

Medical technology in Europe

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Outline

- ▶ Overview of the Medical Technology Industry
 - What is it?
 - How big is it?
 - What it isn't
 - What is Eucomed?

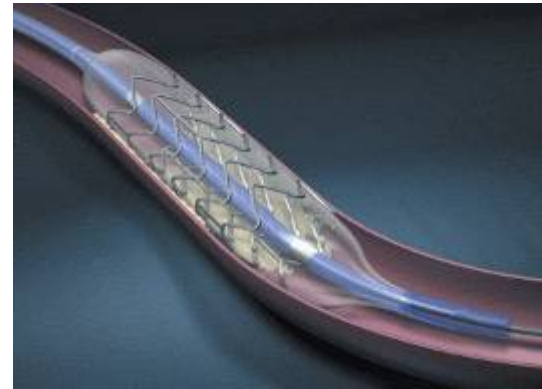
- ▶ Impact of Medical Technology
 - Health system challenges
 - Contribution of Medical Technology

Please ask questions as they arise.

Overview of the European Medical Technology Industry



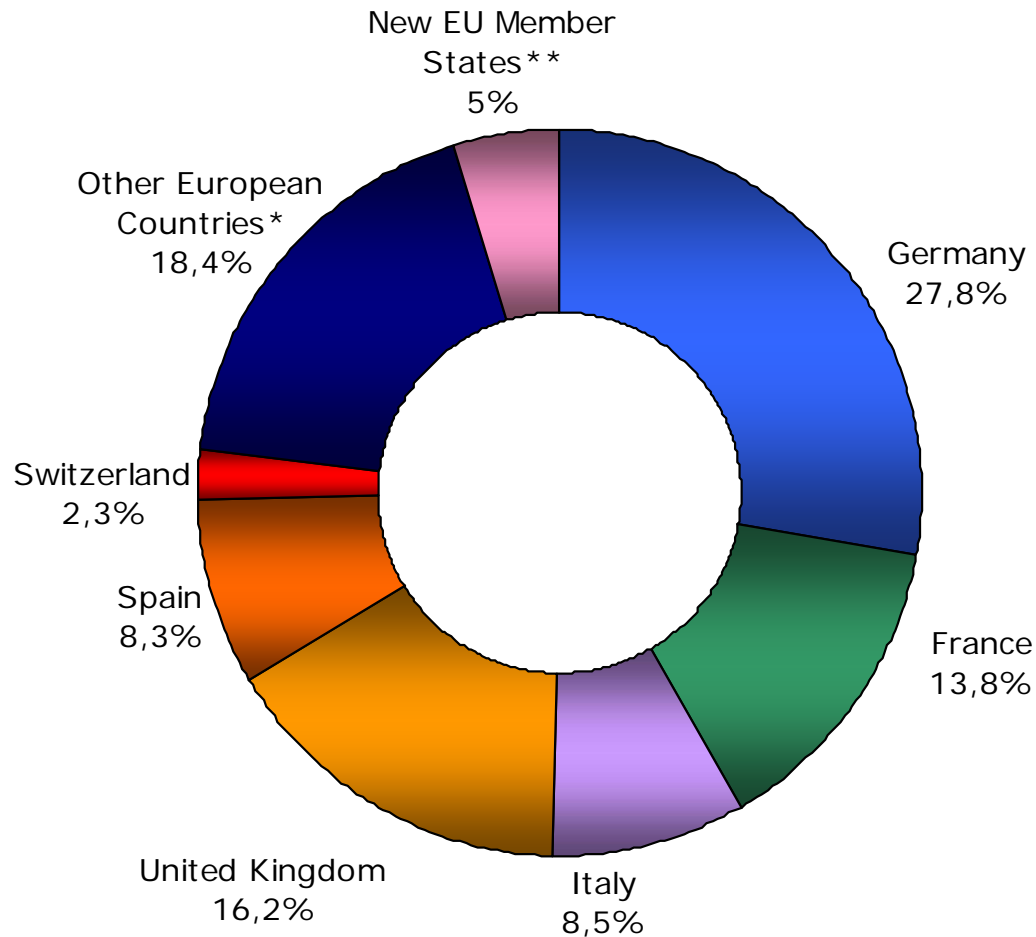
Medical Technology



European Medical Technology Industry

- ▶ Economic Contribution
 - Total sales of €63.6 billion in 2006
 - 1/3 of global medical technology market (€187 bn)
 - Second largest market behind the US
 - Employed 435,000 people across Europe
 - 11,000 Companies, 80% of them SMEs
- ▶ Scientific Contribution
 - Major user of R&D services
 - Up to €3.8 billion spent on R&D in 2006
- ▶ Trade Contribution
 - Germany (€14.0 bn), Ireland (€6.6 bn), France (€6.1 bn), and the UK (€5.6 bn) are major exporters of medical technology
 - Germany, Ireland, the UK, Denmark, Sweden and Finland have trade surpluses in medical technology

The European MedTech industry 2007



Percent of Total European Medical Technology Sales (€72.6 bn)

* Finland, Sweden, Denmark, Norway, Netherlands, Belgium, Luxembourg, Portugal, Austria, Greece, Ireland

** Estonia, Latvia, Lithuania, Poland, Czech Republic, Slovakia, Hungary, Slovenia, Malta, Cyprus, Bulgaria, Romania

The European MedTech industry

- ▶ Nearly 11.000 manufacturers
- ▶ 80% are SMEs
- ▶ Annual growth rate of ca 6%
- ▶ EUR 5.8 bn reinvested in R&D
= 8% of total sales
- ▶ Average life cycle of 18 months
- ▶ 529,000 employees (EU+EFTA)
- ▶ 6.8% of total healthcare expenditure (= 0.55% of GDP)

- ▶ Total sales MedTec sales in Europe of EUR 72.6 bn
= nearly 33% of world market share (EUR 219 bn)
- ▶ For comparison:
 - USA = €98.0 Billion (45%)
 - Japan = €23.1 Billion (11%)
 - China = €3.7 Billion (2%)
 - Brazil = €3.0 Billion (1%)

Source: Eucomed

European Medical Technology Employment

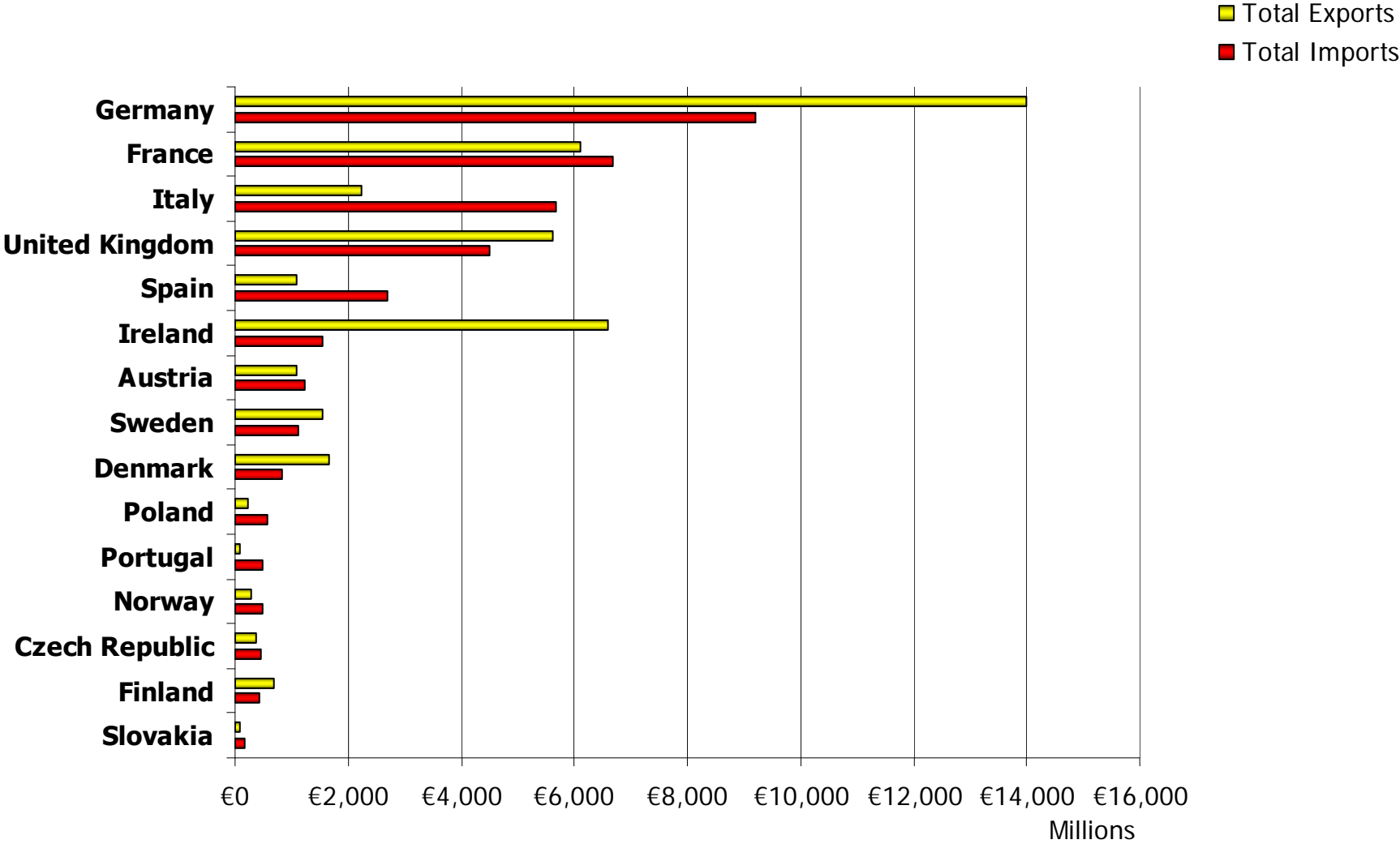
<i>Country</i>	<i>Nº of Employees</i>	<i>% of European Total</i>
Austria	6,000	1.4%
Belgium	5,500	1.3%
Czech Republic	12,760	2.9%
Denmark	14,000	3.2%
Finland	3,000	0.7%
France	40,000	9.2%
Germany	110,000	25.3%
Greece	2,500	0.6%
Hungary	4,250	1.0%
Ireland	26,000	6.0%
Italy	29,815	6.9%
Netherlands	9,500	2.2%
Norway	500	0.1%
Poland	8,700	2.0%
Portugal	3,200	0.7%
Romania	15,000	3.5%
Slovakia	2,198	0.5%
Slovenia	1,237	0.3%
Spain	25,400	5.8%
Sweden	15,000	3.5%
Switzerland	40,000	9.2%
United Kingdom	60,000	13.8%
Total Europe	434,560	100%

- ▶ As many people work in the medical technology industry as live in Liverpool or Toulouse



- ▶ One out of every 500 employed Europeans is employed in the medical technology industry

European Medical Technology Imports & Exports



Differences Between Drugs & Devices

▶ Pharmaceuticals

- Industry with longer history
- Primarily large multinationals



▶ Medical Devices

- Relatively young industry
- 80% are small- and medium-sized companies



Differences Between Drugs & Devices

► Pharmaceuticals

- Limited number of products
- Development by trial and selection on the basis of quality, safety and efficacy
- Therapeutic
- Based on pharmacology, chemistry, biotechnology, and genetic engineering
- Biologically active and effective when absorbed by the body



► Medical Devices

- More than 10,000 products (different sizes, models, etc.)
- Designed specifically to perform certain functions based on quality, safety and performance
- Diagnostic, therapeutic, monitoring
- Based on mechanical, electrical and/or materials engineering
- Generally act by physical means



Differences Between Drugs & Devices

► Pharmaceuticals

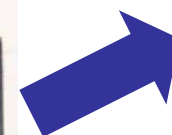
- Continuous innovation and some improvements based on new science and technology
- Innovation primarily the result of laboratory work
- Extensive product lifecycle and long investment recovery period

“Push through drugs”



► Medical Devices

- Continuous innovation and iterative improvements based on new science, technology and available materials
- Innovation primarily the result of insights from clinicians
- Short product lifecycle and investment recovery period (~18 months)
- New devices bring added functions and clinical value based on incremental improvements



Differences Between Drugs & Devices

► Pharmaceuticals

- Low distribution cost
- No service or maintenance
- Limited training required (compared to high-tech medical devices)



► Medical Devices

- High cost of distribution
- Training and education essential
- High cost of training and education
- Extensive service requirements



Differences Between Drugs & Devices

► Pharmaceuticals

- Randomized control trials simple to perform
- Efficacy and efficiency can be proven before going to market
- Drugs either work or don't work: efficacy and efficiency easy to prove

$$x + y = z$$

► Medical Devices

- Randomized control trials difficult to perform
- Efficacy and efficiency difficult to prove before product is used
- Medical devices are part of whole system and their efficacy relies on the skills and experience of the physician, the quality of the hospital, and other factors

$$x + y - b / q * r - d \dots = ?$$

About Eucomed

- ▶ Represents the European medical technology industry
- ▶ 62 Corporate Members, 27 National Association Members
- ▶ Represents 4,500 companies active in the European medical technology industry

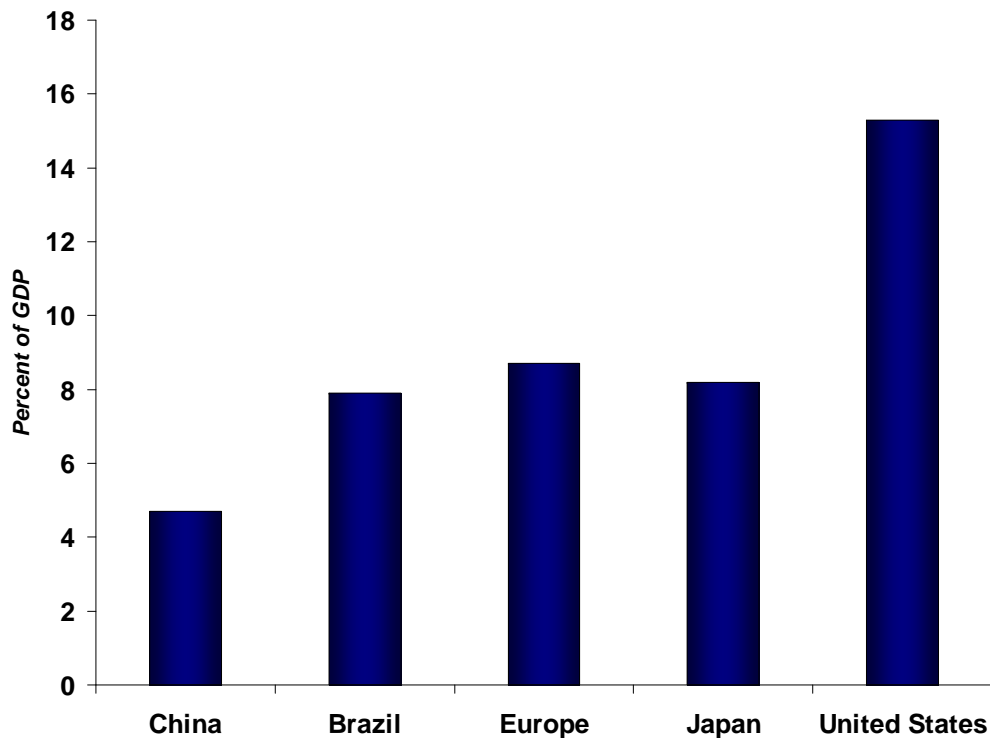


Impact of Medical Technology in Europe

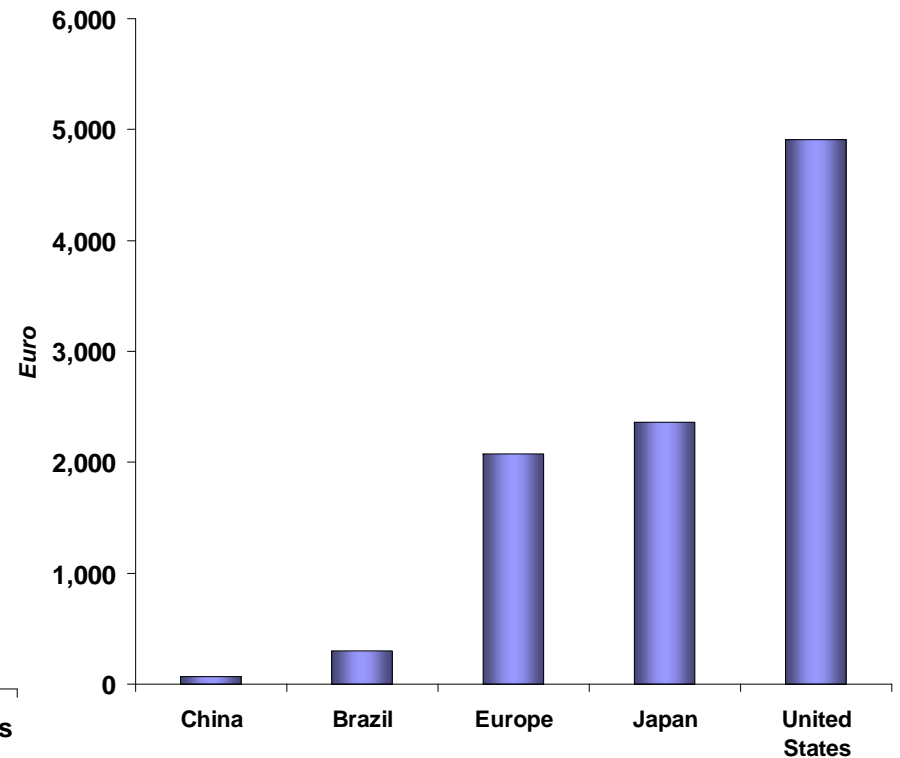


Health Spending in 2005

Percent of GDP Spent on Healthcare



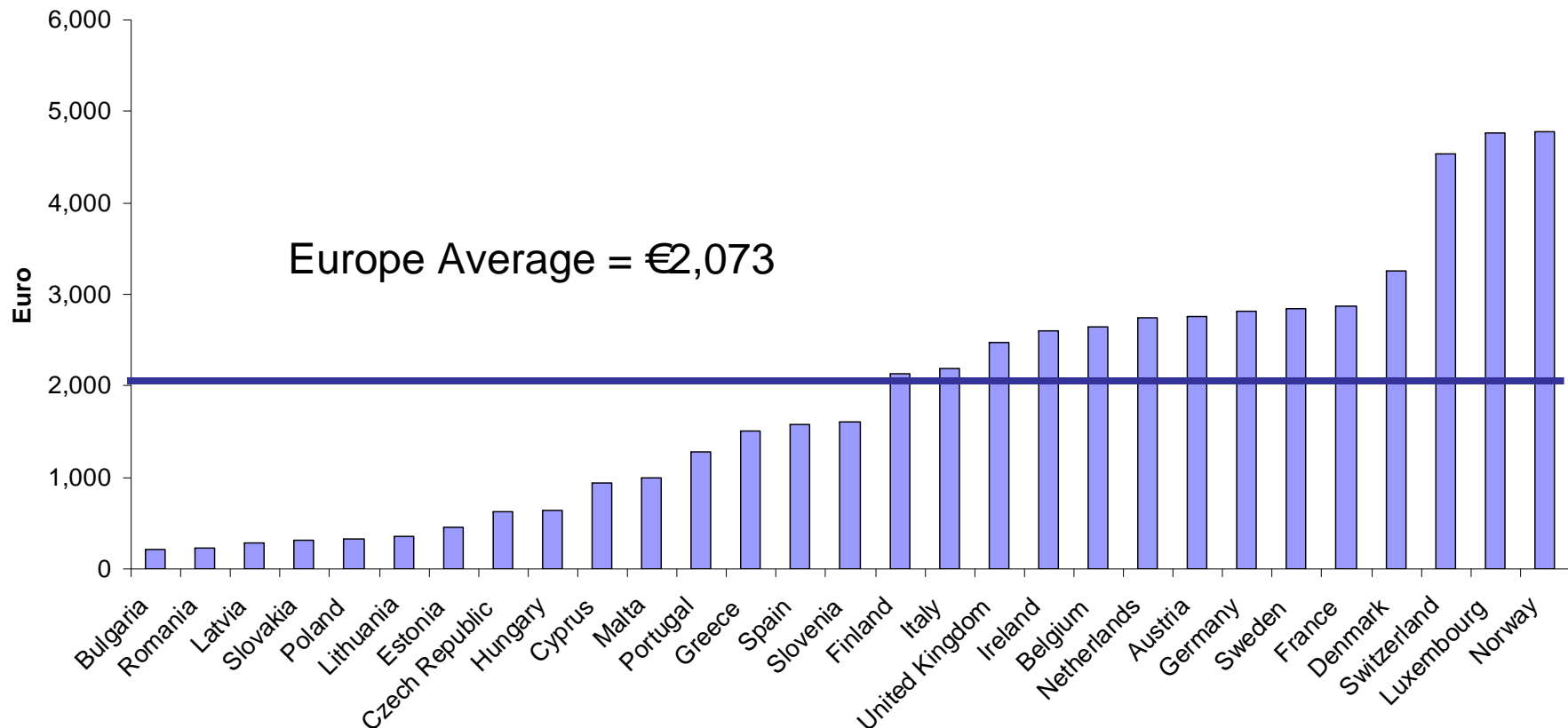
Per Capita Health Spending



Source: WHO (WHOIS database accessed 2/VI/08, Eucomed Medical Technology Brief, May 2007)
Europe refers to EU-27 plus Norway and Switzerland

Health Spending in Europe in 2005: Per Capita

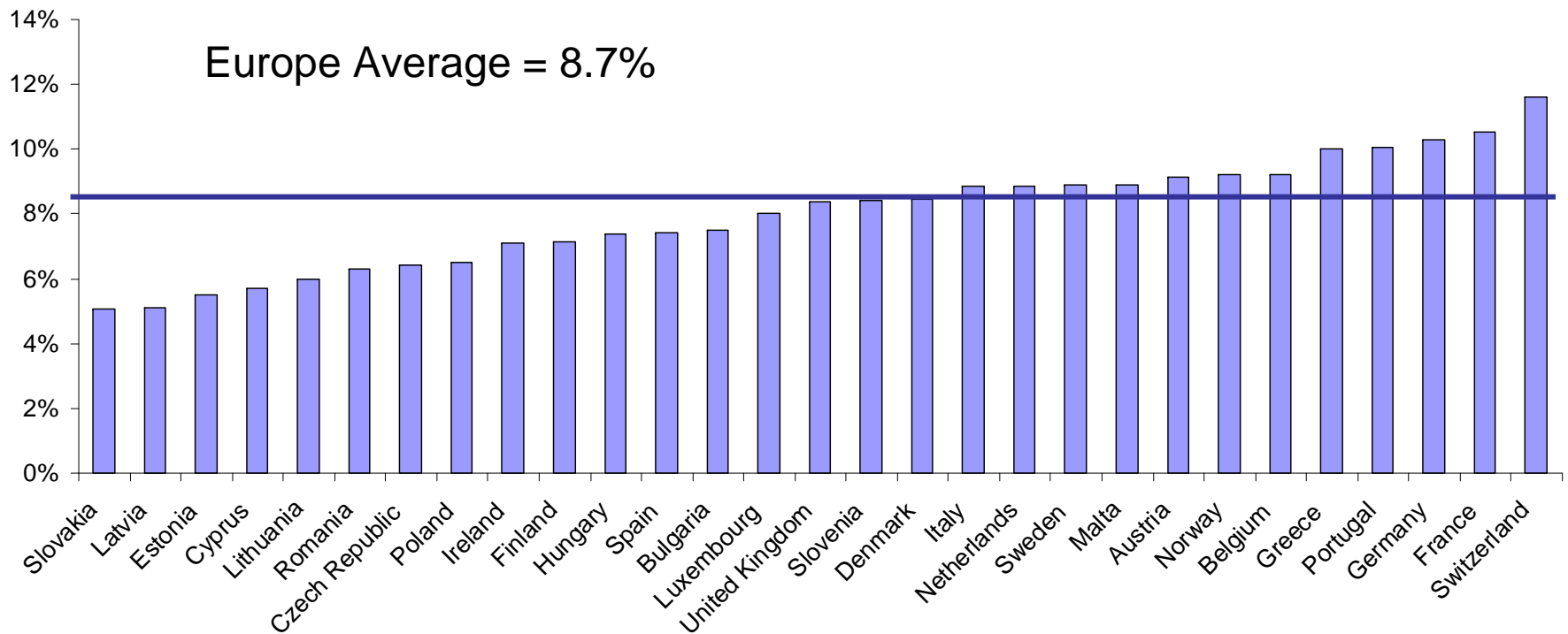
Per Capita Health Spending



Source: Eucomed Medical Technology Brief, May 2007

Health Spending in Europe in 2005: Percent of GDP

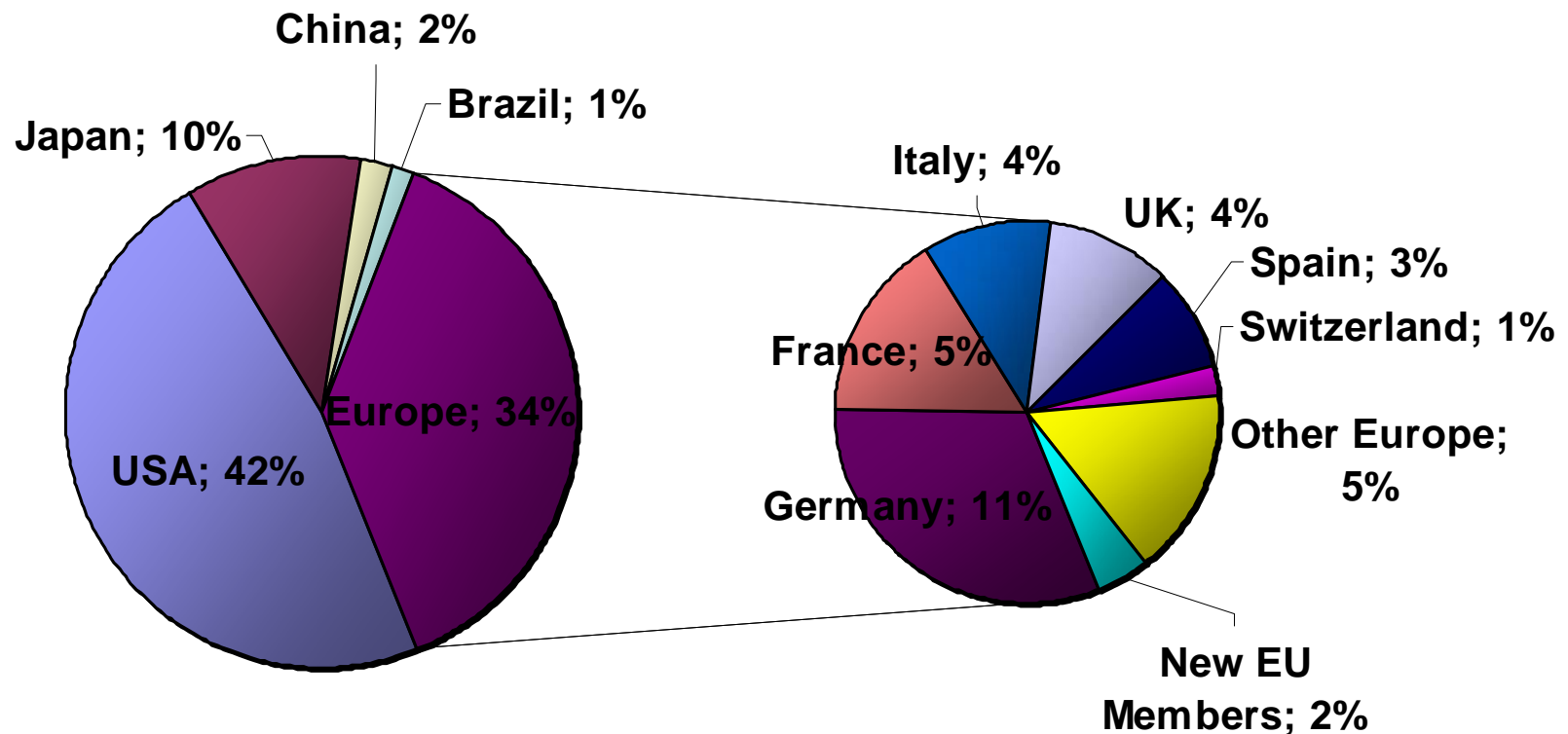
Percent of GDP Spent on Healthcare



Source: Eucomed Medical Technology Brief, May 2007

Global Medical Technology Spending

In 2005: €187 billion spent on medical technology worldwide
Of this, 42% was in the US and 34% was in Europe



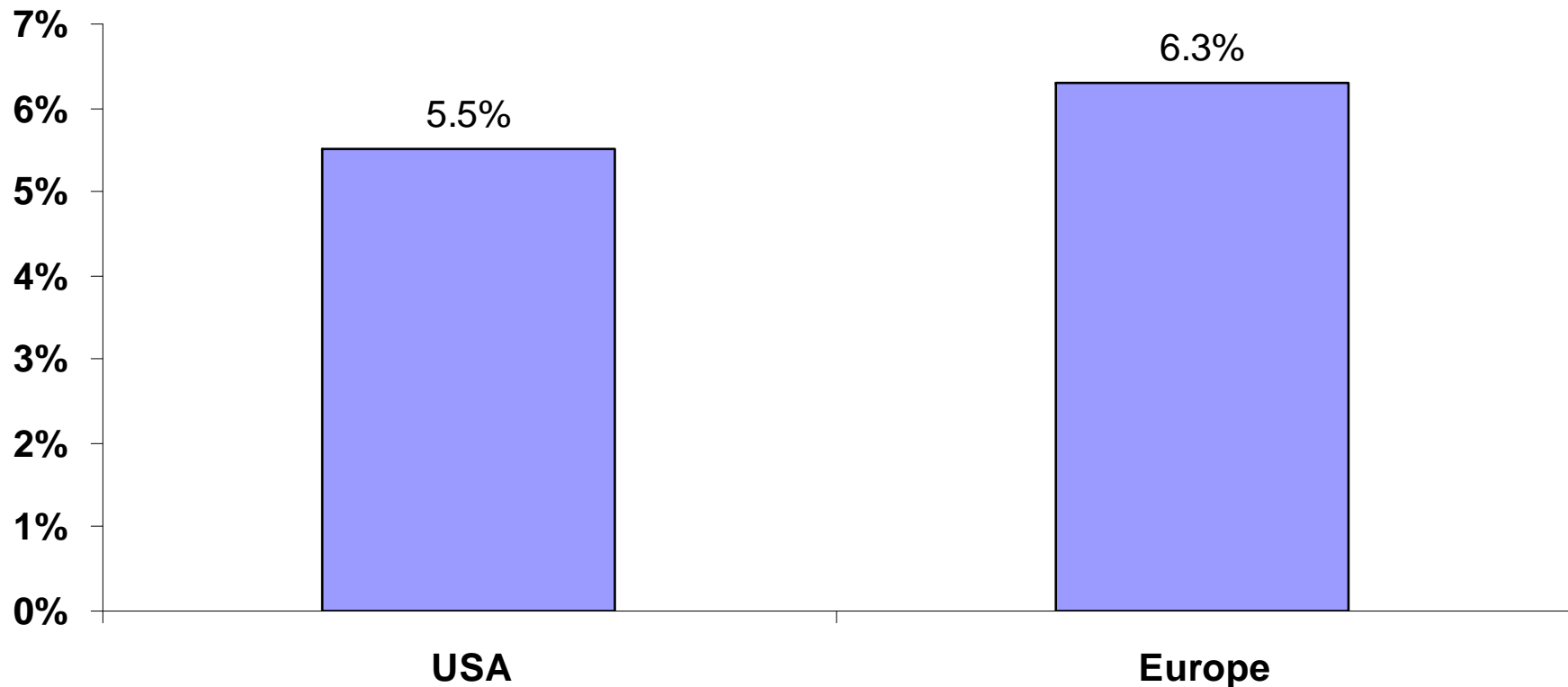
New EU Members = EST, LT, LV, PL, CZ, SK, HU, SI, MT, CY, RO, BG

Other Europe = NL, BE, LU, IE, DK, GR, PT, AT, SE, FI, NO

Source: Eucomed Medical Technology Brief, May 2007

Medical Technology Spending in 2005

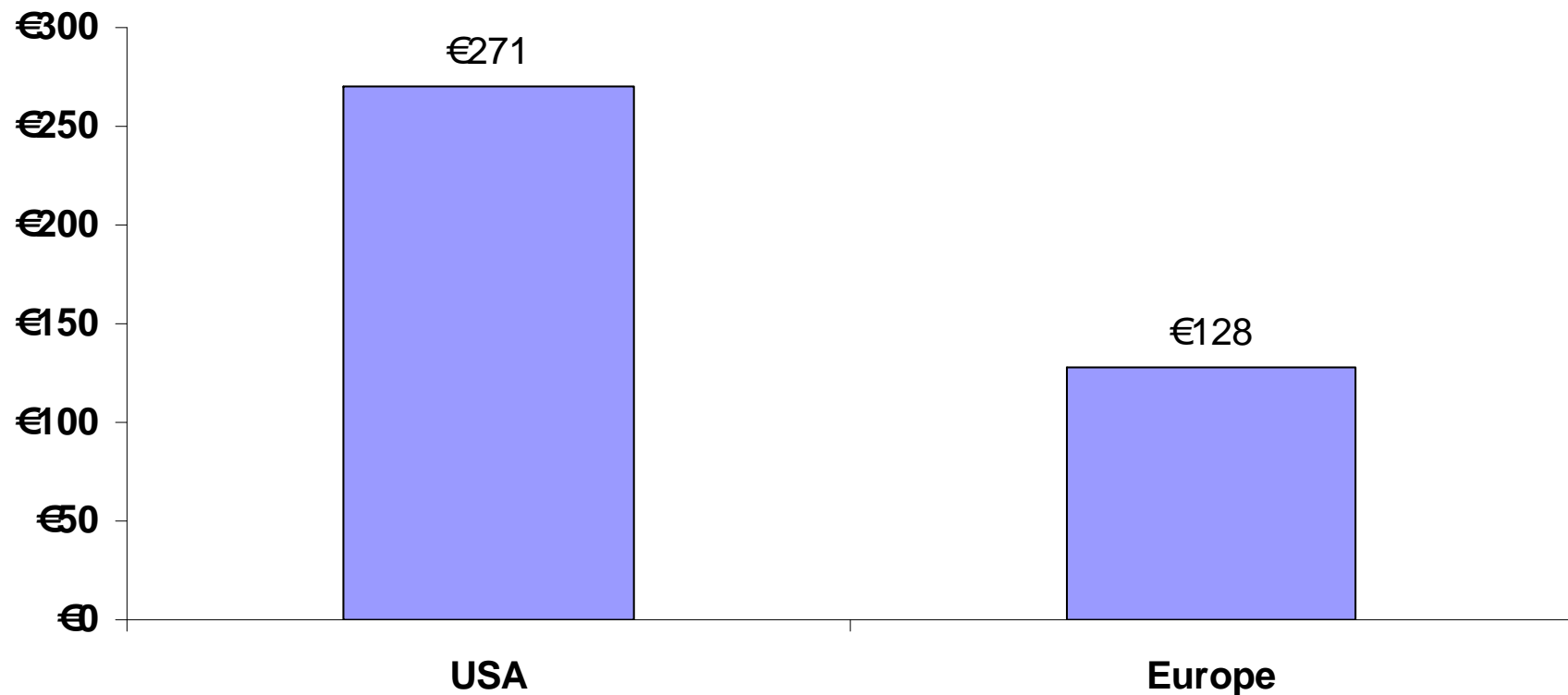
Percent of Total Healthcare Expenditure Spent on Medical Technology



Source: Eucomed Medical Technology Brief, May 2007

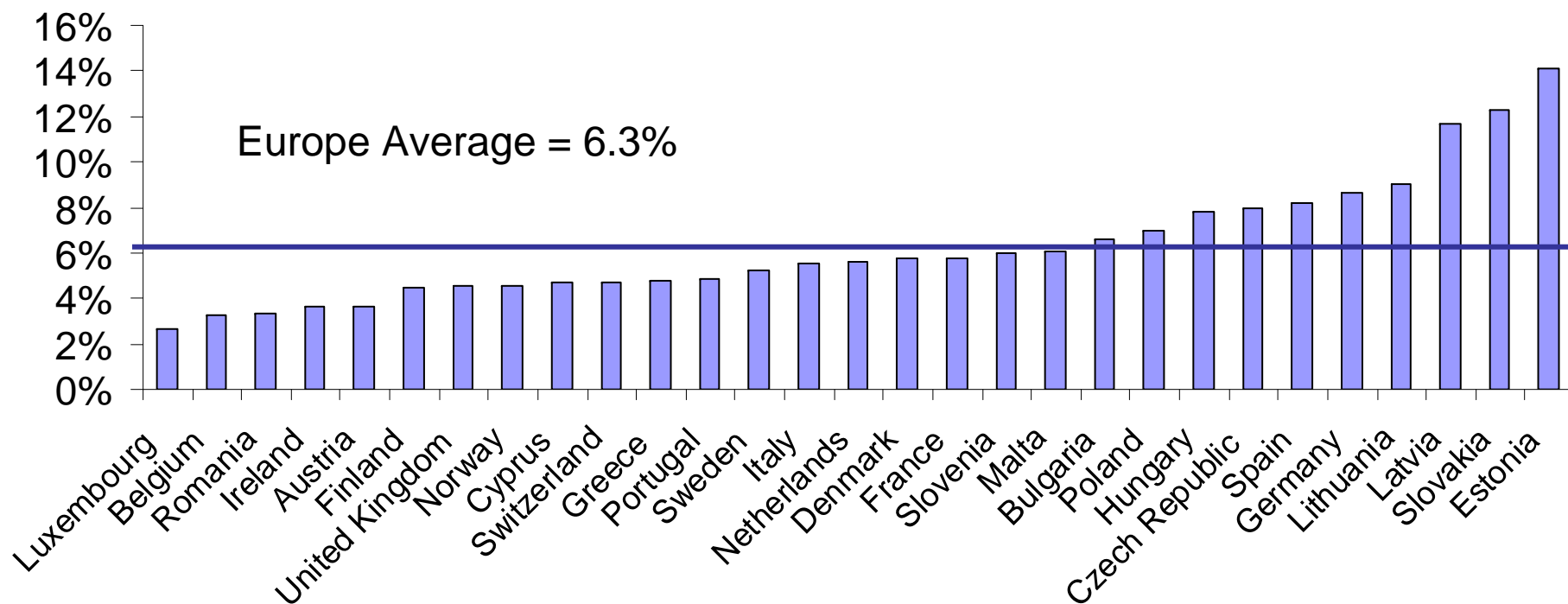
Medical Technology Spending Per Capita

Per Capita Spending on Medical Technology (2005)



Medical Technology Spending in Europe in 2005

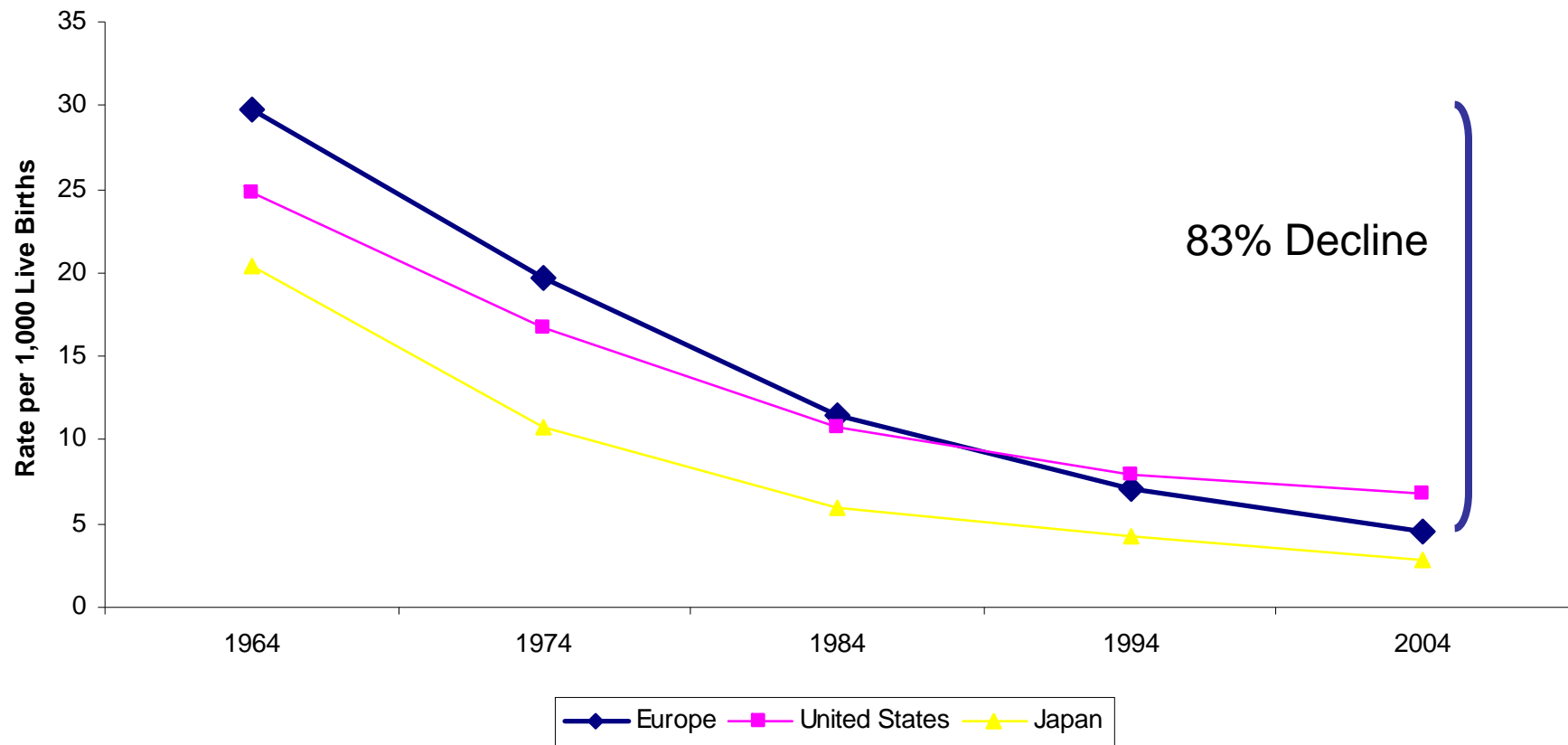
Percent of Total Healthcare Expenditure spent on Medical Technology



Source: Eucomed Medical Technology Brief, May 2007

Declining Infant Mortality Rate

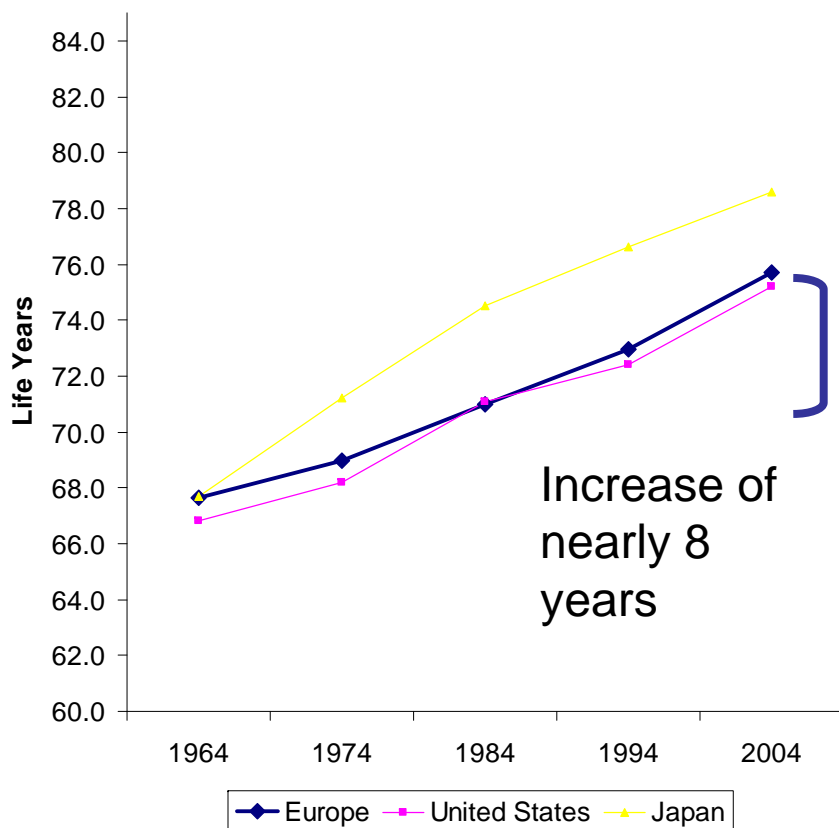
Infant Mortality Rates per 1,000 Live Births



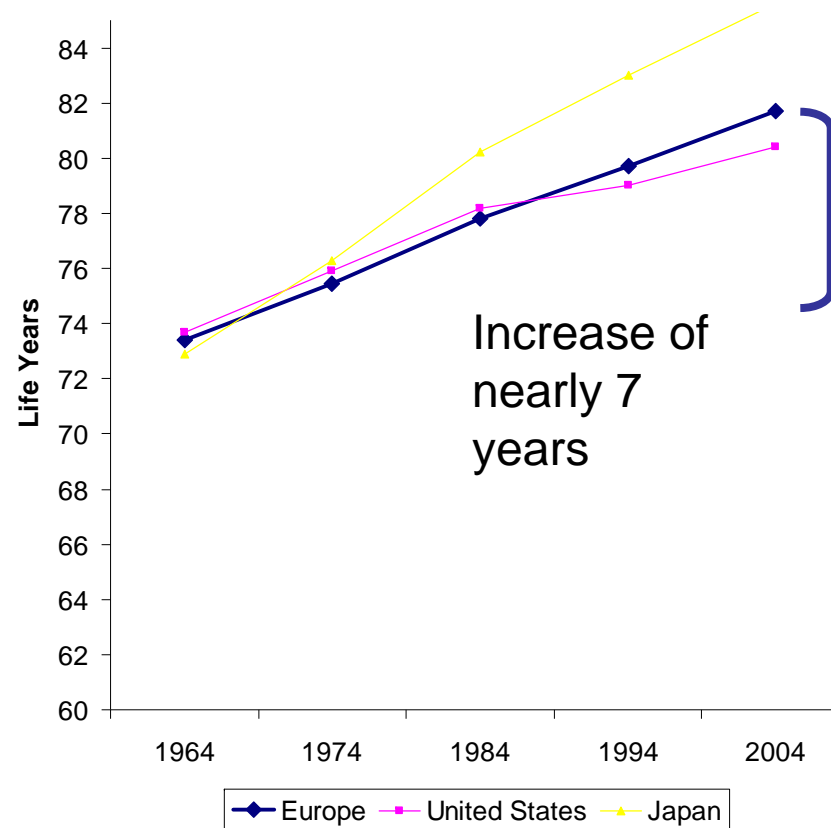
Source: OECD Health Data 2007

Increasing Life Expectancy

Male Life Expectancy at Birth



Female Life Expectancy at Birth



Source: OECD Health Data 2007

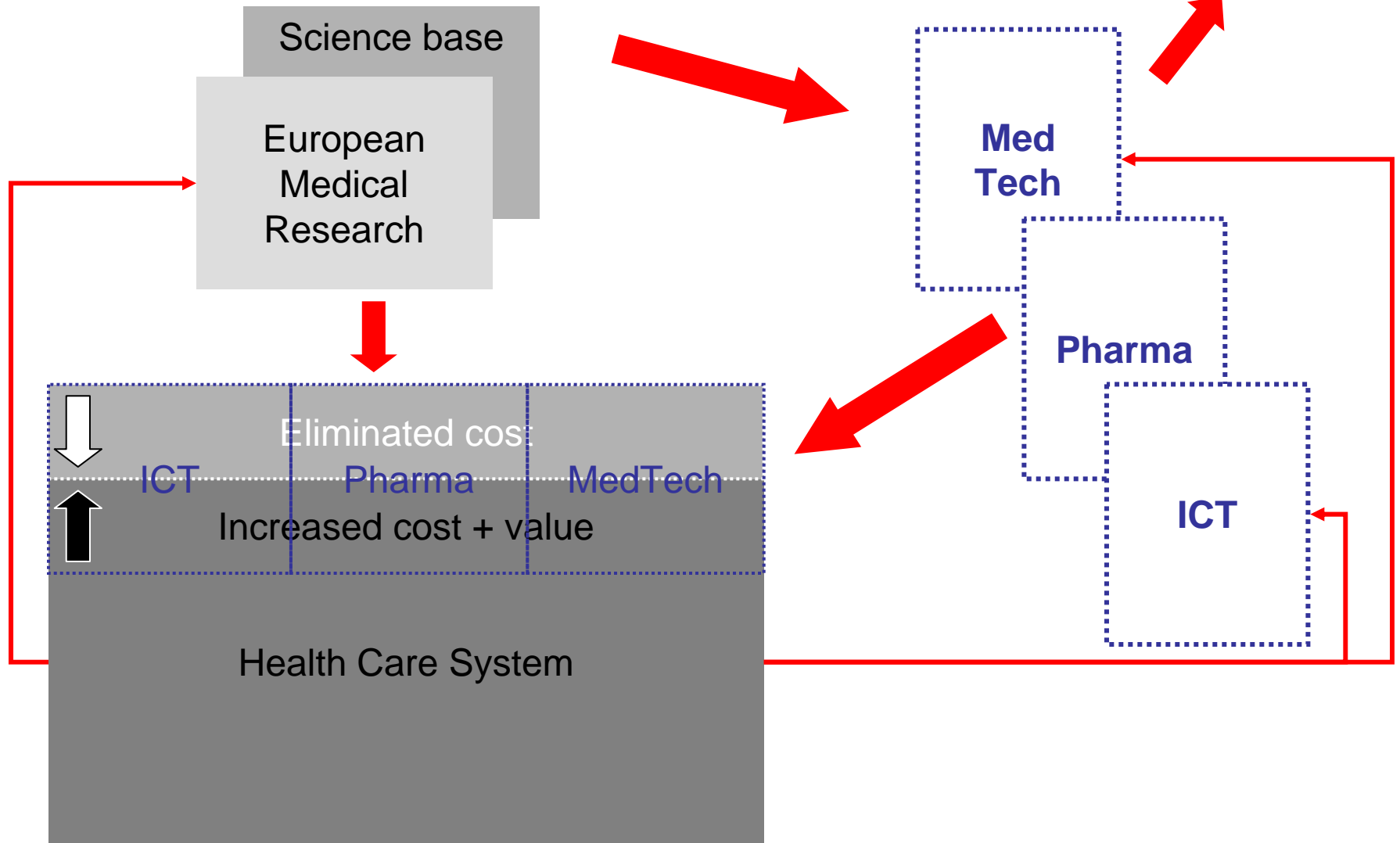
Overall Better Health

- ▶ Since 1986:
 - Overall death rate **down 25%**
 - Life expectancy from birth **increased by 4.3 years**
 - Life expectancy for those **over 65 up by 12%**
 - Mortality rates from **acute myocardial infarction (heart attack) down by 50%**
 - Mortality rates for **cerebrovascular diseases (stroke) down by 44%**
 - Mortality rates for **breast cancer (female) down by 18%**

Source: OECD Health Data 2007

Technology's virtuous circle

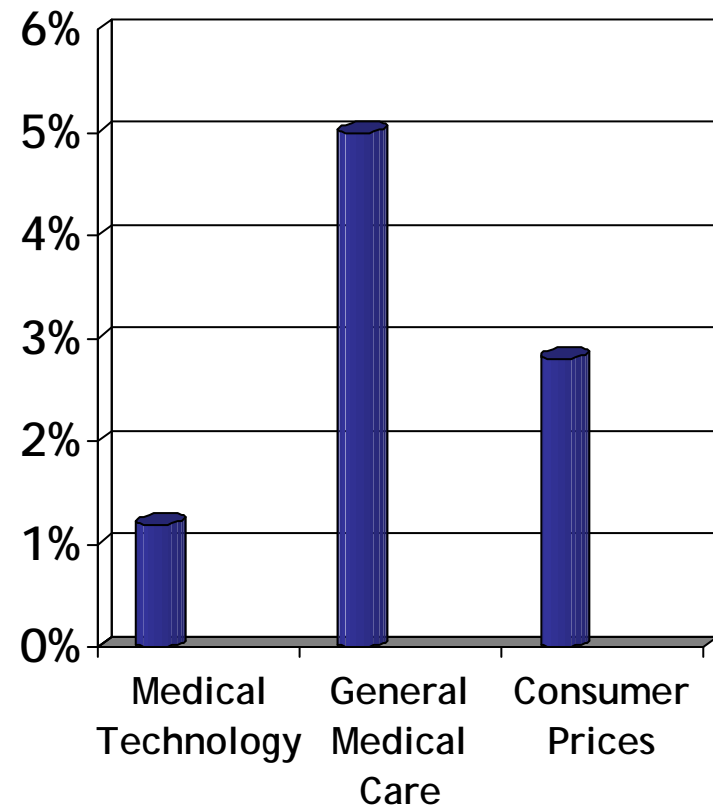
Trade benefits



Cost-Effectiveness of Medical Technology

- ▶ Medical technology constitutes a relatively small share of overall healthcare expenditure (6.3% in Europe in 2005) *
- ▶ While overall healthcare expenditures have increased, the share of spending on medical technology has remained relatively constant * *
- ▶ While expenditure on medical technology has grown significantly over the previous decades, it has grown at a rate less than that of general medical care and prices overall * *

Annual Spending Increases (1989-2004)**

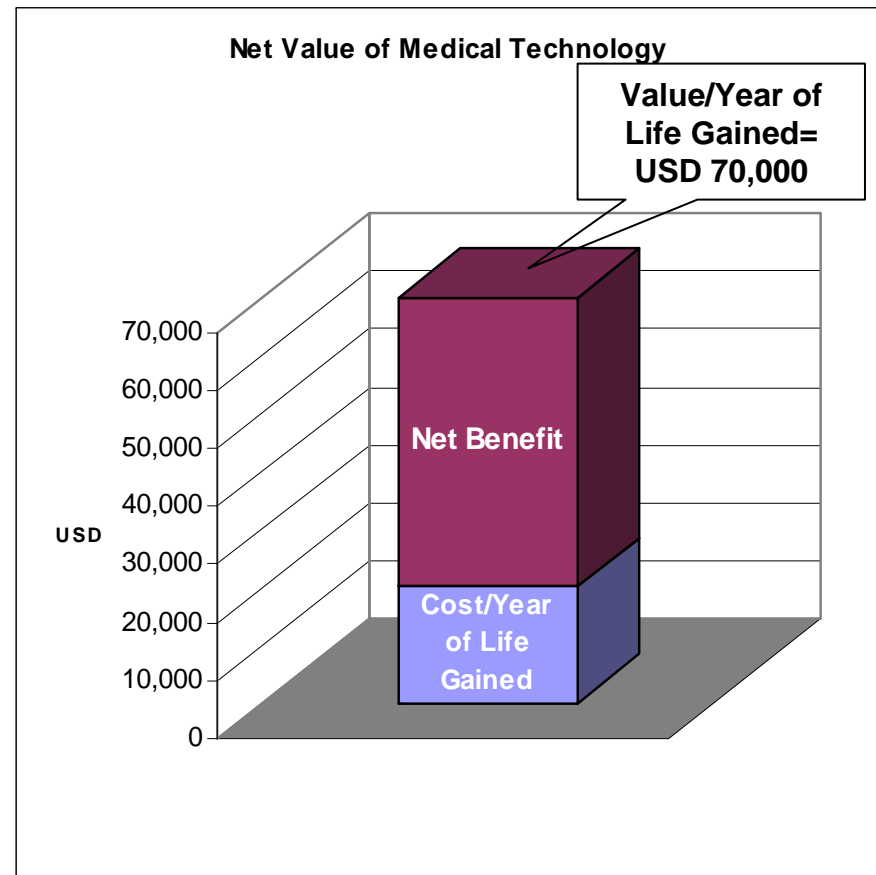


Sources: *Eucomed Medical Technology Brief, May 2007

**King, Roland and Gerald F. Donahoe, "Estimates of Medical Device Spending in the United States." Advamed.

Cost-Effectiveness of Medical Technology

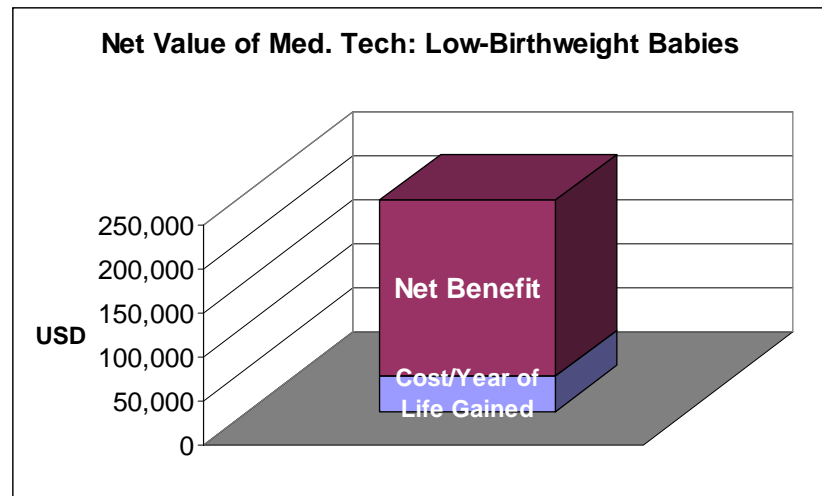
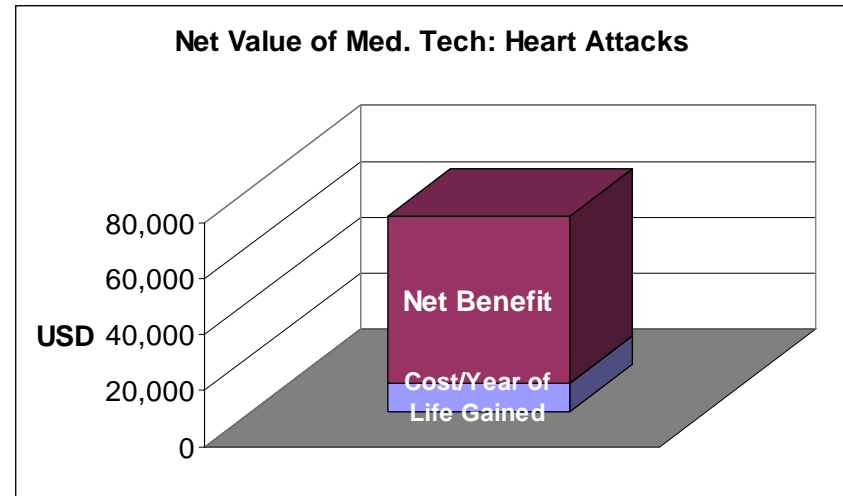
- ▶ Prof. Cutler: “Although medical spending has increased over time, the return on spending has been high.”
- ▶ Furthermore: “substantial improvements in the quality of life during this period, especially among the elderly.”
- ▶ For example:
 - Between 1960 and 2000, life expectancy for newborns increased by 6.7 years
 - Lifetime medical spending (adjusted for inflation) increased by USD 69,000
 - Cost per year of life gained was USD 19,900
 - Assuming a value of an additional year of life of USD 100,000, net benefit on medical technology spending is USD 80,100



Source: Cutler et al. “The Value of Medical Technology Spending in the United States, 1960-2000.” *N Engl J Med* 355:9. 31 August 2006.

Cost-Effectiveness of Medical Technology

- ▶ The same trend can be observed in regard to specific diseases/treatments
- ▶ Heart Attacks:
 - Change in treatment costs between 1984 and 1998 = USD 10,000
 - Outcome change = 1 year increase in life expectancy = USD 70,000
 - Net benefit = USD 60,000
- ▶ Low-birthweight babies
 - Change in treatment costs between 1950 and 1990 = USD 40,000
 - Outcome change = 12 year increase in life expectancy = USD 240,000
 - Net benefit = USD 200,000



Source: Cutler, David M. and Mark McClellan. "Is Technological Change in Medicine Worth It?" *Health Affairs*. September/October 2001.

Cost-Effectiveness of Medical Technology

- ▶ This appears to be equally true in Europe
 - For acute myocardial infarction, progress in medical procedures in Spain has saved 5,326 lives since 1980
 - The real unit costs of treatment have increased from €2,143 in 1980 to €4,500 in 2003
 - If this cost increase is applied to the 57,842 cases of acute myocardial infarction in Spain in 2003, the advances in medical technology have cost €26,140 per life saved
 - Based on common assumptions about the value of a life, progress in medical technology from 1980 to 2003 has been well worth it

Source: López-Valcárcel, Beatriz & Jaime Pinilla. "The Impact of Medical Technology on health: A Longitudinal Analysis of Ischemic Heart Disease." ISPOR, 2007.

Summary

- ▶ Over the past decades, expenditure on both healthcare and medical technology has increased significantly.
- ▶ However, the proportion of healthcare expenditure spent on medical technology is still relatively small, and has remained more or less constant.
- ▶ Moreover, the costs of medical technology has increased more slowly than healthcare costs overall and general prices in the economy
- ▶ Over the past decades, great improvements in health among the population have taken place
- ▶ Economic analysis suggests that the benefits of medical technology far outweigh its costs

Summary

▶ BUT:

- The level of understanding of the role of medical technology is very low
- Mechanisms for evaluating the contribution are very limited
- Health systems tend to focus on controlling costs of technology rather than maximising value and utility