

Health Care as an Investment?

Reframing the Health Policy Debates in Europe

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Executive Summary

This issue brief explains why the debate about health care expenditures in Europe should shift focus from controlling costs to evaluating value for money. Based on a review of existing studies and a summary of the preliminary results of our ongoing work, we seek to provide a stimulus for future analysis of health as an investment in Europe.

Good health has a value, and the economic value associated with recent health improvements is likely, in many cases, to far outweigh the costs of investments that have achieved such gains. For example, during the 1990s, rates of premature death due to ischemic heart disease, cancer of the colon, rectum, breast or cervix, and hypertension and stroke fell significantly in France and England and Wales. Even when using conservative estimates of their economic value, it is clear that these gains are worth billions of euros. These mortality reductions were due, in large part, to investments in primary and secondary prevention, as well as improved tertiary care—interventions whose costs are far below the realized benefits, based on existing evidence from the United States.

As in any other sector, health policymakers need information about the returns on their investment—not just on the evolution of expenditure—if they are to make informed decisions about the best use of resources, given the wide range of competing economic and social policy objectives that might be pursued. Unfortunately, there is a dearth of studies based on European data. Yet even if there is evidence of substantial overall returns on the money spent so far, there will always be opportunities to use existing resources more efficiently. Future European (and U.S.) research should also identify opportunities for greater returns on their investments.

Introduction

Health care policy debates in Europe tend to focus on the need to contain the growth in spending.¹ Contemporary concerns regarding upward pressure on costs are exacerbated by anxiety toward the future sustainability of health services faced with aging populations and technological change.² When debates focus on containment strategies to assure sustainability, they often imply that any future health care expenditure increases ought to be curtailed. This view reflects a widespread, often implicit, consensus. It contrasts, however, with the policy debate in other sectors (education, basic research, or transport infrastructure), where expenditure is seen as an investment and not simply a cost. It also contrasts with the widespread use of expressions indicating the high value that ordinary people place on good health, as they do on better education or transport links. We recognise that there are political problems associated with increasing health spending, but a complete assessment of health care spending should consider not merely the inputs but also the potential value that may have been bought with such expenditures. From an economic point of view, if the benefits resulting from health care spending exceed the costs, then the resources invested in health care would be 'worth it'. Hence, what matters is value for money, not solely the level of expenditures. A number of questions arise:

- What are the benefits we derive from investment in our health care systems?
- How do we measure them?

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- Once we succeed in measuring them, how big are the benefits compared to the costs?

Two clear goals emerge from this policy brief:

- Shift the policy debate in Europe beyond costs and toward an assessment of value. The economic value of the benefits associated with recent investments could be worth billions of euros, and failure to recognize those benefits alongside costs risks is likely to waste public resources.
- Identify lessons from existing studies that should guide future analysis of health care as an investment in Europe.

The valuation of the benefits resulting from health care interventions comprises two basic components: (1) identifying the associated change in health status that is attributable to a specific (or general) health care intervention or policy; and (2) determining the value of the resulting units of health status improvement. While the second component may provoke controversy in many quarters, estimating the first component is no less difficult and problematic. The costs of the intervention or policy, then, obviously need to be subtracted from the gross benefits to arrive at an estimate of the net benefits and thus the net return on investment.

In the United States, a growing literature highlights significant returns to health care expenditures for specific diseases, as well as for the country as a whole.³ To the best of our knowledge, no such analysis has been applied to Europe. In the absence of relevant European evidence, we conjecture that resources invested in health care in European nations will provide an even higher return than in the United States. We believe this may be the case because: (1) average prices of health care services are significantly lower in Europe than in the United States;⁴ (2) the clinical evidence suggests that the benefits of health care interventions are comparable in Europe and the United States; and (3) recent evidence indicates that major European countries are achieving considerably better outcomes, in terms of reducing deaths amenable to health care, than the United States.⁵ The availability of direct, credible evidence on specific medical interventions, however, would fill a gap in the current policy debate.

Impact of health care on health outcomes

Many studies indicate that the role of health care in improving health is small in comparison to actions aimed at social and environmental determinants, e.g., income, education, neighbourhood, and occupational status.⁶ Ivan Illich even argued that much health care may be detrimental to health.⁷ It is likely that the impact of curative

medical measures on the large declines in mortality seen in industrialized countries between the mid-eighteenth century and mid-twentieth century has been small.⁸ Since then, however, the scope and quality of health care have changed almost beyond recognition, although the debate about the relative role of health care continues.⁹ A recent study examined life expectancy at birth and infant mortality as the ‘output’ of the health care system, with various lifestyle, environmental, and occupational factors as ‘inputs’.¹⁰ Drawing on panel data for the 15 pre-2004 members of the European Union over the period 1980–1995, it finds that increases in health care expenditure were associated with large reductions in infant mortality but only marginally with extensions of life expectancy at birth.

An alternative approach is to look at specific diseases. Recent studies conclude that health care has contributed substantially to the reduction in mortality from heart disease seen in many countries. For example, in England and Wales, 42 percent of the decrease in coronary heart disease (CHD) mortality between 1981 and 2000 has been attributed to medical and surgical treatments.¹¹ In Scotland and the Netherlands, 44 percent and 46 percent of a similar decrease has been attributed to medical and surgical interventions, respectively.¹²

One useful way to estimate the contribution of health care to health outcomes is to focus on the concept of ‘unnecessary untimely deaths’ or ‘avoidable mortality’.¹³ This concept relies on routinely collected mortality data, and some of the studies that estimate rates of avoidable mortality use sociodemographic variables to control for the influence of external factors. They have shown that health care interventions (primary and secondary prevention, as well as tertiary care) have had a substantial effect on the decline in mortality, especially over the past 30 years.¹⁴

A recent analysis of avoidable mortality applied the concept to changing patterns of mortality in Europe between 1980 and 1998, illustrating how this concept can provide important new insights into the contribution of health care to population health and can help to assess the economic benefits associated with health care spending.¹⁵ In defining health care services to include primary care, hospital care, and primary and secondary prevention services such as screening and immunization, the analysis examined trends in mortality from conditions for which identifiable health care interventions can avert mortality. It assumed that although not all deaths from these causes are entirely ‘avoidable’, health services could contribute substantially by minimising mortality.

The analysis found that deaths that could be prevented by timely and effective care were still relatively common in many countries in 1980. Observed reductions in these deaths contributed substantially to the overall change in life expectancy between birth and age 75 during the 1980s. The largest contribution was from declining deaths in infancy, but in some countries reductions in deaths among the middle aged was equally or even more important. These countries were Denmark, the Netherlands, the United Kingdom, France (for men), and Sweden (for women). In contrast, during the 1990s reductions in avoidable mortality made a somewhat smaller contribution to improved life expectancy, especially in the northern European countries that had already experienced the largest gains in the preceding decade. However, by now reductions in these deaths were contributing significantly to gains in life expectancy in southern Europe, especially in Portugal and Greece, which had not done so well in the 1980s.

Although the rate of decline in these deaths had begun to slow in many countries in the 1990s, they continue to fall even in countries that had already achieved low levels, such as in Sweden or France, and even more so where levels were higher, such as in the United Kingdom. Nolte and McKee found that from 1997 to 1998 and from 2002 to 2003, avoidable mortality fell in each of 19 OECD countries, although the United States was an outlier with a decline of only 4 percent.¹⁶ Similarly, Weisz et al. (2007) demonstrated how, in England and Wales during the 1990s, the rate of avoidable mortality fell by almost 20 percent, and in France by almost 13 percent.¹⁷ In both countries, these reductions were due primarily to lower rates of premature deaths due to ischemic heart disease and cancer of the colon, rectum, breast, or cervix, followed by premature deaths attributed to hypertension and stroke.¹⁸ Translating these reductions into changes in the potential years of life lost (PYLL) that could be attributed to avoidable deaths, England and Wales gained about 85,454 potential years of life and France gained about 23,620 potential life years during the 1990s (Table 1).

Table 1: Avoidable Deaths and Associated Potential Years of Life Lost (PYLL) France and England and Wales

	1988–1990		1998–2000	
	Avoidable Deaths	Potential Years of Life Lost	Avoidable Deaths	Potential Years of Life Lost
France	47,629	681,853	43,566	658,233
England and Wales	80,494	962,760	70,086	877,306

Source: Weisz et al. 2007

So what does this major achievement represent in monetary terms? Even if we adopt a conservative estimate of the value of a life year used by the English National Institute for Health and Clinical Excellence (NICE),¹⁹ these reductions in avoidable mortality in England and Wales were worth more than €3 billion and the reductions in France were worth nearly €900 million. Any analysis that failed to consider these benefits when evaluating the cost of health care would clearly be inadequate.

Value per unit of health

Traditionally, economic evaluations of health care interventions have shied away from putting a monetary value on health and have instead measured the benefits in health units, most commonly in terms of either mortality- or morbidity-based indicators, or as a combination of the two (e.g., as QALYs or DALYs). While seemingly straightforward, this strategic choice has come at the cost of neither providing an appropriate measure of the net social gains nor a return estimate that would at least in principle allow comparison to the gains from other uses of public money.²⁰

Much of the reservation about putting a monetary value on life and health stems from a misunderstanding of what such a value actually means. In fact, we cannot—and do not seek to—place a monetary value on our own or others’ lives. Instead, we are valuing often comparatively small changes in the risk of mortality, a very different matter. A more appropriate term than *value of life* would thus be the *value of risk reduction*. While under normal circumstances no one would trade his or her life for money, most people would weigh safety against cost in choosing safety equipment, safety against time in crossing a street and on-the-job risks against different wages. In making these choices, people are implicitly putting a price on their risk of mortality.

While the value of a reduction in mortality risk is not directly observable, it can be inferred from the decisions people make when choosing between mortality risk and financial compensation. The most common procedure uses labour market data about the wage premium workers demand from a job with higher mortality risk, as it is well known that, given a choice, individuals demand higher wages to work in jobs associated with greater risks, such as coal mining or off-shore oil work. For example, if an individual is willing to forego €200 to reduce the risk of mortality by 1/1000, this trade-off gives a value of life of €200,000 only in the sense that the risk reduction is

achieved in a population of 1,000: if mortality risk is reduced by 1/1000 per capita over a population of 1,000, this is the same as saying that we expect—statistically—one life to be saved in this population.²¹ Put this way, we can speak of ‘the *value of a statistical life*’ (VSL).²²

Yet is it really possible to generate an actual price that can be placed on life or health? While this is by no means easy, there is now a wealth of studies²³ that have measured how people value the risks of mortality or even morbidity. Many of these studies infer willingness to pay for small changes in mortality risk from observed choices in the labour markets and in markets for safety-related products (e.g., smoke detectors). Other studies use what is termed *contingent valuation methodology*, where people are asked directly what they would be willing to pay for a change in risk, using surveys. The considerable experience that has accumulated with both labour market-based and survey approaches has led to significant improvements in the methods used, but there is still a sizeable variation in the estimates obtained from different studies, as well as large confidence intervals around the point estimates obtained from any single willingness-to-pay study.²⁴

While this is a challenge that calls for cautious use of such estimates (as well as for the use of appropriate sensitivity analyses), it is certainly not a reason for abandoning the pursuit of more accurate measures of this meaningful concept. Further improvement in both measurement methods and data sources will make it possible to narrow the degree of uncertainty around estimates. Indeed, the application of these estimates in a cost-benefit analysis has value in itself as it forces decision makers to be explicit about what are often implicit and unexamined choices concealed within policy decisions.²⁵

There is a host of estimates of the VSL in the literature, including a growing number based on European labour market data.²⁶ For example, one recent study, using surveys from France, Italy, and the UK, estimated a VSL range of €1.1 million to €2.3 million, with a life year valued between €55,000 and €142,000. These estimates are comparable to those from a 2006 study of German labour market data, which estimated the VSL at €1.9 million to €3.5 million, depending on the method of calculation.²⁷

Aggregate and disease-specific ‘return on investment’ estimates

What then is the return that can be expected on investment in health care? Evidence both at the disease-specific

and aggregate level comes largely from the United States. Two recent studies have assessed the return on health expenditures for the United States over different periods in time. Cutler and colleagues examined the period from 1960 through 2000. They found that increased spending on health care at birth equated to an average cost of \$19,900 to gain a year of life. In analyses focusing on people 65 years of age and over, the average cost to gain an additional year of life was about \$84,700.²⁸ The authors made the assumption that 50 percent of improvements in longevity resulted from medical care, based on the literature they had reviewed for the study.²⁹

Another way of looking at this issue is to ask how much gain a given investment will yield. Using values of a life year of between US\$99,000 to \$173,000, and considering only the improvements in survival attributable to health care over the past two decades, Luce and colleagues found that a dollar of U.S. health care spending generates between \$1.55 and \$1.94 in overall health care gains.³⁰ These estimates will be conservative because they do not include the reductions in morbidity and improvements in employee productivity resulting from these expenditures.

Cutler and McClellan looked at the gains from investment in the care of five individual conditions: heart attacks, low birth weight in infants, depression, cataracts, and breast cancer. For the first four conditions, they estimated that the financial benefits of investment in relevant technology is much greater than the cost. In the fifth condition, breast cancer, costs and benefits of medical intervention are of about equal magnitude³¹—but this analysis does not include the costs and benefits of breast cancer screening, which many researchers believe to produce a substantial return.³²

Similarly, Smith and colleagues used ‘years of life lost’ to estimate the expenditure necessary to ‘save’ an extra year of life in several disease categories. Based on 2005–2006 expenditure data, they provide the following estimate for the marginal cost of a life year saved: £13,931 for cancer (£13,137 using 2004–05 expenditure data); £8,426 for circulation problems (£7,979 using 2004–05 expenditure data); £7,397 for respiratory problems; £18,999 for gastrointestinal problems; £26,453 for diabetes.³³ Although these are not cost-benefit estimates, these cost effectiveness estimates, based on English data, are consistent with the Cutler and McClellan findings based on U.S. Medicare data.

Using return on investment to inform debates about health disparities

In all countries there are some groups in the population who have better life chances than others. For example, those with the lowest socioeconomic status typically live several years less than those with the highest status. This premature loss of life bears a cost. A recent study by Mackenbach and colleagues, looking at the 25 EU members in 2004, estimated that the loss of life years as a result of the least well off failing to live as long as the most advantaged in each country equated to ‘€1,000 billion per year, or 9.5 percent of GNP.’³⁴

There are many factors underlying these disparities in health, but one is differential access to health care. Thus, in addition to estimating the net benefits associated with particular interventions, such analyses can be used to evaluate access to health care within countries.³⁵ In the United States, Glied and Little argued that ‘more than \$1.1 billion is lost annually from excess morbidity and mortality among the uninsured population because of lack of access to new technologies for the treatment of heart attacks, cataracts, and depression, alone.’³⁶ If, as we expect, there are positive net benefits associated with specific medical interventions in Europe, it is important to calculate the welfare that is lost as a result of barriers to access within each country faced by groups defined by their gender, ethnicity, socioeconomic status, and/or place of residence.

For example, contributors to this brief found significant disparities in access to revascularization (bypass surgery and angioplasty) by gender in France and England and Wales.^{37,38} After accounting for gender differences in the incidence of heart disease, the odds of women receiving revascularization are about 20 percent lower than the odds for men.³⁹ More recently, we found significant disparities in access to revascularization across neighbourhoods of Paris.⁴⁰ Given the large ‘net benefits’ associated with revascularization, the welfare loss produced by existing obstacles to access for these procedures on the basis of gender or place of residence may be substantial.

To the extent that return on investment studies focus on mortality improvements alone, they can make only a partial contribution to debates regarding the allocation of medical resources. Nevertheless, understanding disparities in access to lifesaving health care services is important.

The need for return on investment studies in Europe: a call to action

In the absence of evidence about the returns on investment in health care, policymakers are lacking essential input into their decision-making process, input that is needed to assess the net societal benefits associated with health care investment, not least as a basis for comparison with a wide range of competing economic and social policy interventions, such as education, basic research, and regional development assistance. Based on our brief review, we expect that although health care spending has increased over time, the return on spending over the past several decades has been high. Evidence from the United States indicates that many health care interventions generate a large net benefit, even though much of this evidence focuses exclusively on mortality improvements and does not capture gains in quality of life. Furthermore, there is good reason to believe that the health benefits associated with these interventions are comparable in the United States and Europe, but the prices of these interventions are substantially lower in Europe.

Without more detailed analysis of European data, however, it will be difficult to support this claim. Such analysis can be carried out: For example, by linking hospital data to other medical record and mortality data, one could develop country-specific estimates of the contributions of new health care interventions to gains in life expectancy. Furthermore, despite our expectation of positive returns on health expenditures in Europe, there will undoubtedly remain considerable scope for using existing resources more efficiently, while calling for greater spending. It is also important to emphasise, as we have in several places above, that health improvement can be reaped not only from better health technology but also from population-based preventive interventions. Future research on the return to investment in health care should not be confined to the purchase of new medical technologies, although this may be easier to quantify; rather it should take a broad perspective on what is now broadly (and fashionably) termed value-based health care.⁴¹

Nevertheless, to balance the concern about high medical costs with the benefits of the care received, we believe that the ways in which health systems have been tracked thus far in Europe should be modified to include measures of health benefits associated with health spending. Doing so will provide policymakers and the public a more informed picture of the benefits obtained for the money spent and improve the quality of the health care policy debate in Europe.

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Notes

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20. Nor has the strategy avoided a judgment on the value of health as it enters through the backdoor: a threshold needs to be exogenously defined of when it becomes ‘too costly’ to produce a given health gain.
21. The individual would not be willing to pay the same amount for the same risk reduction if the initial survival probability were different: the higher the initial mortality risk, the higher the value the individual would attribute to the same reduction in risk, compared to a low-risk situation in which the individual had a low mortality risk. This illustrates the apparent paradox that an individual, although he probably places an infinite value on his own life, willingly accepts small probabilities of death for finite compensation.
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