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INVESTING IN OBESITY TREATMENT TO DELIVER SIGNIFICANT HEALTHCARE SAVINGS: ESTIMATING THE HEALTHCARE COSTS OF OBESITY AND THE BENEFITS OF TREATMENT

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EXECUTIVE SUMMARY

Obesity rates in Europe have been growing at an accelerated speed in the past two decades. In the European Union, between 36.9% and 56.7% of all women – and between 51% and 69.3% of all men – are overweight or obese, according to data from 2008-09. Estimates on the growth of obesity suggest that by 2030, more than 40% of the population in the United Kingdom will be obese. The equivalent rate for Germany is 28.8%.

Obesity is a source of several non-communicable diseases. An obese individual is at serious risk of developing diagnoses like diabetes type 2 – and the risk for cardiovascular and respiratory diseases increases considerably with obesity. According to the World Health Organisation, obesity and overweight are estimated to be the principal causes of 44% of all cases of diabetes around the world, 23% of ischaemic heart diseases and between 7-41% of all cancer cases.

Consequently, obesity is a source of healthcare expenditures: expenditures to treat patients that have developed diseases associated with obesity. While manageable today, the total healthcare expenditures associated with obesity are likely to grow faster in the next couple of decades than in the past. Increased obesity rates and longevity are key factors behind this trend.

Another way to look at it is that rising healthcare expenditures means that there are potential savings to be made from future expenditures by preventing a higher share of the population to become obese. If effective methodologies to "treat" obesity, like lifestyle weight management programmes, are employed societies can reduce the number of people that is or at risk of becoming obese. Knowing the growth of obesity in the past decades, and its cost to healthcare systems and societies, an economic approach to obesity in the past would have suggested a full deployment of prevention strategies to avoid that an increasing share of the population would become obese. Today, with already high levels of obesity, it is necessary to use effective treatments of those that already are obese and that prevention strategies cannot reach.

This study estimates potential savings in future healthcare expenditures by employing effective lifestyle weight management programmes based on treatments that help people to make and sustain changes to their lifestyles to lose weight (including community based, group services facilitated by i.e. non health professionals) through regular support, guidance and advice to overweight and obese people. The study also provides estimates on savings that could have been made in the past, had obesity treatments been used. It is notoriously difficult to estimate costs of obesity and the benefits of various policy approaches. All studies provide inexact estimates. This study is no exception. However, by using existing research, projections and studies of the comparative effectiveness of different policy approaches, this study provides a better understanding of the potential gains from a better approach to obesity treatment.

The overall results are clear. If the five countries studied in this paper (Germany, France, Spain, Sweden, and United Kingdom) had been able to substitute its historic expenditures on obesity treatments with the cost-effective approaches provided today by eligible commercial providers, obesity rates would not have accelerated as much as they did. Germany, for example, would have 2 percentage units lower obesity rates; the equivalent figure for the UK is 4 percentage units. Furthermore, the healthcare expenditures associated with obesity would have been smaller. France and Sweden, for example, would have 12 percent lower healthcare expenditures on obesity after 25 years of substitution between actual programmes to treat obesity and the cost-effective approaches that exist today. If the total expenditures on treating obesity had been twice as large, the healthcare savings would also be considerably larger.

Governments can save considerable healthcare expenditures on obesity in the future by employing cost-effective weight management programmes to treat obesity. If governments would use all existing and future resources on weight management to spend on the most cost-effective approaches provided by eligible commercial providers, the savings would be considerable. The UK and Spain would be able to reduce healthcare expenditures by 10 and 12 percent. Sweden could "save" as much as 55 percent of future healthcare expenditures related to obesity.

PREFACE

The last 10 years have seen obesity policy measures discussed at length, yet limited EU health policy competences have meant there has not been the possibility to carry out many of the options to really make a difference. Obesity has reached the point where now over 50% of Europeans have been classified as being overweight and obese – but only in the last year or so have European policy makers in the Member States woken up to the notion that we need more than just soft policy to make sure that the measures taken have as their goal weight reduction rather than just education and prevention.

Macro-economic and social events have caught up with Member State governments. We are seeing a twin attack of squeezed healthcare budgets coupled with the ticking time bomb of an obesity crisis where, if action is not taken now, healthcare costs to treat the illnesses relating to obesity such as diabetes and heart disease will spiral out of control in the future.

For these reasons, I am delighted to be able to support this new report by ECIPE as it seeks to calculate for the first time the savings that could be made to European healthcare budgets if they invest now in lifestyle weight management solutions.

Governments are now actively looking to the EU to help them find solutions – this report highlights the economic importance of one vital tool that should be at the disposal of every government as they seek to tackle obesity in a cost-effective manner with tangible results.

Phil Prendergast
Member of the European Parliament

1. INTRODUCTION

Economic historians and demographers have long understood the role of nutrition for economic growth. The growing capacity to feed a population has not only generated significant improvements in its health status – it has also been a source of increased material well-being. In a crude form, nutrition intake or dietary profiles have been related to the productive capacity of an individual, or indeed of a whole population – and more so, of course, in some stages of the economic development than others. The journey from "rags to riches" would not have been possible without improved physiology.

But what will economic historians and demographers have to say about the relationship between nutrition and the economy in the future? Inarguably, a growing share of the population in Europe, the United States, and other developed regions has become overweight or obese. It is an increasing source of non-communicable diseases and premature deaths. Even if muscle power or physical strength is no longer the defining competitive advantages of an individual, overweight and obesity have grown to become an economic concern.

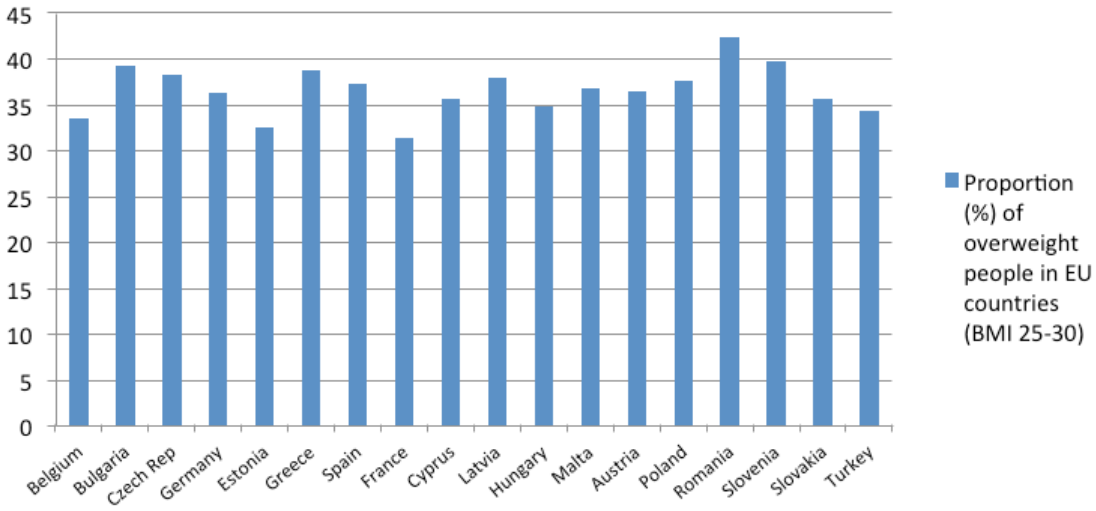
And the problem is not limited to the "old West". Obesity is today a global phenomenon that affects all countries and all social groups. Regardless of age, sex and income, the prevalence of obesity is increasing[1]. Obesity has now become such a widespread condition that several health experts describe it as an epidemic – "globesity". Moreover, as a risk factor behind chronic non-communicable diseases like diabetes type 2, it is likely to increase the cost pressure on the already stressed public healthcare systems around the world, especially so in Europe where several countries are already forced to slash healthcare expenditures.

The question is: can societies do anything to prevent obesity – or indeed reduce its scale? This paper stands in the nexus of obesity and public healthcare expenditures. Its primary aim is to deepen the understanding of the relationship between obesity and rising healthcare costs. Indeed, the paper seeks to explore whether investments in obesity treatment – in the form of lifestyle weight management programmes – actually can save future healthcare expenditures by way of making healthcare policy more effective. In other words, is *calorie containment* a better fiscal policy strategy for healthcare authorities than *cost containment*?

In some ways, this is an odd field of inquiry. The debate among experts on possible policy approaches to reducing the scale of obesity has too often been divided between those who favour prevention strategies and those who advocate treatment to be a viable method. In fact, surprisingly many have demoted, even caricatured, the notion that some forms of treatment can be effective. Economists contributing to the debate have often exacerbated this division by clearly coming down on the side of prevention strategies. Such strategies are thought to be, according to several economic studies, more cost effective. For instance, the OECD has calculated that a "comprehensive" prevention strategy to tackle obesity could cost as little as 12-32 US dollar per capita (there are cost variations between OECD countries). Subsequently, it suggests that "health education and promotion, regulation and fiscal measures, and lifestyle counselling by family doctors – are a better investment than many treatments currently provided by OECD health care systems."[2] Rather than prescribing weight management programmes or other treatment alternatives, it is commonly believed that societies will achieve more by changing habits and attitudes by food regulations, taxes, information, education, or greater incentives for physical activity.

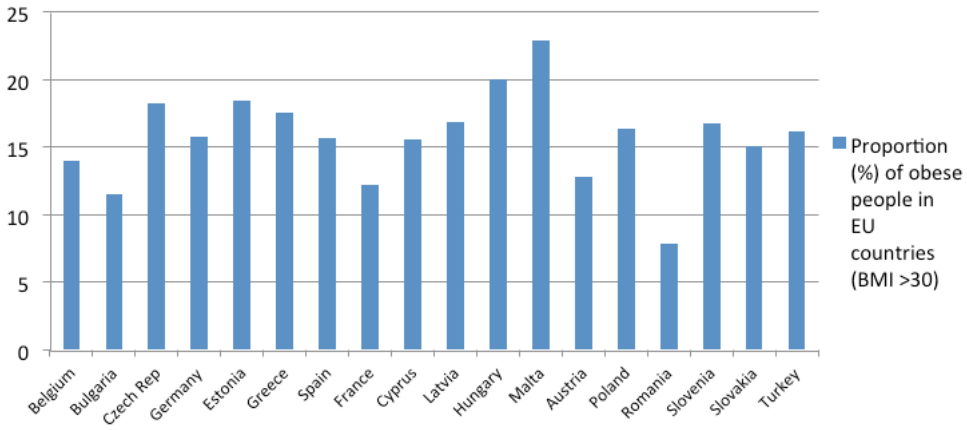
1. A person's weight status is calculated with the help of Body mass index (BMI). A BMI above or equal to 25 but below 30 indicates overweight. A BMI equal to or above 30 indicates obesity. The BMI is calculated by dividing the body weight (in kilograms) by height (in metres) squared.
2. Sassi (2010).

CHART 1. OVERWEIGHT IN EUROPE IN YEAR 2008



Source: Eurostat

CHART 2. OBESITY IN EUROPE IN 2008

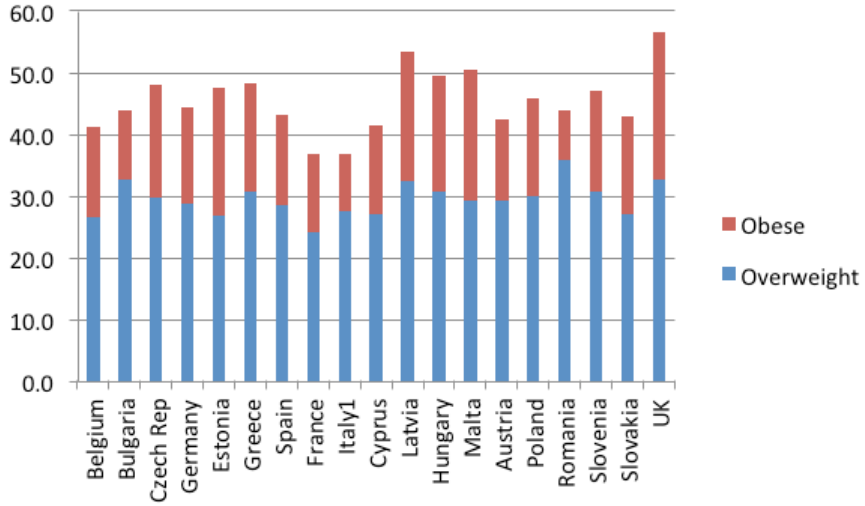


Source: Eurostat

There are good reasons to believe this statement to be factually correct. Yet there are equally good reasons to suspect that it gives an incomplete view of existing strategies – and also to question the professed effectiveness of prevention strategies. It is irrelevant today to compare ideal prevention strategies with past treatment strategies that obviously have not been proven effective. Indeed, there are good reasons to question why there at all has to be a distinction between the two approaches. Are not both approaches necessary?

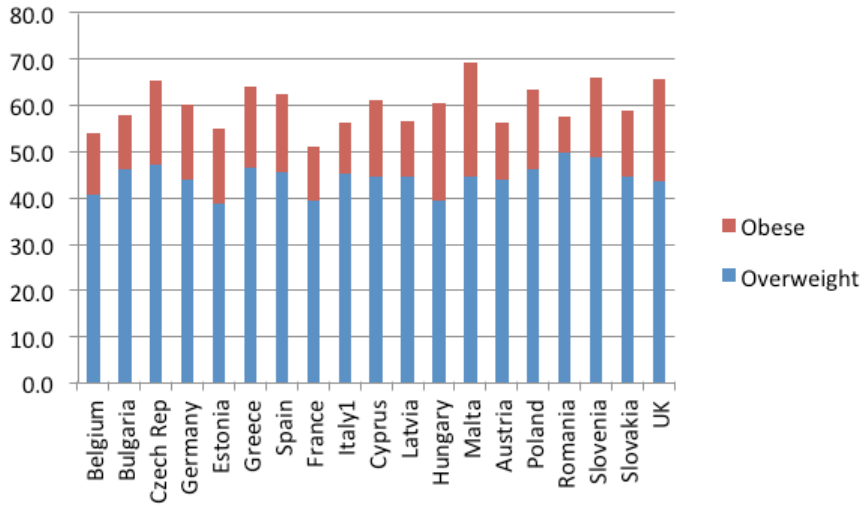
Prevention and treatment strategies tend to resonate with and/or target different groups and individuals. Prevention strategies are basically not designed to deal with people that are already overweight or obese. Moreover, there are big differences with respect to the effectiveness of different treatment methodologies. As will be discussed later, expert studies in the past decade have improved our knowledge about "what works" and "what doesn't work". Furthermore, as societies have become more individualistic, it is important to work with a range of different methodologies. To ignite and sustain the motivation to lose weight in a better way than in the past, it is important that people are offered choices and that modern innovations are employed.

CHART 3. OVERWEIGHT AND OBESITY AMONG WOMEN IN EUROPE, % OF TOTAL POPULATION



Source: Eurostat

CHART 4. OVERWEIGHT AND OBESITY AMONG MEN IN EUROPE, % OF TOTAL POPULATION



Source: Eurostat

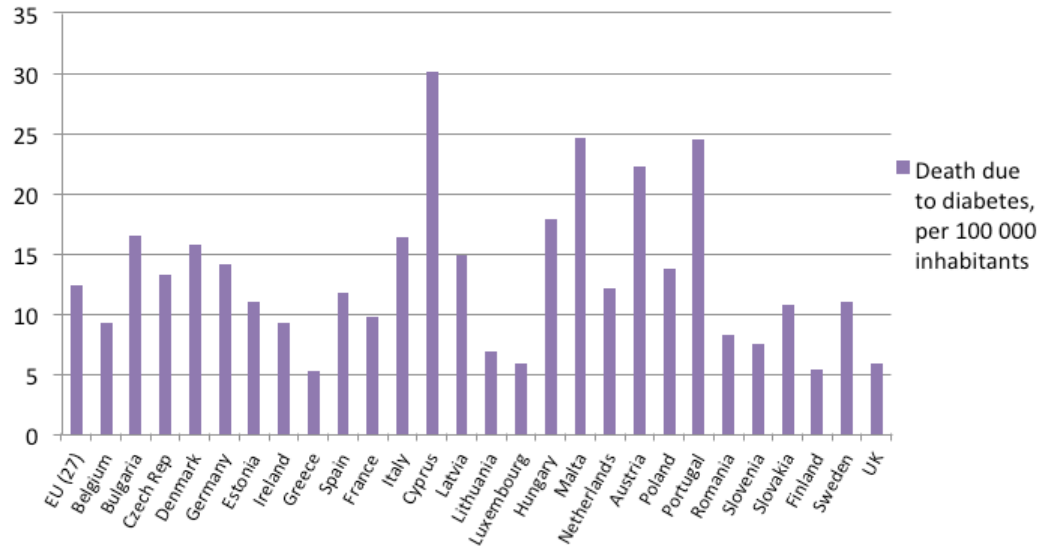
The next chapter will examine the prevalence of obesity, predominantly in Europe. In chapter 3, the economic aspects on obesity and healthcare expenditures will be discussed. Thereafter, chapter 4 presents an estimation of the healthcare costs related to obesity as well as the potential benefits of treatment. The paper ends with concluding comments.

2. THE PREVALENCE OF OBESITY IN EUROPE

Since the 1980s there has been a sharp increase in the prevalence of overweight and obesity around the world. In Europe, it is estimated that over 50% of all men and women were overweight in 2008, and on average around 23% of all women and 20% of men were obese, according to the World Health Organisation (WHO).

Tables 1 and 2 show the prevalence of overweight and obesity in different European countries. The share of the population that is overweight is quite similar across Europe. The rates of overweight vary, but the variations are not as big as the differences in obesity when

CHART 5. DEATH DUE TO DIABETES IN 2009, PER 100 000 INHABITANTS

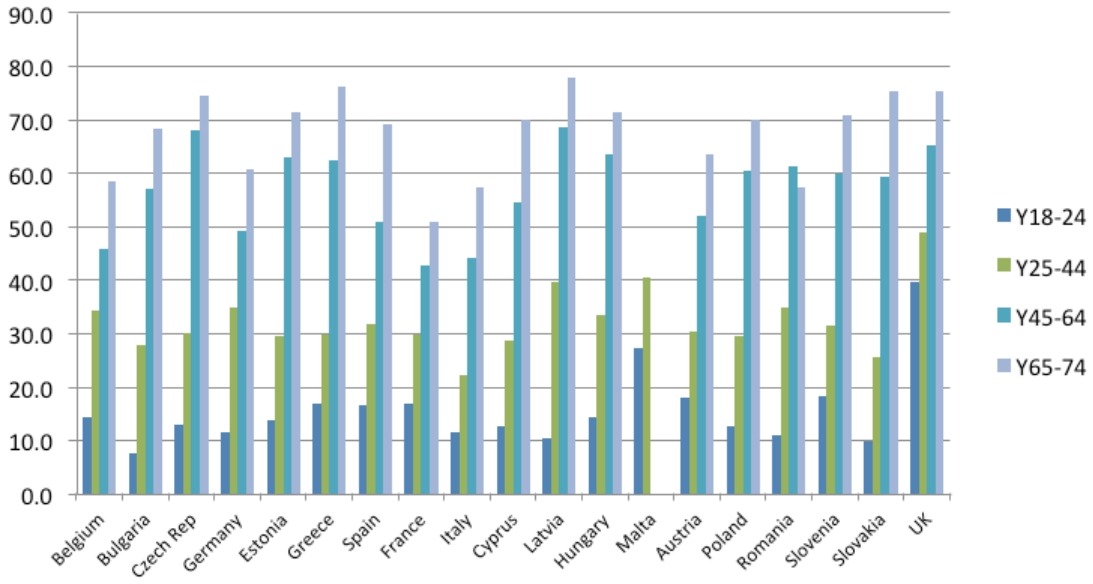


Source: Eurostat

European countries are compared. For example, while Romania has the highest share of overweight people, it also has the lowest share of obesity. Countries in the southern rim of Europe appear to be more represented among countries with the highest share of overweight than countries from the northern parts of Europe.

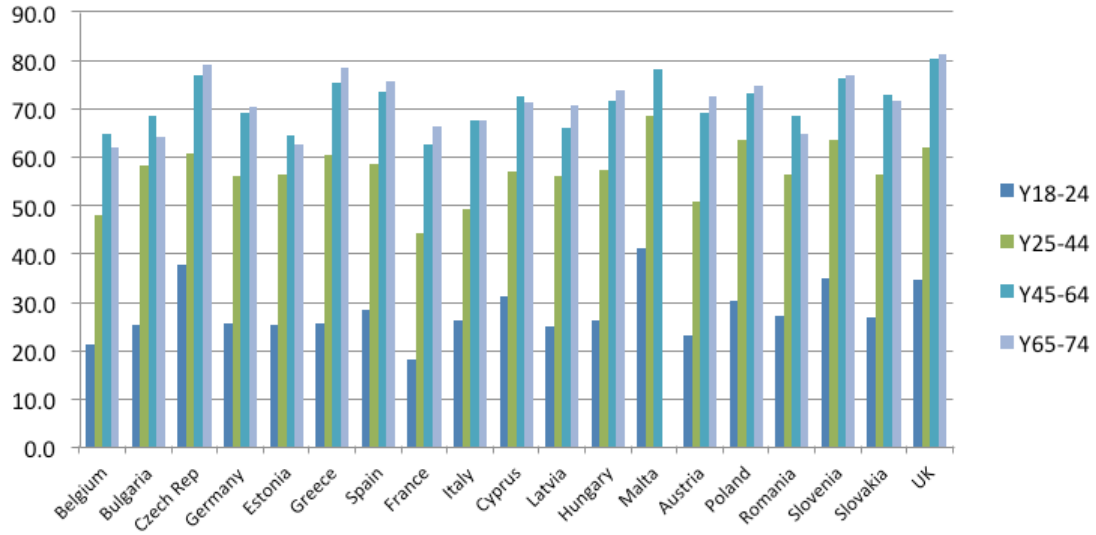
In the European Union, between 36.9% and 56.7% of all women were overweight or obese according to data from 2008-09 (which, at the time of researching this paper, was the latest year for which data is available). The figures for the male population vary between 51% and 69.3% in the countries for which data is available. Amongst women, the prevalence of over-

CHART 6. OVERWEIGHT AND OBESITY AMONG WOMEN IN EUROPE, BY AGE GROUP



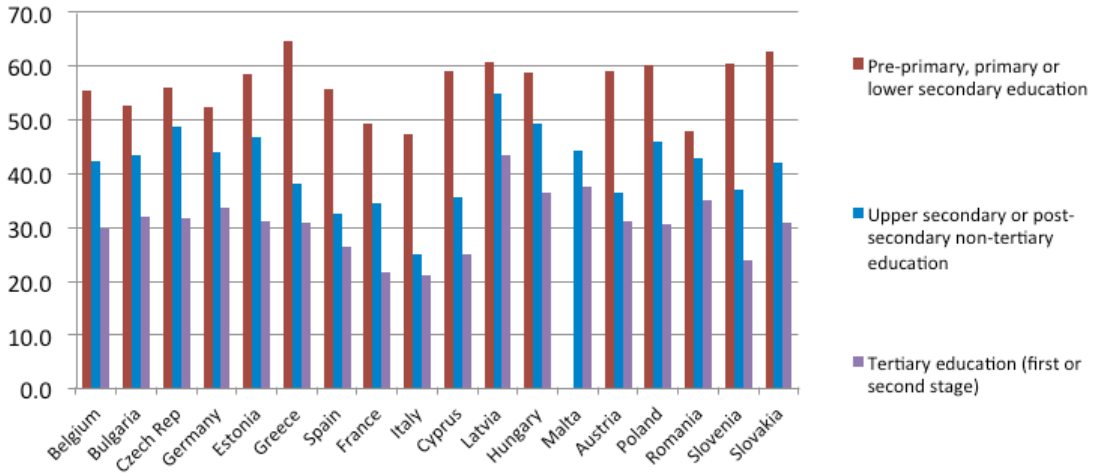
Source: Eurostat

CHART 7. OVERWEIGHT AND OBESITY AMONG MEN IN EUROPE, BY AGE GROUP



Source: Eurostat

CHART 8. OVERWEIGHT AND OBESITY AMONG WOMEN, BY EDUCATIONAL LEVEL, % OF TOTAL POPULATION

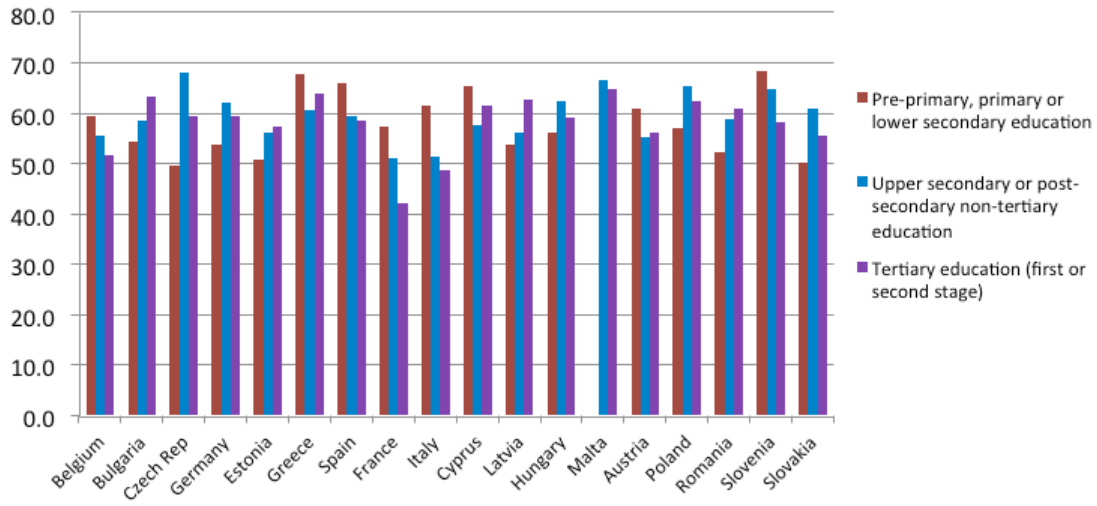


Source: Eurostat

weight and obesity tends to be higher in the northern part of Europe, whereas countries in the southern part of Europe have higher rates of overweight and obesity among men.

Obesity often results from physical inactivity and unhealthy diets, as well as from alcohol use. These are the main risk factors that cause non-communicable diseases, notably cancer, diabetes, or cardiovascular and lung diseases. It is estimated that non-communicable diseases are the main cause behind almost 86% of deaths in Europe, and 77% of the disease burden. Cardiovascular diseases, including hypertension (high blood pressure), cause more than half of all deaths in Europe. At the same time, diseases such as cancer, diabetes, cardiovascular and respiratory diseases represent the bulk of diseases that can be partly prevented in Europe. Fighting obesity plays a central role in reducing the number of people with such diagnoses. Between 1990 and 2010, the so-called global burden of disease has continued to shift away from communicable to non-communicable diseases. The Global Burden of Disease

CHART 9. OVERWEIGHT AND OBESITY AMONG MEN, BY EDUCATIONAL LEVEL, % OF TOTAL POPULATION



Source: Eurostat

Study 2010 concluded that dietary risk factors and sedentary lifestyles accounted for 10% of disability adjusted life years globally in 2010.[3]

Moreover, obesity and overweight are estimated to be the principal causes of 44% of all cases of diabetes around the world, 23% of ischaemic heart diseases and between 7-41% of all cancer cases, according to WHO figures. As for the European Union, 80% of all type 2 diabetes cases among adults are related to obesity, 35% of ischaemic heart diseases and 55% of hypertensive diseases. All in all, the WHO considers obesity to be the 5th leading death risk.

The proportion of obesity and overweight among adults tends to increase with age in all European countries. This pattern is particularly clear among women. As for men, there is a general increase in the prevalence of obesity up until the age of 65. Thereafter the prevalence of obesity is somewhat diminishing.

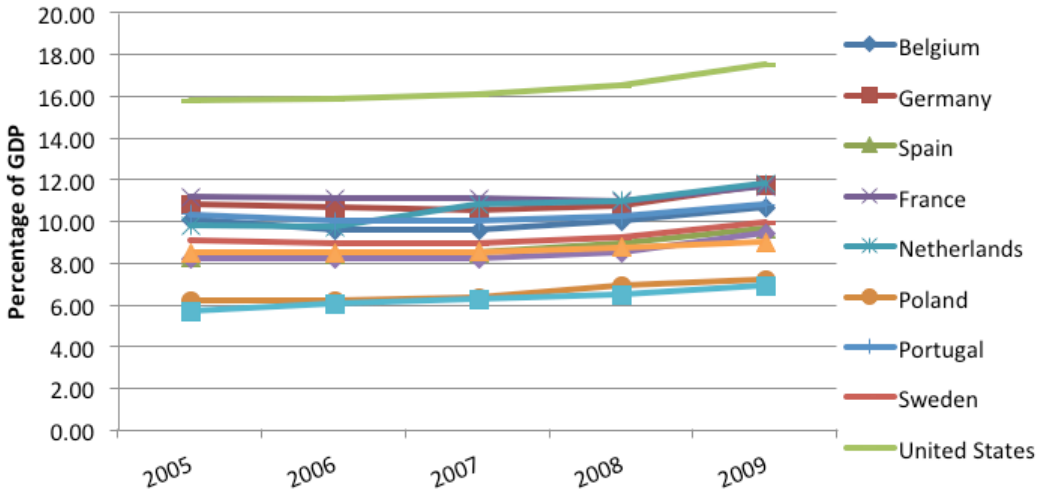
Moreover, the level of education has been identified as a factor associated with overweight and obesity among women. In general, excessive weight is more common among women with lower education. In contrast, there is no systematic difference in terms of obesity among men related to the level of education in Europe.

In recent decades, there has been a significant increase in the number of people who are obese in OECD countries. Before the 1980s, around 10% of the population was considered obese. In just 30 years, the rates of obesity in OECD countries have more than doubled, and it is predicted that the situation will deteriorate further. In half of the OECD countries, at least one in two people is today overweight or obese. While it is estimated that the rate of overweight people (BMI 25-30) within the age group of 15-74 will stabilise in most countries, the rate of obesity (BMI >30) is however likely to continue to increase.

Obesity among children is also a growing trend. If it remains unaddressed, it will most certainly have an impact on health and healthcare costs in the future. People who become obese

3. A good overview of the results from the Global Burden of Disease Study 2010 can be found at the Lancet's special website, http://www.thelancet.com/themed/global-burden-of-disease

CHART 10. TOTAL HEALTHCARE EXPENDITURES IN SELECTED OECD COUNTRIES, % OF GDP



Source: Eurostat

at a young age usually develop diseases that require medical attention later in life. Among children up to 4 years old, the prevalence of overweight and obesity has increased globally over the last decade. In 1990, 4.2% of all preschool children were overweight or obese. In 2010, the figure had increased to 6.7%, and it is expected to increase to 9.1% in 2020. Looking at children between 5-17 years old, around 21.4% of all girls and 22.9% of all boys were overweight or obese in OECD countries in 2011.

Excess weight can entail health and medical complications even at a young age, including diabetes, hypertension, and cardiovascular problems. Children who are overweight or obese are more likely than non-obese children to be obese later in life. Even if the excess weight is lost, childhood obesity is one of the main causes behind health and medical complications later in life, according to a recent study.[4]

Also, childhood obesity incurs healthcare costs at an early age. A recent German study showed, for instance, that overweight and obese children have higher healthcare costs than other children at the same age: costs are €62 higher for obese children per year, and 27 higher for overweight children, in comparison to a child with a healthy weight. In relation to this, a study from Ireland showed that the percentage of hospital days related to childhood obesity increased from 0.81% to 1.37% of total hospital days in 2004, involving an increased in expenditures from €0.9 to €2.7 million.[5]

3. GOVERNMENT RESPONSES TO THE GROWTH OF OBESITY

Healthcare expenditures are currently equivalent to between 8-10% of Gross Domestic Product (GDP) in many European countries. Out of this aggregate figure, it is estimated that obesity-related illnesses account for between 1-3% of total healthcare expenditure in most OECD-countries (the figure for the U.S. is 5-10%). The OECD estimates suggest that the healthcare expenditures for an obese person are 25% higher compared to a person of normal weight at any given age. Given the growth of obesity rates in recent years, the share of healthcare expenditures associated with obesity is destined to increase. In addition to

4. Trasande & Elbel (2012).
5. Trasande & Elbel (2012).

direct medical expenses, obesity and overweight also entail costs in terms of production and productivity losses.

Despite a clear rationale, and calls from the WHO and the OECD as well as others to halt and revert the obesity trends, governments are not really engaging in effective measures to curb obesity. On current trends, and if no changes are made to the healthcare coverage, governments in Europe and other parts of the world will soon be facing rapidly increasing costs related to the treatment of illnesses and health problems associated with obesity.

Using England and Italy as examples, the OECD estimates that a comprehensive strategy to prevent obesity from causing chronic non-communicable diseases could prevent around 70 000 deaths each year. Such a strategy, it suggests, would cost as little as USD 19 per capita in England and USD 22 in Italy. It would be based on prevention strategies that include physical activity and education to improve dietary standards.[6] There are, however, reasons to believe these figures are underestimating the cost as they build on best practices that are not universally replicable: a prevention strategy in one country does not necessarily fit for another country.

Measures to tackle obesity and overweight, and thereby prevent chronic non-communicable diseases, could be seen as investments for the future. There are a number of possible measures, which EU member states in a more or less extensive way have been experimenting with. Such measures include those suggested by the OECD, such as food education and physical activity at school level, or food taxes targeting food products with high content of sugar or saturated fats. The effects of special taxes have not been encouraging, partly depending on the use of the resulting revenue. In France, attempts have been made to reinvest tax revenues in the healthcare sector, where as similar tax revenues in Denmark and Hungary were disconnected from the healthcare sector.

Obesity treatment programmes can also be organised within the healthcare sector. Physicians can for instance refer obese people to intensive multi-component behavioural counselling, as recommended by the U.S. Preventative Services Task Force.[7] Compared to 30 years ago, there is now much wider knowledge regarding effective and cost effective methods of obesity treatment. There is a range of solutions available that have been proven effective. This increasing wealth of knowledge has translated into international scientific evidence and recommendations with greater granularity than before. However, governments have been slow in their responses and have not completely embraced the developing evidence base and scientific consensus. It is fair to say that there is room for improvement in the treatment of obesity. Adequate measures are currently not being undertaken across Europe.

What do governments in Europe actually do in order to prevent or treat obesity and obesity-related illnesses? Table 1 below outlines some general characteristics of healthcare policy in five EU countries. There are many similarities between different countries. Most of them put a lot of emphasis on prevention, and on efforts to increase the knowledge about obesity and the virtues of healthy lifestyles. The governments focus many of its targeted activities on risk groups – e.g. people who have developed diabetes. Most governments also have strong restrictions on the use of medicines to treat obesity. There has been a reported increase in surgical treatment of people with very high Body Mass Index (BMI) and/or obesity related illnesses, but it remains a restricted practice.

6. OECD (2012).
7. Moyer (2012).

The exact levels of expenditures that governments or other entities responsible for healthcare allot to various approaches to obesity are unknown. Some local healthcare entities report that they know the expenditures on some components – for surgeries or pharmaceuticals – but they have yet to release such data. While several governmental entities can produce fairly granular data on expenditures and costs per patient for many other diagnoses, their methodologies for reporting expenditures on obesity-related treatments are underdeveloped.

There is no doubt that governments understand the necessity of addressing obesity. But there seems to be a gap between understanding the need for action and implementing structured actions, let alone structured actions with solid effects. There are differences between countries that should be acknowledged, as well as differences between different healthcare bodies within countries. Some governments are clearly more focused on the problem than others – and the degree of focus is partly a reflection of the prevalence of obesity. Yet most countries appear too often to manage their programmes with a "box-ticking" mentality. All governments emphasise prevention, but have been unimaginative when it comes to engaging in effective solutions to treat obesity. A lot of attention and resources seem to be allocated to prevention strategies, yet despite the considerable opportunity for cost savings and societal benefits, no government has been able to achieve sizeable aggregate changes through treatment.

All researched governments claim they are offering weight management programmes to patients with diabetes or in diabetes risk groups. While it is true that governments do offer such programmes as a routine, these programmes appear to focus on structured education and information in order to support people diagnosed with diabetes. Consequently, most governments offer some level of dietary counselling or access to obesity patient groups, but it is questionable whether the amount of services meets the need for treatment. So, while it may be true that governments have scaled up their expenditures to treat obesity, such treatments are offered within the framework of a fixed healthcare structure. In other words, it does not offer people any real choice or any greater degree of individual tailoring although some countries do offer elements of choice but only in a limited way. In addition, the assumption behind the structure of current public approaches to obesity treatment often seems to be that weight management programmes *going beyond* dietary counselling and access to obesity patient groups should be paid for by individuals out of pocket.

All governments perform a greater number of surgical treatments of obesity today than in the past. This may only be natural as new surgical treatment standards have been developed. However, it could also indicate that effective behaviourally-based treatment is not available. All governments are also using medicines in a very restrictive way, partly because they argue that there is a limited availability of pharmaceuticals that are not associated with dangerous side-effects.

4. CALORIES AND COST CONTAINMENT: INVESTING IN HEALTHCARE SAVINGS

Budget cuts today might reduce public expenses in the short-run but lead to higher costs in the future. This policy inconsistency dilemma is perhaps more tangible in the public healthcare sector than anywhere else.[8] While the demand for healthcare is growing at an accelerated pace – and will continue to do so as the European population grows older – the

8. WHO (2013) offers some insights on this matter and argues that reduced funding for healthcare in Europe will lead to higher costs in the future.

TABLE 1. HEALTHCARE POLICY TOWARDS OBESITY IN SELECTED EU COUNTRIES

	Prevention	Weight management	Surgery	Medicines
France	Government investments in health promotion and life styles Comparatively weak government leadership	Weight management offered to risk groups through existing healthcare structures No policy for choice	Yes, if necessary, but restrictive (guidelines for morbid obesity)	Restrictive use of medicines/ re-imbursement
Germany	Investments in information, education, and life styles Comparatively weak government leadership: diffused on many health insurers Yet a lot of focus on prevention as the key step to address obesity growth	Big differences between regional and healthcare bodies Offer weight management treatment through usual healthcare centres; focus on individual dietary standards No choice exists, even if it may happen Focus on diabetes patients and high-risk groups	Yes, if necessary, it is reimbursed	Restrictive use of medicines/ re-imbursement
Netherlands	Concerted efforts by health insurers and the government to inform and educate about life styles and overweight/ obesity Comparatively strong government leadership Programme to improve nutrition standards and sports in schools	National partnerships binding together various healthcare and health insurance entities National guidelines and care standards have been established The Dutch Insurance Board has strong guidelines for health insurers on reimbursement Differences between health insurers in weight management treatment: choice exist but is limited	Yes, if necessary, reimbursed by health insurers	Yes, if necessary, for risk groups and combined with weight management (differences between health insurers)
Sweden	Information to schools Information to patients in risk groups	National guidelines exist on weight management programmes No national policy for reimbursement or choice of programmes: weight management usually offered through local healthcare bodies Local healthcare bodies focus on diabetes patients or diabetes risk groups	Yes, if necessary (BMI >40kg/m2) reimbursed by government	Medicines only prescribed and reimbursed if patient has type-2 diabetes Medicines prescribed in addition to weight management treatment
United Kingdom	General investments in information and education Special educational campaigns to schools and risk families	Dietary programmes/ recommendations Weight management reimbursed through NHS (e.g. Weight Watchers) Selective use of individual choice for weight management programmes: selection of NHS physicians that can prescribe access to other than the NHS preferred programme NICE clinical guidelines for weight management	Yes, if necessary, reimbursed by government	Restrictive use of medicines

Sources: This table is based on two types of sources: survey interviews with national healthcare officials and documentary resources form governments about their strategies. In some instances, there has also been information collected for some regions inside countries, such as Stockholm County Council, Action programme against overweight and obesity 2010-2013 and from the Weight Management Centre (United Kingdom).

healthcare sectors around Europe are under fiscal pressure. Governments are actively trying to curb expenditure growth in healthcare, or even cutting expenditures altogether. Some governments have taken measured approaches to control expenditure growth, several others have however been ushered by the economic crisis into a new world of "slash-and-burn" methods to cut healthcare expenditures.[9]

But as severe budget cuts are being implemented, governments and other agents of healthcare finance may overlook opportunities of making rational investments for the future. Investments addressing obesity is an example. It has been called a "time-bomb" for health-insurance systems. As one of the main factors causing chronic diseases, obesity will almost certainly increase fiscal costs for the public health insurance systems in the future.

The immediate consequences of the fiscal squeeze are pretty obvious in the healthcare sector. The budget cuts across Europe are indeed being felt as people are denied access to healthcare services that they are in need of. In fiscal terms, artificially depressing the demand for healthcare services offers governments a chance to cut expenditures, or slow down their growth. Yet in the medium-to-long term, such an outcome is far from guaranteed. Restricting the access to healthcare services will affect the health status of individuals – and, perhaps more surprisingly, it is often likely to increase healthcare expenditures rather than moderate them.

Whereas there is no universal pattern in either direction – the medium-to-long term fiscal consequences of healthcare expenditure cuts depend on many factors – the potential inconsistency between short, medium and long-term effects require far more attention from policymakers than they currently get. This is partly because governments are under pressure to save money in the healthcare system or, more generally, to cut public expenditures. Equally important are factors like longevity and lifestyle: the longer a person lives, the greater the healthcare costs per individual associated with lifestyle habits or non-treatments. One diagnosis that illustrates the *inconsistency problem* in healthcare is type-2 diabetes – an illness that typically develops at an advanced age but tend to reflect lifestyle habits at an earlier age.

The general welfare in Western societies has increased significantly throughout the 20th Century. Since the 1950s in particular, economic and technical development have revolutionised the means of transportation, communication and the flow of information as well as improved the access to food and healthcare services. Not all lifestyle changes have had entirely positive outcomes though. Sedentary working conditions and stressful life situations in general are beginning to take their toll. Physical inactivity together with unhealthy diets and excessive intakes of calories has contributed to the rise of obesity.

Overweight and obesity may not cause major physical or medical complications at a young age, although they might imply physical as well as psychological and social problems. At a higher age, however, obesity is one of the main risk factors causing non-communicable diseases, including chronic diseases such as type-2 diabetes, cancer and cardiovascular- and respiratory diseases. Diabetes type 2 requires special attention as it is the most common form of diabetes and currently represents 90% of all cases of diabetes among patients, according to the WHO. Diabetes type 2 means that the body cannot assimilate insulin and/or the pancreas is incapable of producing sufficient amounts of insulin, which serve to regulate the carbohydrate metabolism in the body. Akin to other chronic non-communicable diseases, type-2 diabetes largely results from physical inactivity and complications deriving from excessive weight.

9. WHO (2013) and Erixon (2014).

From a health-economics perspective, the situation is serious. Overweight and obesity are not merely abstract negative externalities of our perhaps too comfortable lifestyles; they translate into significant fiscal costs and represent a growing share of healthcare costs. In the coming decades, healthcare spending will increase from an average of 5.7% in OECD-countries in 2005, to 9.6% of Gross Domestic Product (GDP) in 2050, unless no measures are taken to address the underlying factors, according to the OECD. These figures err on the side of caution; other estimates claim that many European governments are likely to spend far beyond 10 per cent of their GDP on healthcare. One study particularly focused on the effects of the demographic developments on healthcare spending suggests that Spain and Germany will spend 25.6 % and 21.4 % of GDP respectively on healthcare in 2050.[10] One of the main factors behind the growing healthcare costs is the increasing prevalence of chronic and non-communicable diseases amongst people, often related to obesity.[11]

In terms of public health policy, there are political strategies in place to address this growing concern, both at international and national levels. At the EU level, the European Commission adopted a White Paper in 2007 on a strategy on nutrition, overweight, and obesity-related health issues. Policymakers across Europe, and the world, have been recognising the problem and the need to prevent obesity and related chronic diseases.

However, despite the general awareness among policymakers and the public, the problem of obesity keeps aggravating. At the same time, there is, as pointed out above, an inherent *inconsistency problem* in healthcare expenditure reforms. The urgent need for several countries to cut spending seems to have reinforced the structural flaws with respect to the allocation of funds to address healthcare problems. Especially in crisis economies, healthcare budgets are now cut without much knowledge about how the cuts will affect the demand for healthcare – and expenditures on healthcare – in future.

Given current economic and fiscal weather conditions, it is easy to see why the current priority imposed on the public healthcare sector is to curb cost. Ideally, cost savings today would lead to lower expenditures in the years to come. But is this really a waterproof proposition? On the contrary, argue several experts on healthcare expenditure: strategic investment that increases spending in the short-run might actually reduce costs significantly in the future. This is simple economics – and the relationship between investments in the short-term, and gains in the long-term, is known in many different circumstances.

Now, many politicians are of course aware of the possibility that strategic investments could reduce health care costs in the future. However, such investment decisions are not being taken, at least not to a sufficient degree. The allocation of resources to improve public health in the long-term and preventing diseases is complicated by the fact that policy-makers work with annual budgets that must balance at the end of the year. In addition to the reinforced need for cost savings in the wake of the economic crisis, policy-makers need to divide the already scarce resources between different sub-sectors that are competing with each other to receive more funds.

Naturally, doctors, nurses and physiotherapists would all like to see a greater share of the total budget being granted to their departments or research areas. Amid existing shortages, queues for treatment and operations as well as acute cases that require attention. It is dif-

10. Kotlikoff & Haigst (2005) och i bibliografin lägga den fulla referensen ovanför Lobstein (2009): Kotlikoff, Laurence & Haigst, Christian, 2005, *Who's Going Broke? National Bureau of Economic Research, Working Paper* 11833.
11. Sassi, F. et al. (2008)

ficult to allocate resources to address, for instance, long-term concerns like overweight or obesity. Also, in many cases, there is no diagnosis established for a patient suffering from health complications due to overweight or obesity, since it may take some years before an obese person develops an actual disease. Weight management is a long-term formula that requires on-going support to effect life-style changes.

However, for hospitals and medical centres, there are, simply put, more urgent priorities than avoiding distant problems or physical conditions. And to the extent that electorates reward or punish political leaders for how healthcare budgets are allocated, they are by all probability giving low priority to increase expenditures to address overweight or obesity if neither condition has induced a medical diagnosis. Consequently, few national healthcare systems in Europe put appropriate economic emphasis on addressing obesity.

Yet the increasing problem of overweight and obesity is clearly reflected in the growing prevalence of non-communicable and chronic diseases in Europe. This is not to say that obesity is the only explanatory factor causing type-2 diabetes, nor is it suggested that healthcare policies could eliminate type-2 diabetes by addressing obesity. Nevertheless, in sum, the challenge facing policymakers can be presented like this:

i) If the prevalence of obesity continues to grow, the share of the population that will develop type-2 diabetes will almost certainly expand.

ii) If the prevalence of type-2 diabetes continues to increase, the cost pressure on the healthcare budgets will accelerate given that the treatment is expensive (the cost, of course, varies between healthcare systems).

iii) Investments to effectively treat obesity would most probably reduce the prevalence of type-2 diabetes, but it requires an expansion of resources for that purpose now. Similarly, reductions in current spending to treat obesity would most probably increase the prevalence of type-2 diabetes in the future, but it would save money now.

If these propositions hold true, the question is: is it not preferable to invest in weight management programs now in order to avoid higher healthcare costs in the future? The answer is fairly obvious: Yes. It is preferable from several perspectives – medical, social and economic – to invest now as to avoid larger costs in future. But how large could the potential savings be? In the next section we will provide an estimate.

4.1. ESTIMATING THE HEALTHCARE COSTS OF OBESITY AND THE BENEFITS OF TREATMENT

Economics is not an exact science. Economists cannot exactly predict what the economic output will be in the next quarter. Nor can economists provide estimates on government spending in ten or twenty years from now. Yet in order to estimate possible outcomes of events and policy changes, economists can fashion models and scenarios that help policymakers to understand the direction of costs and effects from events or various alternatives of action.

In this section we examine the fiscal effects from various options to treat obesity, especially from eligible commercial providers of weight management. Weight management or lifestyle weight management basically means behaviourally based treatments that help people to make and sustain changes to their lifestyles to lose weight. This includes community

based, group services facilitated by lay people (i.e. non health professionals) that offer regular support, guidance and advice to overweight and obese people. The results are estimates based on simple models, but give a strong indication regarding the direction of the effects from various alternatives that we examine. And that is the purpose of this calculation: to better understand the fiscal effects of an approach different from the practice among most governments today. We are focusing exclusively on treatments of obesity, notably a specific version of treatments, on the presumption that modern research has developed a greater understanding of "what works" and "what doesn't work". More precisely, we are examining the effect on healthcare expenditure under the presumption that eligible providers of weight management had been utilised to a greater degree. Too often, knowledge about the comparative effectiveness of different approaches to weight management is not embraced by healthcare systems.

The quantitative work in this chapter examines two scenarios. The ambition has been to estimate historical and future savings in five countries' healthcare budgets *under the assumption that obesity-intervention policies would have been different from today*, i. e. that the effectiveness of weight-management programmes by eligible commercial providers would had been the norm in healthcare systems that already provide their own methods to help obese people to manage their weight. In other words, we are estimating an historic counter-factual.

The entry point for the calculations is the question: how much can selected countries save in healthcare expenditure by investing in obesity treatments? Given current trends for the prevalence of obesity, it is important to design cost-effective policies that can be employed at scale, for people who are already overweight or obese. There is a wide array of "intervention types" – starting from social campaigns for individual monitoring of weight and raising awareness of obesity to medical and pharmaceutical interventions. The vast majority of the interventions are under national or state financing, yet the application and coverage vary between country and type. For the purpose of this study, a general assumption is that a model country has three intervention categories or options of interventions at hand – a) education and social campaigns, b) primary care, medical services and counselling, and c) lifestyle interventions by eligible commercial providers.[12] The common rule is that the first two are under national expenditure for obesity prevention, whereas commercial programmes are not.

Just as healthcare expenditures for obesity prevention vary between countries, so do the composition of interventions and the spending and cost-effectiveness associated with them. In this study, we account for differences in national budget expenditure for intervention. However, we assume that all countries in the study apply the same type of interventions with exactly the same composition balance.

For our modelling we use results from Carter et al. (2009), which estimates the cost of 13 available intervention components. Two distinct groups can be found in the pool of interventions: A) schooling, education and social campaigns account for about 60% of total obesity prevention expenditure, while B) primary care and medical counselling account for the remaining 40%. This is a simplification and evidently omitting certain intervention types. Nor does it include treatments by commercial providers.

Furthermore, we examine the effectiveness of each intervention category by using existing clinical trial studies. Among widely acknowledged methods, the weight reduction of each

12. Eligible providers are those which deliver multicomponent lifestyle weight management programmes that meet rigorous best practice standard.

intervention type in a year (plus follow-up trials) is the most universal and applicable method. This method is also the one that best fits the purpose of the study. The ICER approach, which measures quality-adjusted life-years (QALY) by intervention, is not used because it is more applicable to measure longer (lifelong) effects. Also, the ICER approach requires additional assumptions on BMI convergence to QALY gains, which is a "known unknown". Nor it is necessary to capture that particular effect in this study because it is primarily interested in general healthcare expenditure costs and savings associated with obesity and obesity treatment.

A central study by Fuller et al. (2012) reports that a year-long treatment by a commercial provider leads to a mean weight reduction of -4.91 kilogram compared to -1.73 kilogram for the standard care alternative in the United Kingdom. Studies by Jebb et al. (2011) and Jolly (2011) confirm that commercial programs have at least twice the impact on weight reduction compared to standard (primary) care program. Additionally, the latter study, based on population data from the UK, estimates that commercial programmes cost even less than primary care interventions. For example, a commercial program intervention costs £15 to £28 compared to £66 for general practice per kilogram lost. The cost of other medical interventions is even higher – a group program costs £1,000-2,000 per individual, while pharmaceutical or surgical intervention costs three to eight times more per quality-adjusted life-years.

Similarly, the study by Fuller et al. (2012) shows that the cost per kilogram lost in the UK tends to be lower for commercial providers than standard care, but slightly higher for Germany. Admittedly, certain studies can arrive at lower gap in cost-effectiveness when comparing intervention types, when national endowment factors are taken into account (i.e. labour market, transportation, or time). Nevertheless, for the purpose of simplicity in our calculations, we assume that one unit cost of commercial provider reduces the weight by a factor of 2 (100%), compared to standard care.

In the studied scenarios, based on the above-mentioned assumptions, we model a situation where substitution of standard care (primary care) intervention by commercial program leads to continuous reductions in the obesity rate. The objective is to estimate how much governments could save by adjusting their intervention policies towards the most cost-effective ones among exiting alternatives of interventions. The scenarios incorporate the two previous assumptions on the share of intervention composition in existing expenditures, and the cost-effectiveness of each intervention type. We use data on obesity rates – historic, current and future – from the OECD and national statistical records. Due to the limitations of data, we only use one obesity rate (BMI > 30) and do not distinguish between various obesity rates (e.g. obesity I, II and III). For missing observations of obesity rates we calculate the rates between existing data points derived from other statistical records. Where there is no two data points available that can be used to estimate the intervening trend, we make an estimation based on the development of obesity rates in other countries (we use the average from a group of countries for which data points are available). The table below summarises Scenarios 1 and 2 while presenting the key assumptions and specifications of the model.

TABLE 2. SCENARIO SUMMARY

SCENARIO 1 – Historic Estimation		
BASELINE	Scenario 1A	Scenario 1B
Uses backward extrapolation from 2005 to estimate historical obesity cost in each period of time Applies medical price indices to deflate current (2005) prices	Changes intervention composition – primary care (PC) refers obesity treatment to Commercial Provider (CP) Assumes that one cost unit of CP reduces weight by factor of 2 compared to PC Applies changed intervention effectiveness to estimate historical savings Applies MPI deflator	Assumes increased healthcare expenditure on obesity treatment by 100% starting from 1980 Allocates additional healthcare funds to CP Primary Care expenditure follows trend Assumes that one cost unit of CP reduces weight by factor of 2, compared to PC Applies changed intervention composition and effectiveness to estimate historical savings
SCENARIO 2 – Future Estimation		
BASELINE	Scenario 2A	Scenario 2B
Applies projection for obesity rate increase until 2030 Assumes existing (unchanged) intervention composition Estimates healthcare expenditure to 2030 Adjusts estimates to projected inflation (MPI medical prices indices)	Changes intervention composition – commercial provider (CP) substitutes primary care (PC) Assumes that one cost unit of CP reduces weight by factor of 2, compared to PC Applies intervention effectiveness to estimate healthcare expenditure in 2030	Assumes that one cost unit of CP reduces weight by factor of 2, compared to PC Expands healthcare expenditure on obesity by 100% to 2030 Assumes that additional healthcare funds are channelled to CP Additional funding does not alter spending on Primary Care – expenditure follows trend

4.2. SCENARIO 1A AND 1B

In Scenario 1 we attempt to estimate the historical healthcare expenditure associated with obesity. Given country-specific national healthcare expenditure in 2005 along with parallel obesity rates we use backward extrapolation from baseline 2005 to 1980. The final calculation applies medical price indices to deflate the current (2005) healthcare expenditure, with results presented in the Table 3.

TABLE 3. HISTORICAL COST OF OBESITY, MLN EUR

	1980	1985	1990	1995	2000	2005
UK	1041.87	1325.11	1719.84	2572.41	3781.40	5362.37
Spain	325.99	445.18	677.83	1242.37	1682.77	2044.68
France	1142.23	1476.09	1890.15	2513.60	3917.09	4411.14
Germany	1573.38	1804.57	2173.03	3133.31	4633.15	4998.00
Sweden	90.97	147.24	236.70	343.09	386.71	415.82

Source: OECD, National Statistics, own extrapolation (Germany and France)

Scenario 1 A is modelled on the assumption that current expenditure for obesity treatment used by each country on standard care (SC) will be referred to commercial providers (CP). Following the previous discussion, CP replaces SC with a cost-effectiveness factor of 2 in reducing weight per cost unit. Taking into account intervention composition (60-40) and the CP cost-effectiveness factor, we arrive at a final obesity-reduction rate of 1.3 (30% reduction) for each period, while still holding constant the aggregate expenditure.

To put it more simply, in 1980 each country undergoes an obesity prevention policy change that has a lagged impact on obesity rates up until 2005. The change towards CP has a mitigating impact on obesity rate increase by factor of 1.4. By 2005, countries like the UK could in this scenario lower the expected obesity rate by 4 percentage units compared to when no policy change has taken place (see Tables 4 and 5). Similarly, Spain could have lowered its current obesity rate by 1 percentage units, France by 1.5 percentage units, Germany by 2 percentage units and Sweden by 1 percentage units.

TABLE 4. OBESITY RATES WITHOUT POLICY CHANGE

	1980	1985	1990	1995	2000	2005
UK	11.80%	13.00%	14.20%	16.20%	20%	23.20%
Spain	8.90%	9.70%	9.60%	12.10%	12.80%	13.90%
France	5.70%	6.10%	6.40%	7.20%	9.80%	10.50%
Germany	6.70%	7.20%	8.10%	9.80%	11.70%	13.60%
Sweden	3.60%	4.20%	5%	5.90%	6.10%	6.50%

TABLE 5. OBESITY RATES UNDER SCENARIO 1A

	1980	1985	1990	1995	2000	2005
UK	11.80%	12.66%	13.49%	14.85%	17.34%	19.32%
Spain	8.90%	9.47%	9.40%	11.15%	11.61%	12.32%
France	5.70%	5.99%	6.20%	6.75%	8.49%	8.92%
Germany	6.70%	7.28%	7.93%	9.12%	10.39%	11.59%
Sweden	3.60%	4.03%	4.58%	5.17%	5.29%	5.54%

The new type of obesity treatment intervention comes at a given cost to the national budget. The previous section provided detail account of expected benefit of each intervention on individual patient level. The study by Jolly (2011) on UK patients provides additional information on how the cost per each patient intervention. The study reveals that the lifestyle community intervention program has a cost of £55 (or, expressed in current euros, EUR 70) per participant recruited, compared to £90 for general practice and pharmaceutical therapy. To calculate the national budget expenditure on lifestyle interventions, we assume that each EU country has similar intervention cost to the participants in the UK. Based on the individual participant cost, we then estimate discounted cost of lifestyle intervention program between 1985-2005. Table 6 presents approximated and discounted national cost of each intervention type in each period of time over last 20 years.

TABLE 6. THE NATIONAL COST OF OBESITY LIFESTYLE INTERVENTION PROGRAMME, SCENARIO 1 A (MLN EUR)

	1985	1990	1995	2000	2005
UK	79.2	91.96	138.70	267.33	354.62
Spain	48	50.43	70.86	147.15	174.07
France	39.2	44.94	65.85	125.52	179.35
Germany	61.6	66.84	103.06	207.52	268.58
Sweden	3.92	4.41	7.1	14.04	16.33

The lifestyle intervention reduces the rate of obesity, which has an impact on total healthcare expenditure associated with obesity treatment. Using 1980 as the baseline, we calculate

how healthcare expenditures for treating obesity-related diseases would develop under the new obesity rates generated in Scenario 1 A. The outcomes of Scenario 1 A are healthcare savings from obesity treatment reduced by the healthcare expenditure on lifestyle intervention. Table 7 reports new cross-country healthcare expenditure until 2005, together with the percentage savings rate for each period of time. As can be seen in the table, changes in obesity intervention policy could reduce total healthcare costs associated with obesity by between 3 and 12 percent under this scenario. The following charts graphically present the trend under Scenario 1 A compared to baseline (where no policy change takes place).

TABLE 7. OBESITY-RELATED HEALTHCARE EXPENDITURE SCENARIO 1 A, MLN EUR (% SAVING)

	1980	1985	1990	1995	2005
UK	1041.87	1369.36 (-3%)	1726.01 (0%)	2496.58 (+3%)	4819.78 (+11%)
Spain	325.93	482.69 (-8%)	714.26 (-5%)	1215.74 (+2%)	1986.92 (+3%)
France	1142.23	1487.64 (-1%)	1874.84 (+1%)	2422.07 (+4%)	3928.08 (+12%)
Germany	1573.38	1887.19 (-4%)	2195.39 (-1%)	3020.11 (+4%)	4528.63 (+10%)
Sweden	90.97	145.15 (+1%)	221.07 (+7%)	307.45 (+12%)	370.60 (+12%)

CHART 11. UK - CHANGES IN HEALTHCARE COSTS, SCENARIO 1A

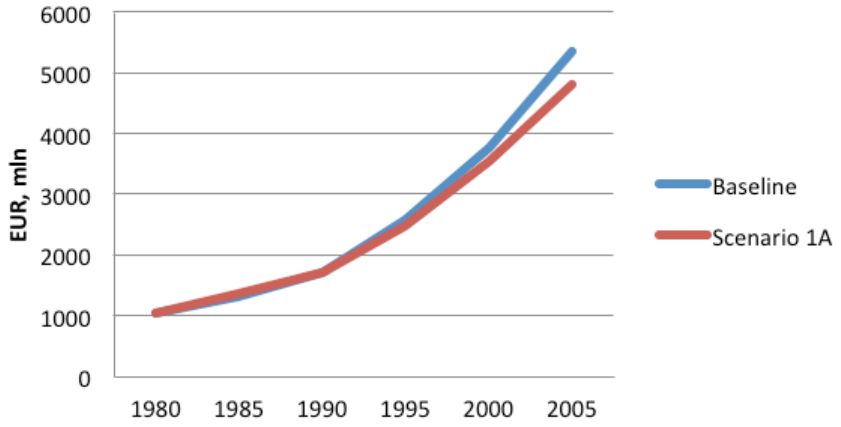


CHART 12. SPAIN - CHANGES IN HEALTHCARE COST, SCENARIO 1 A

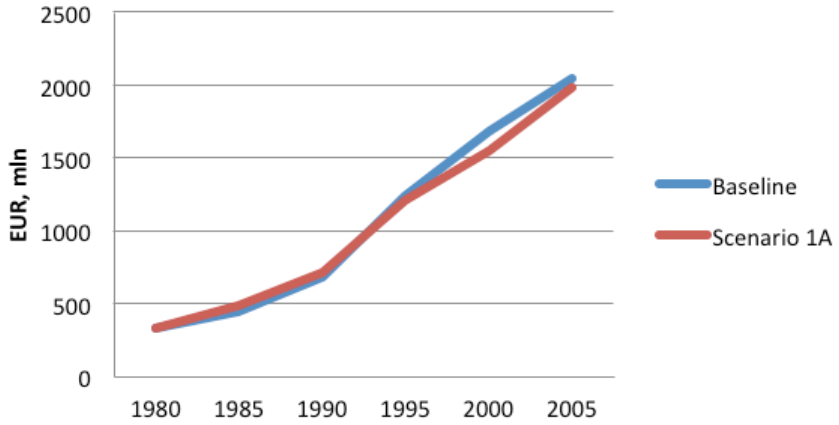


CHART 13. FRANCE - CHANGES IN HEALTHCARE COST, SCENARIO 1A

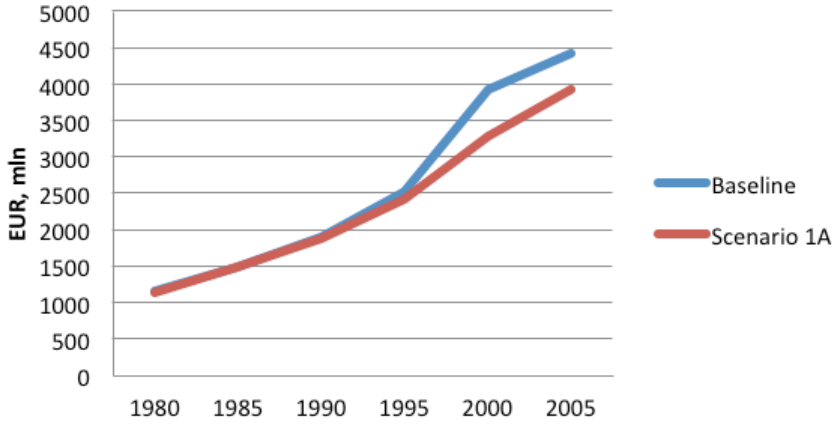


CHART 14. GERMANY - CHANGES IN HEALTHCARE COST, SCENARIO 1A

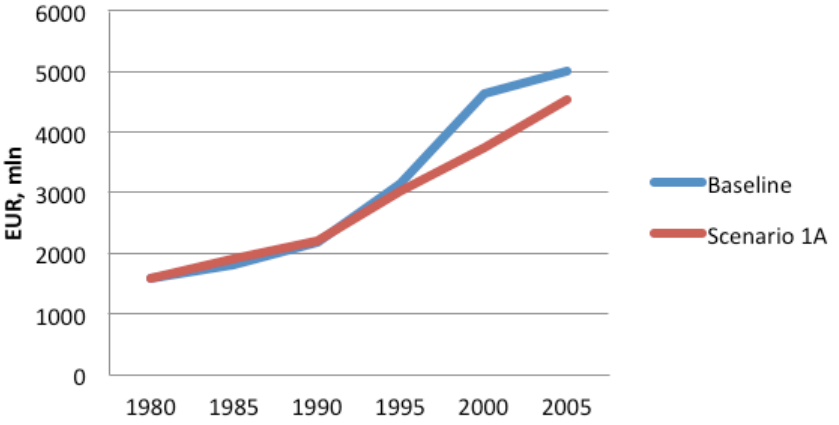
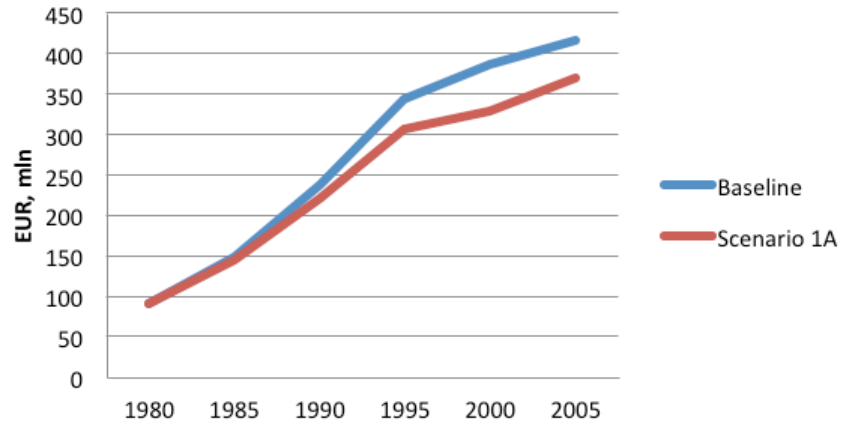


CHART 15. SWEDEN - CHANGES IN HEALTHCARE COST



Scenario 1 B builds on Scenario 1 A, with the additional assumption that expenditures on obesity intervention would have increased by 100% from 1980 until 2005. The model assumes that additional funding (expenditure) would have been channelled to commercial providers, leaving other expenditures for obesity interventions unchanged. In other words,

non-treatment interventions receive as much funds as it had done under observed circumstances. The expenditure expansion affects the final composition of the intervention package and consequently adjusts the hypothetical obesity rates in the past. The obesity rates under Scenario 1 B are reported in table 8.

TABLE 8. OBESITY RATES UNDER SCENARIO 1 B

	1980	1985	1990	1995	2000	2005
UK	11.80%	12.23%	12.63%	13.27%	14.38%	15.20%
Spain	8.90%	9.19%	9.15%	10.00%	10.21%	10.52%
France	5.70%	5.84%	5.95%	6.21%	7.01%	7.19%
Germany	6.70%	6.99%	7.30%	7.85%	8.40%	8.88%
Sweden	3.60%	3.81%	4.07%	4.34%	4.39%	4.49%

Similar to Scenario 1 A, the adjusted obesity rates in 1 B have an effect on historical healthcare expenditures associated with obesity. Table 9 summarizes the historic projection starting from 1980 in EUR terms. As evidenced in the table, under Scenario 1 B countries would reduce the burden of healthcare expenditure associated with obesity through a modification in intervention policies and an expansion of budget for obesity interventions. In the final year of this exercise (2005) certain countries can reduce the healthcare burden of obesity up to 27%.

TABLE 9. HISTORICAL SAVINGS UNDER SCENARIO 1 A AND 1 B RESULTING FROM CHANGES IN INTERVENTION COMPOSITION AND HEALTHCARE EXPENDITURE ON PREVENTION, MLN EUR, (%)

Historical Savings of preventing obesity in 2005, mln EUR, (%)			
	Baseline Cost (2005)	Scenario 1 A	Scenario 1 B
UK	5362.37	542 (11%)	997 (22%)
Spain	2044.68	57 (3%)	78 (4%)
France	4411.14	483 (12%)	959 (27%)
Germany	4998.00	469 (10%)	1089 (27%)
Sweden	415.82	45 (12%)	89 (26%)

The summary table outlines the result for each countries' healthcare-expenditure savings under Scenario 1 A and B. Scenario 1A suggests that changed intervention composition in 1980 towards commercial providers could have saved between 3%-12% of healthcare expenditure associated with obesity. In fiscal terms the annual saving can reach up to 542 mln EUR in United Kingdom, 483 mln EUR in France, 469 mln EUR in Germany, 57 mln EUR in Spain and 45 mln EUR in Sweden. In scenario 1B the savings are even greater, despite increased budget expenditure on obesity prevention. The substitution impact and the 100-percent increase in spending on obesity interventions from 1980 onwards (in each period of time) could lead to savings of 4%-27% of total obesity-related healthcare expenditures in 2005. The percentage figure translates into annual savings of 1,089 mln EUR for Germany, 997 mln EUR for UK, 959 mln EUR for France, 78 mln EUR for Spain, and 89 mln EUR for Sweden in the baseline year, 2005. The following charts show the development of cost for each studied country under Scenario 1 B compared to the baseline scenario.

CHART 16. CHANGES IN HEALTHCARE COST RELATING TO OBESITY FOR UK

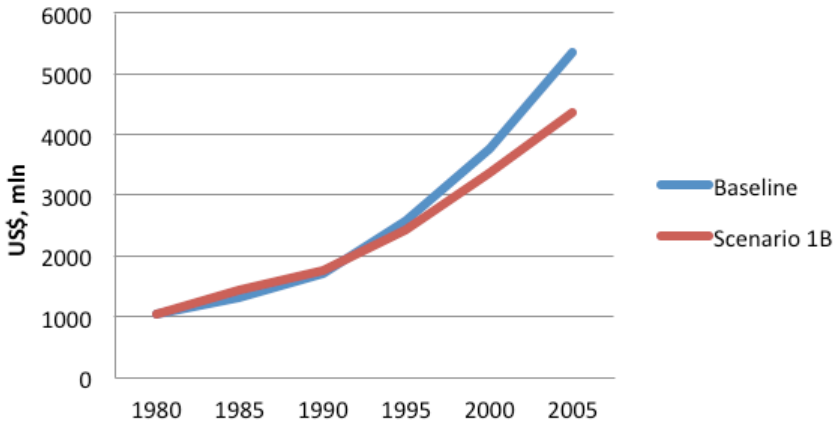


CHART 17. CHANGES IN HEALTHCARE COST RELATING TO OBESITY FOR SPAIN

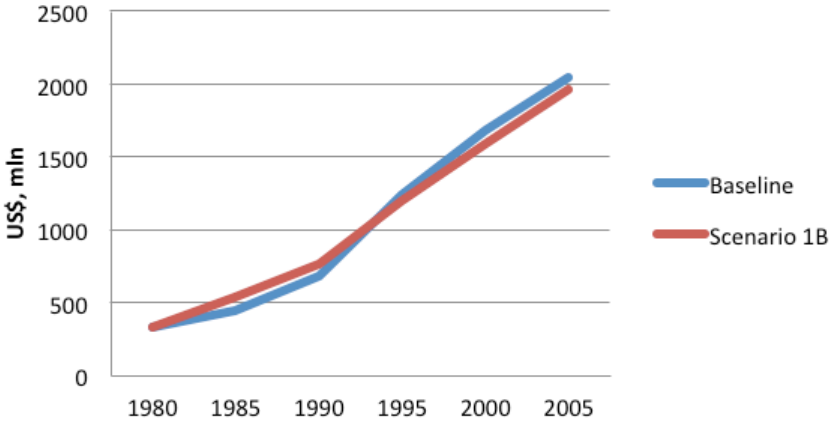


CHART 18. CHANGES IN HEALTHCARE COST RELATING TO OBESITY FOR FRANCE

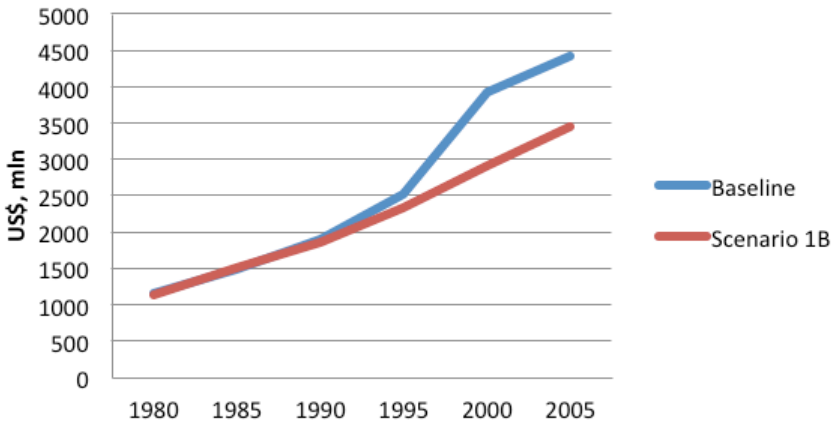


CHART 19. CHANGES IN HEALTHCARE COST RELATING TO OBESITY FOR GERMANY

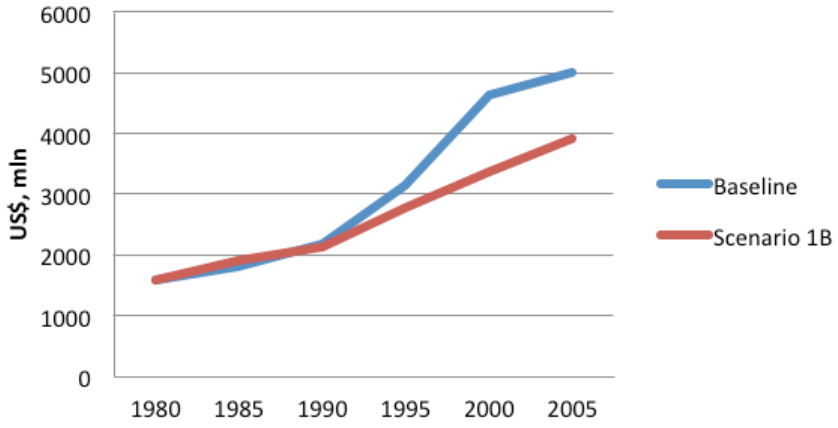
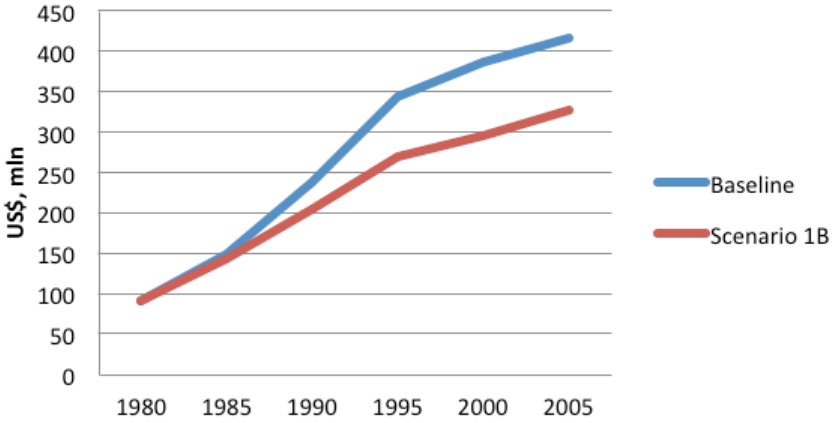


CHART 20. CHANGES IN HEALTHCARE COST RELATING TO OBESITY FOR SWEDEN



4.3 SCENARIO 2: PROJECTING FUTURE COSTS AND SAVINGS

Let us now turn to future projections. Scenario 2 attempts to quantify the future costs associated with an increase in obesity rates in selected countries, holding constant the current (2005) obesity-intervention expenditure and intervention cost-effectiveness. In the baseline of Scenario 2, no policy changes takes place in the intervention composition towards usage of effective eligible providers and projected level of expenditures, although the cost is adjusted to projected price increase for medical care. The first step is to calculate the projected obesity rates for the studied countries, which are taken from OECD projections[13] or country-specific obesity projection studies. Missing observations for individual countries are computed based on past trend or other countries' average increase adjusted to country trend. The results of estimation are presented in Table 10.

13. OECD(2009)

TABLE 10. PROJECTED OBESITY RATES, BASELINE SCENARIO

	2010	2015	2020	2025	2030
UK	25.31%	29.43%	32.79%	36.79%	41.29%
Spain	12.46%	13.68%	16.20%	17.05%	17.95%
France	9.66%	11.18%	13.19%	14.23%	15.35%
Germany	19.10%	21.20%	23.50%	26.20%	28.80%
Sweden	7.32%	8.23%	9.27%	10.43%	11.74%

Source: OECD, National Statistics

In calculating the future healthcare expenditures associated with obesity, this study uses estimates from the Foresight Report (2007), prepared by the Government Office for Science in the UK as reference. The report states that in 2007, NHS costs attributable to obesity is going to reach £6.3 bn in 2015, £8.3 bn in 2025 and £9.7 bn in 2050.[14] These estimations are in line with other studies attempting to measure the cost of obesity. For instance, Wang (2011), estimates that in 2030 obesity is going to cost the NHS £2 bn more a year than in 2010.[15] In calculating the future prevalence of obesity in the general population, the study uses distribution of people by age-cohorts and BMI categories. Similar figures for future's rates of obesity can be found for Spain, France, Germany and Sweden.

The subsequent step in the calculation is the association between increased body mass and incidence of medical conditions. This is generally a universal relationship independent of country-specific characteristics; the risk factors for chronic disease associated with obesity are the same across countries. This allows for making an assumption based on UK's Foresight Report (2007) prediction that an increase in body mass above BMI 30 results in increase incidence of diseases such as diabetes, hypertension, stroke, coronary disease and other related diseases, as well anticipated additional morbidity associated with obesity.[16] For example each 5 kg/m2 in BMI increases risk for oesophageal cancer by 52% and for colon cancer by 24%, and for women, endometrial cancer by 59%, gall bladder cancer by 59%, and postmenopausal breast cancer by 12%. Other studies point out that a BMI of 30-35 at the age of 50 increases the incidence for diabetes by 750%, hypertension by 280%, coronary disease by 150%, et cetera.[17] With an established link between obesity rate (expressed as measures of BMI) and associated additional costs to healthcare budgets, we use a macro-approach by applying the projected healthcare expenditure growth projection across remaining countries for each obesity rate prevalence in each period of time, assuming that the national cost expenditure treating obesity are the same across countries.

For example, in 2005 23.2% of UK population was obese, which was associated with 5.3 bn EUR healthcare expenditure associated with obesity. For 2010, an obesity level of 25.3% is estimated to generate total healthcare expenditures on obesity at 6.3 bn EUR. From this follow that between 2005-2010 for UK, a 1% increase in obesity rate had an estimated 476 mln EUR additional cost for the healthcare budget. Similar estimations are done for other countries with varying rates for each period of time. The final step is the deduction of healthcare expenditure on lifestyle intervention programs, which follows the pattern from Scenario 1 A and B. We calculate forward lifestyle intervention cost on national level based on UK figures (EUR 70 per enrolment) adjusted to changes in inflation until 2030. Table 11 summarizes the

14. Foresight (2007), p. 40 [http://www.bis.gov.uk/assets/foresight/docs/obesity/17.pdf]
15. Commons Health Select Committee report
16. Detailed methodology can be found in Foresight (2007) available at: [http://www.bis.gov.uk/assets/foresight/docs/obesity/17.pdf]
17. Lobstein (2009), found at [http://www.mhsimulations.co.uk/Documents/WangC.pdf]

country extrapolations of future healthcare costs associated with an increase in obesity rates. The Table 12 presents future lifestyle intervention costs to national budget.

TABLE 11. FUTURE DIRECT HEALTHCARE COST ASSOCIATED WITH OBESITY, BASELINE (EUR)

	2005	2010	2015	2020	2025	2030
UK	5362	6300	7600	8800	9700	10500
Spain	2044	2268	2674	3574	3765	4089
France	4411	4953	5447	6164	6389	6590
Germany	4998	7328	8010	8831	9438	9906
Sweden	415	451	776	1133	1348	1582

Source: ECIPE calculation based on Foresight Study (2007)

TABLE 12. FUTURE DIRECT HEALTHCARE EXPENDITURE ON LIFESTYLE OBESITY INTERVENTION, EUR MLN

	2005	2010	2015	2020	2025	2030
UK	532.06	629.54	773.11	912.04	1074.28	1257.89
Spain	233.71	267.11	311.55	378.95	424.21	489.28
France	248.75	298.18	358.46	433.71	492.86	557.01
Germany	394.24	564.59	669.82	787.34	922.95	1064.40
Sweden	22.50	27.24	32.65	38.81	45.81	53.76

Source: ECIPE calculation based on Jolly (2011)

Let us now look at Scenario 2 A. The baseline scenario 2 assumed no disruption to the intervention composition and financial expenditure on obesity intervention, whereas scenario 2 A assumes that intervention expenditure spent on standard care will be spent on eligible commercial providers. Similar to Scenario 1, a cost-effectiveness factor is applied to 2005 obesity rates level, with subsequent changes in obesity rates at each point of time in the future projection.

TABLE 13. FUTURE OBESITY RATES, SCENARIO 2 A (AFTER CHANGE IN POLICY)

	2005	2010	2015	2020	2025	2030
UK	23.20%	24.71%	27.58%	29.83%	32.43%	35.26%
Spain	13.90%	14.30%	15.16%	16.90%	17.47%	18.71%
France	10.50%	11.33%	12.38%	13.73%	14.40%	15.11%
Germany	13.60%	17.53%	18.91%	20.37%	22.04%	23.60%
Sweden	6.50%	7.08%	7.72%	8.41%	9.16%	9.98%

Scenario 2 A and B show that changes in obesity-intervention policies result in even higher reductions in obesity rates, compared to the historic scenarios. The increased pace of obesity rates as well as healthcare costs in the future can be slowed down by changes in the composition of intervention forms (Scenario 2A) coupled with increased healthcare expenditure on obesity intervention (Scenario 2B).

In consequence, delegating standard care provisions to eligible commercial providers (Scenario 2A) can save 3% to 55% a year in healthcare expenditure associated with obesity by 2030 (Table 14). Sweden can expect the highest percentage budget savings amounting to 956 mln EUR by 2030 – almost a 55% expenditure reduction, compared to baseline-projected cost. Countries with already high obesity rates like the UK can save up to 10% of future obesity expenditure, equivalent to 1.1 bn EUR in 2030. Under the same conditions, Spain saves 0.85 bn EUR, which is 20% less than projected baseline obesity expenditure in 2030. Germany reduces the budget burden by 6% and saves 0.4 bn in 2030. In France, annual savings in 2030 are estimated at 3% of baseline expenditure or equivalent of 0.3 bn EUR by 2030.

Scenario 2 B envisages that the healthcare cost for obesity-intervention treatment will expand by 100%, with subsequent changes to the intervention composition. Consequently, there is going to be a slowdown in obesity-rate increase that is bigger than in Scenario 2 A.

Under Scenario 2 B, selected Member States are projected to save 7% to 60% of 2030 national healthcare expenditure associated with obesity-related treatments, compared to baseline projection. In financial terms, annual expenditure savings are projected to amount to 1.35 bn EUR for UK by 2030 (13% of baseline), Germany can save 1.1 bn EUR a year (11%), Sweden saves 1 bn EUR (60%), Spain saves 0.7 bn EUR (18%), and France up to 0.5 bn EUR (7%) a year by 2030.

TABLE 14. PROJECTED FUTURE SAVINGS (SCENARIO 2A AND 2B) OF CHANGES TO INTERVENTION COMPOSITION AND INCREASED HEALTHCARE EXPENDITURE ON PREVENTION, MLN EUR, (%)

Projection of Future Obesity-related Healthcare Costs				
	Baseline Cost (2005)	Projected Baseline Cost (2030)	Scenario 2 A Saving (2030)	Scenario 2 B Saving (2030)
UK	5362.37	10500	1092 (10%)	1343 (13%)
Spain	2044.68	4089	847 (20%)	731 (18%)
France	4411.14	6590	324 (3%)	498 (7%)
Germany	4998	9906	414 (6%)	1121 (11%)
Sweden	415.82	1582	889 (55%)	956 (60%)

4.4 OBESITY COST IN THE EU-27

The methodology used above is based on country-specific information. Could the estimates above help us to generate a better understanding of the proportions of costs and benefits from changing obesity interventions across the EU? The results cannot be aggregated up to the EU as a whole, but under some specific assumptions we can generate a result that provides a ballpark estimate for the EU.

A 2006 European Commission report estimates that obesity-related healthcare costs Member States 59 bn EUR a year.[18] Based on the previous methodology and calculation of saving rates, we make an estimation of historical and future savings for EU member states on the basis of the average results from the five countries studied above.[19] Derived from the average savings rate of the five countries examined in this study, adjusted to country healthcare expenditure, the total EU retrospective savings under Scenario 1 A reach 10 bn and 19 bn under Scenario 1 B.

18. *FACTSHEET Nutrition and obesity prevention, September 2006 Commission services*
19. EU members in the year 2006.

If EU public policy towards obesity had followed Scenario 1 and 2 the total healthcare expenditure would be lowered by 2% already in 2005. For the EU as a whole, Scenario 2 A estimates 18.7% savings on obesity-related expenditure in 2030, which is an equivalent to 22 bn EUR. Under assumptions of Scenario 2 B, the EU saves 34% or equivalent to 39.1 bn EUR in 2030.

TABLE 15. SUMMARY TABLE

SCENARIO 1		
BASELINE	Scenario 1 A	Scenario 1 B
€59 bn a year spent on obesity treatment (2005), ca. 400%-500% increase in healthcare expenditure on obesity treatment since 1980 for each MS Continuous increase in rate of obesity – some MS approached 25% rate (UK)	Change in intervention composition mitigates the increase in obesity rate by 30% Countries could have reduced obesity rate by 1 to 4 percentage points Estimated lowered prevalence of population obesity reduces healthcare expenditure by 11%-17% in 2005 Leads to average €8 bn EU savings in 2005	Change in intervention composition and additional healthcare expenditure mitigates the increase in obesity rate by 65% Countries could have reduced obesity rate by 2 to 8 percentage units Estimated lower prevalence of obesity reduces healthcare expenditure by 24% to 35% Leads to average €18 bn EUR savings in 2005 UK saves €1.8 bn, Spain €0.5, France €1.4 bn, Germany €1.7 bn, Sweden €0.1 bn
SCENARIO 2		
BASELINE	Scenario 2 A	Scenario 2 B
EU spends €120 bn a year by 2030 Average 50% increase in healthcare expenditure – inflation not included Continuous increase in the rate of obesity – some MS approach 41% rate (UK)	Change in intervention composition mitigates the increase in obesity rate by 30% Countries can reduce prevalence of population obesity by 0.2 to 6 percentage points EU saves €22 bn a year by 2030	Change in intervention composition and additional healthcare expenditure mitigates the increase in obesity rate by 65% Countries can reduce prevalence of population obesity by 2.2 to 14 percentage points compared to baseline EU saves €39 bn a year by 2030

CONCLUDING COMMENTS

In this study we have used a basic economic model to generate an idea of the proportions of savings that can be achieved if obese people get treatment by effective, eligible commercial providers. The assumptions have been based on previous research on the comparative effectiveness of specific approaches to weight management. It is impossible to make exact forecasts on future healthcare costs related to obesity, let alone the rates of obesity a few decades from now, but by using existing projections we can generate a valuable estimate that gives an indication on potential costs and savings. Importantly, the results also indicate the focus that should be placed on changing the policy for obesity treatments in order to raise the effectiveness and achieve tangible savings for healthcare systems.

The overall results are clear. By substituting standard care practices for obesity treatment with effective methods by eligible commercial providers of weight management, governments can provide significant savings in their future direct healthcare costs for obesity. And, if governments increased current investments in these obesity interventions, the future savings would be significantly higher.

This result is confirmed by other research, which shows that healthcare costs associated with obesity by far out-distance the cost obesity interventions, e.g. using various policy interventions to either prevent or treat obesity. As people live longer, the healthcare costs associated with obesity will most likely continue to grow. A fiscally prudent approach to obesity, therefore, would be to invest in obesity intervention now to avoid future healthcare costs to escalate. One thing is certainly for sure: it is a very expensive healthcare strategy to not treat people that have developed a condition (obesity) that with a high degree of probability will result in serious medical conditions in the future.

This study does not provide guidance on the composition of policies to combat obesity. Many approaches appear necessary, combining both prevention and treatment of already obese people. Yet the paper challenges the notion that treatment of obesity is cost-ineffective. Undoubtedly, efforts to prevent obesity from growing further will be a critical part of a complete approach, but prevention methods are not universally applicable. Prevention strategies are not designed to change the weight condition of people that have already developed obesity. As the prevalence of obesity has already reached high levels, there will have to be a significant treatment component in any obesity strategy within Europe. Ideally, that component should employ the knowledge about the effectiveness and cost-effectiveness of existing alternatives.

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