co-ordination, minimising duplication of medical tests, reducing the administrative cost of processing claims and potentially increasing the quality of care where this is monitored*” (OECD, 2010, p. 75).

To improve patient follow-up and coordination between health services and between health and social care, it is also important to develop mechanisms that facilitate the flow of information across providers (European Commission, 2010, pp. 157-158).

### 3.2.2 Rethinking the mix of public and private funding

Policies addressed to demand and supply control (considered in previous section) represent a necessary but (likely) not sufficient condition to guarantee the long-term financial sustainability of public health care systems.

The future impact of technological innovation and epidemiological transition on spending growth coupled with lower government revenue-raising capacity due to a substantial change in the economic environment over the last decades - with prolonged low growth rates and the uncertainties caused by globalisation and the decline of the working class with its typical solidarist values - will probably entail an increased use of explicit rationing of some aspects of health care, redefining the package of services subsidised by public funds to be provided (Coulter and Ham, 2000). Priority setting through explicit rationing of less cost-effective health care (high cost/low benefit treatments) is politically difficult, but “*the alternative may be to reduce steadily the scope and quality of statutory health care by stealth*”, increasing social inequality in access to care and reducing solidarity (Smith, 2009).

This means that long-term financial sustainability of European health systems will likely require a new balanced mix of public and private financing, increasing the role of private funding and of supplementary private health insurance, to allow investment and innovation, without imposing unsustainable burdens on public budgets and without denying care to the disadvantaged. In this framework, copayments could probably increase their weight in funding health care, particularly those treatments considered difficult to control or not cost-effective enough from a societal point of view.<sup>41</sup>

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<sup>40</sup> Another important issue to consider is the complex interaction between public health systems and private R&D activities in drug development. Stiglitz (2012) argues that actually governments finance most health-related research and development – in part directly, through public support of research (e.g. clinical trials within public hospitals), and indirectly, through public purchases of drugs within the basic basket of health care. On the same time, the patent system gives private innovators a temporary monopoly and creates incentives that do not necessarily correspond to social returns (high drug prices, limited spread of knowledge, reduced incentives to produce less profitable high social-value drugs). Stiglitz suggests to replace the current model with a government-supported prize fund where innovators are rewarded for new knowledge, but they do not retain a monopoly on its use. In this way, the power of competitive markets can ensure that, once a drug is developed, it is made available at the lowest possible price – not at an inflated monopoly price (Stiglitz, 2012).

<sup>41</sup> I do not consider here other potential sources of private funding such as Medical Saving Accounts (MSAs), involving personalized savings accounts earmarked for health care without risk pooling across individuals

Two possible actions might be considered: (i) a redesign of the system of copayments for treatments included within the basic package of health care provided by public health systems; (ii) promoting, via tax incentives, additional private health insurance topping up the public basic coverage, in order to mitigate the burden of out-of-pocket (OOP) spending.

A frequently proposed solution both for health care and LTC – in the same way of the pension system - is a mixed (public/private) system structured on three levels:

1. a basic package (“benefit basket”) financed by public funds (taxes, social contributions) to be defined explicitly (by the criteria of cost-effectiveness and EBM) and guaranteed free of charge across the country;
2. copayments and/or private health insurance (PHI) schemes supported by tax incentives to fund drugs and services with significant, even though lower, social value than those within the benefit basket, which are not (or partially) covered by the basic public scheme (e.g., dental services, non-generic pharmaceuticals, innovative treatments or drugs with a initial high cost-effectiveness ratio which may improve in the medium-long run);
3. unsubsidised private insurance coverage or direct OOP payments for the remaining interventions.

Figures 12a and 12b tries to illustrate in a simple way these concepts.

**Fig. 12a** Explicit definition of the benefit basket within a public health system

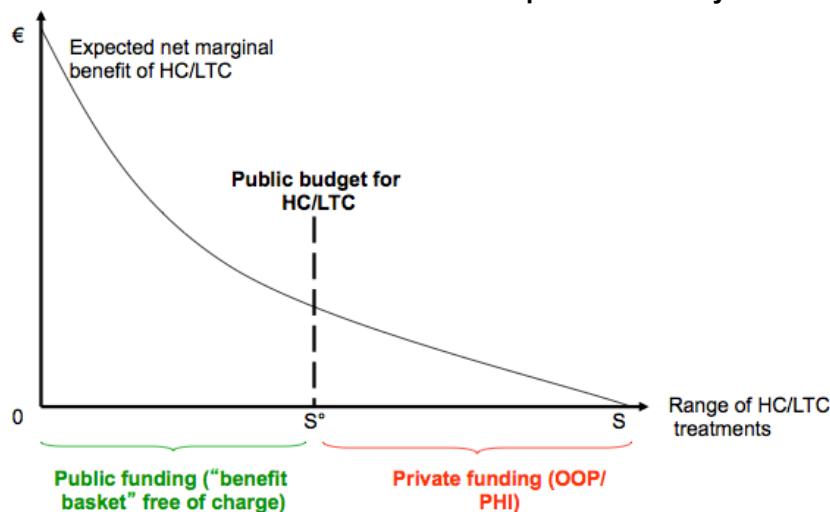


Figure 12a shows a health system where the benefit basket include all the interventions (either for health care or for LTC treatments) whose social expected net marginal benefit is above a given threshold which is defined according to the public budget constraint (explicit

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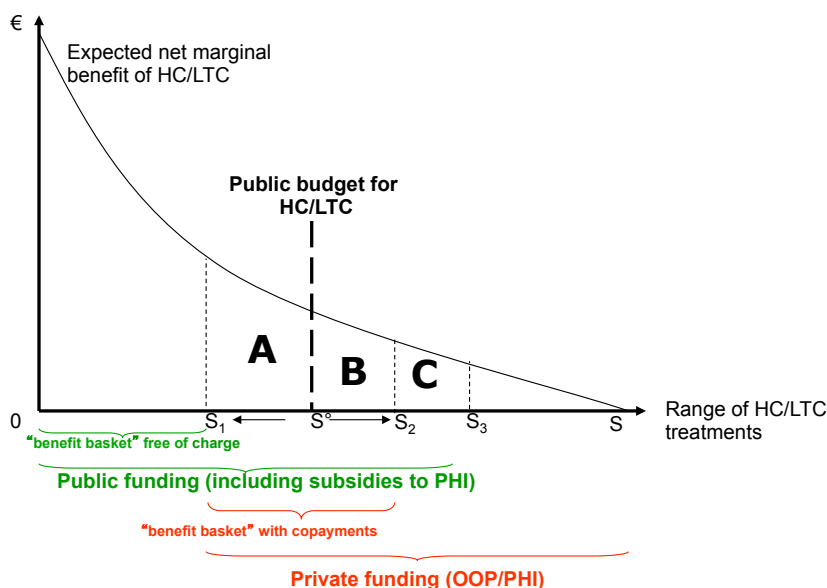
(Thomson et al., 2009, pp. 28-29). MSAs are essentially a variant of cost-sharing but differently from copayments they do not limit excess consumption (moral hazard). Moreover, their introduction could set in motion a process of de-insurance that may increase choice for some, but is also likely to jeopardise important health policy goals. According to the WHO European Observatory on Health Systems and Policies, the international experience of MSAs does little to recommend them to European policy makers, particularly those keen to ensure financial protection, equitable access and value for money in their health systems (Thomson and Mossialos, 2008).



rationing through priority setting). All treatments in the range  $OS_0$  define the benefit basket completely free of charge. Treatments beyond have to be paid OOP. In the long run such a system could be not sustainable and the government could restrict the benefit basket.

Figure 12b illustrates in a schematic way how long-term financial sustainability could be obtained restructuring the health system by increasing the share of total health care spending paid for by citizens whilst, on the same time, allowing an expansion (innovation) of the benefit basket and ensuring equity of access. For example, patients may be required to copay some interventions within the original benefit basket (in the range  $S_1S_0$ ). However now the new benefit basket is wider and contains new interventions  $S_0S_2$  which are partly covered by the government and partly paid by private households. In addition, private households may subscribe a private health insurance (PHI) to cover selected risks which are not covered within the benefit basket. If an additional private coverage in the range  $S_2S_3$  is publicly subsidised, to allow subscription to high risk and low income people, the range of public funding extends to  $OS_3$ . In this way, cost-sharing and additional (subsidised) PHI creates a “fuzzy boundary” between public and private funding. Will the new setting represented in Fig. 12b guarantee financial sustainability without reducing social welfare and equity? It depends from several conditions. Firstly, the public spending for both the benefit basket  $S_1S_2$  (partly copaid by private households) and the subsidies to additional PHI coverage  $S_2S_3$  should be permanently lower than public spending for the original package  $S_1S_0$ . Secondly, the welfare loss deriving from the restriction of the free benefit basket to  $OS_1$  (area A in Fig. 12b) should be more than compensated by the welfare gains from the widening of the set of health care treatments which are copaid (area B) or co-insured by the government (area C). However, the equity implications of this structural change of the health system are generally not easy to assess: they depend on the distributional effects of the change in the benefit package funding and of the public subsidy to additional PHI. For example, whether cost-sharing (with exemptions for low income and chronically ill people) would determine less regressive effects than a subsidised additional PHI, it could be advisable a further extension of the benefit basket with an increasing role for copayments (a widening of area B with respect to C).

**Fig. 12b Copayments and additional private health insurance create a fuzzy boundary between public and private funding**



### 1. *Funding the public benefit basket*

In this framework, ensuring a sustainable funding basis of the first pillar benefit basket is essential. Under this respect, improvement of fund collection (by broadening the revenue base to capture income not based on employment and reducing tax evasion) and enhancement of the pooling of funds and resource allocation criteria according to risk-adjusted capitation (in decentralised health systems) represent important priorities (European Commission, 2010, pp. 146-147; Thomson et al., 2009).

### 2. *Adjusting cost-sharing*

In the new funding framework, cost-sharing could become an important tool. As we have seen in section 3.1, copayments are a well-established tool in many EU countries. Their main purpose should be to control moral hazard, “discouraging treatment when benefits are small and incentivising efficient use of services when it is justified” (Smith, 2009). The “standard rule” is that cost-sharing should be null or very low for all treatments with low price elasticity of demand (e.g. care for chronic diseases or for emergency); moreover, exemption for low income people (with high elasticity of demand) is required to avoid reduced access, lack of prevention and increase of public expenditure in the long-run. Pauly and Blavin (2008) have reconciled the standard rule with the new approach of “value-based cost-sharing” which states that copayments should be lower for services with higher (marginal) benefits relative to costs according to HTA.

As shown in previous example, in a dynamic perspective, moderate copayments could guarantee an enlargement of the public benefit basket, allowing the health system to follow the evolution of health needs and innovations. Moreover, copayments on outpatient services limiting excess demand may reduce implicit rationing by increasing waiting times (Rebba and Rizzi, 2011). These effects could preserve both the quality of public health care and the commitment to solidarity (Muraro, 2003; Smith, 2009). But, while increased cost-sharing can limit the demand for care, reducing the pressure on public budgets, the size of the change necessary to ensure a significant impact on the demand for health care services would certainly have a negative effect on access (Smith, 2009). Therefore, larger increases than those experienced up to now could form one element of a wider package to reduce the pressure on public finances, if balanced by protection for vulnerable groups (OECD, 2010, p. 71).

### 3. *Additional Private Health Insurance*

In most developed countries voluntary PHI integrates statutory health insurance in three ways (OECD, 2004):

- “supplementary” PHI (full or partial coverage for goods and services that are excluded by statutory health care insurance; e.g.: Canada, the Netherlands, Switzerland)
- “complementary” PHI (full or partial coverage of copayments and other OOP expenses built into the public policy; e.g. France)
- “duplicate” PHI (covers goods and services already included under statutory health insurance, by increasing consumer choice and access to different health services, e.g. guaranteeing improved quality of care and faster access to treatment.; e.g. Ireland, UK).

A widespread argument is that providing tax incentives for PHI may be in the public interest

because it should mitigate the demand for statutory health services (reducing upward pressure on public expenditure) while enhancing (or preserving) access to health care (a containment of OOP).

However, using data from SHARE (Survey of Health, Ageing and Retirement in Europe), Paccagnella et al. (2013) found that: (i) additional coverage by PHI in Europe enhances access and is based primarily on past or current occupation, educational levels, and cognitive abilities; (ii) only in the Netherlands, policyholders have lower OOP spending than the rest of the population, whereas in some countries (Italy, Spain, Denmark and Austria), they spend significantly more. Thus, additional PHI does not seem to reduce the need for the insured to rely on OOP payments and personal savings to cover the costs of health care excluded from public coverage. This could be due either to increased utilization (i.e. higher demand for health care goods and services, especially when PHI is complementary of basic statutory coverage) or to cost-sharing measures adopted by the insurers in order both to counter the effects of moral hazard and to avoid adverse selection (mostly when PHI is supplementary or duplicate).

Other empirical studies (e.g. Hurley et al. 2002; Buchmueller et al., 2004; Jones et al., 2006; Gechert, 2009) have shown that:

- PHI may create or increase the inequalities in access to health care, which may be further amplified by tax incentives, acting as a government subsidy to wealthier people;
- caution is necessary about the real effectiveness of PHI in reducing public cost pressures: where it is complementary, covering the gaps risks, it could even generate a negative fiscal externality on the public system because private purchases compound the moral hazard effects inherent in the public insurance system.

Summing up, caution is necessary about the real effectiveness of additional PHI in reducing public cost pressures. To make PHI an effective “second pillar” integrating the basic public coverage is better to promote supplementary (rather than duplicate or complementary) PHI and this calls for a clear definition of the public benefit basket. Moreover, tax incentives should be concentrated on group (employer-paid or open mutual fund) policies: individual policies are more affected by adverse selection; employers and mutual aid funds may be able to organise collective purchasing and to negotiate better coverage packages with insurance companies. Lastly, it can be useful to develop educational and informational interventions to facilitate choice for PHI and to foster simplification of PHI rules (disclosure requirements and benefit standards).

## **Conclusions**

Since the 1960s, European countries have consistently increased both the part of GDP devoted to health care and the public share of the total expenditure on health. The main simulations models (OECD, IMF, EU Ageing Report) project for the main European countries (EU15) a significant increase of the public share of GDP allocated to public health care and LTC over the next forty years, in a range between +27% and +84% of current level (according to different simulation hypotheses). The big challenge will be the growth of public spending on Long-term care which could more than double over the 2010-2050 period, owing to the sharp rise of frailty and disability at older ages, especially amongst the very old (aged 80+) which will be the fastest growing segment of the EU population in the decades to come.

Past trends of growth of health expenditures and the current macroeconomic environment characterized by a recession raise questions about the ability of the health and social systems to maintain adequate coverage for the population. Expenditure growth depends on many factors, many of which are influenced by the same institutional characteristics and regulations of the health and social systems. According to the forecast models developed by major international organizations, the aging of the population should be in better health than ever before. Therefore, aging should have relatively limited direct effects on the dynamics of health care spending over the next 50 years, while the greatest impact of the demographic transition will cover the ongoing support of dependent persons in old age. The innovation process in the biomedical field represents the factor considered crucial in nurturing the growth of health care spending, even in the light of past trends. Another important factor, although so far not adequately considered by the forecasting models, is represented by the evolution of lifestyles and individual behaviors that may decisively influence the future epidemiological trends; given the incidence and prevalence of chronic diseases that represent major causes of mortality and morbidity.

The challenge that is facing many countries today is ensuring the sustainability of their health care systems without affecting the values of universal coverage, solidarity in financing and equity of access on which they are founded. It is an even more challenging goal for those countries which are characterized by a high stock of public debt. This challenge requires innovative policies that aim to improve the overall performance of the health care systems, in order to make the best use of available financial resources to achieve the best results, without compromising fairness. A consensus has been formed at the international level that the objective can be achieved by working on two fronts: first, to promote the economic sustainability of health systems, governing the main factors of demand and supply that fuel the growth of spending, and secondly, to ensure the financial sustainability by seeking a new balance between public funding and private funding, while still maintaining the universal nature of the health care systems. The former policies focus on improving the way health systems address the rise in chronic disease and seek to incentive and reward patients, providers and purchasers for healthy behaviour, quality and efficiency of care. The latter interventions could ensure long-term financial stability but may determine negative effects in terms of equity; therefore, they must be carefully designed.

Anyway, the explicit choice of the amplitude and the level of coverage to guarantee over time to citizens, even though supported by considerations on appropriateness and cost-effectiveness, will always remain a highly political choice that depends on how much society is willing to pay for public health care.

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