Economic Evaluation: Introductory Lecture

Suja S. Rajan, PhD

Associate Professor - Health Economist

Part 1

Costs in Healthcare and the Importance of Economic Evaluation

Economics in Healthcare

Why should **we** care?

- Government/Policy Makers
- Businesses/Employers
- Medical Practitioners
- Scientists: Economists, Statisticians, Bio-technologists
- Health Service Researchers & Public Health Experts
- People

Key Facts

- U.S. spent **$4.3 trillion** on health care in 2021, which **is 18.3 percent of GDP**.^
- On average, healthcare costs have **grown faster than U.S. GDP** by 2.4 percentage points for the past 30 years.*
- Health Expenditure is projected to **outpace GDP** growth by 1.0 percentage point on average **annually**. †
- Almost **half** of the health care spending is used to treat just **5 percent** of the population.*
- **New technologies** and **the spread of existing ones** account for a large portion of medical spending and its growth.*

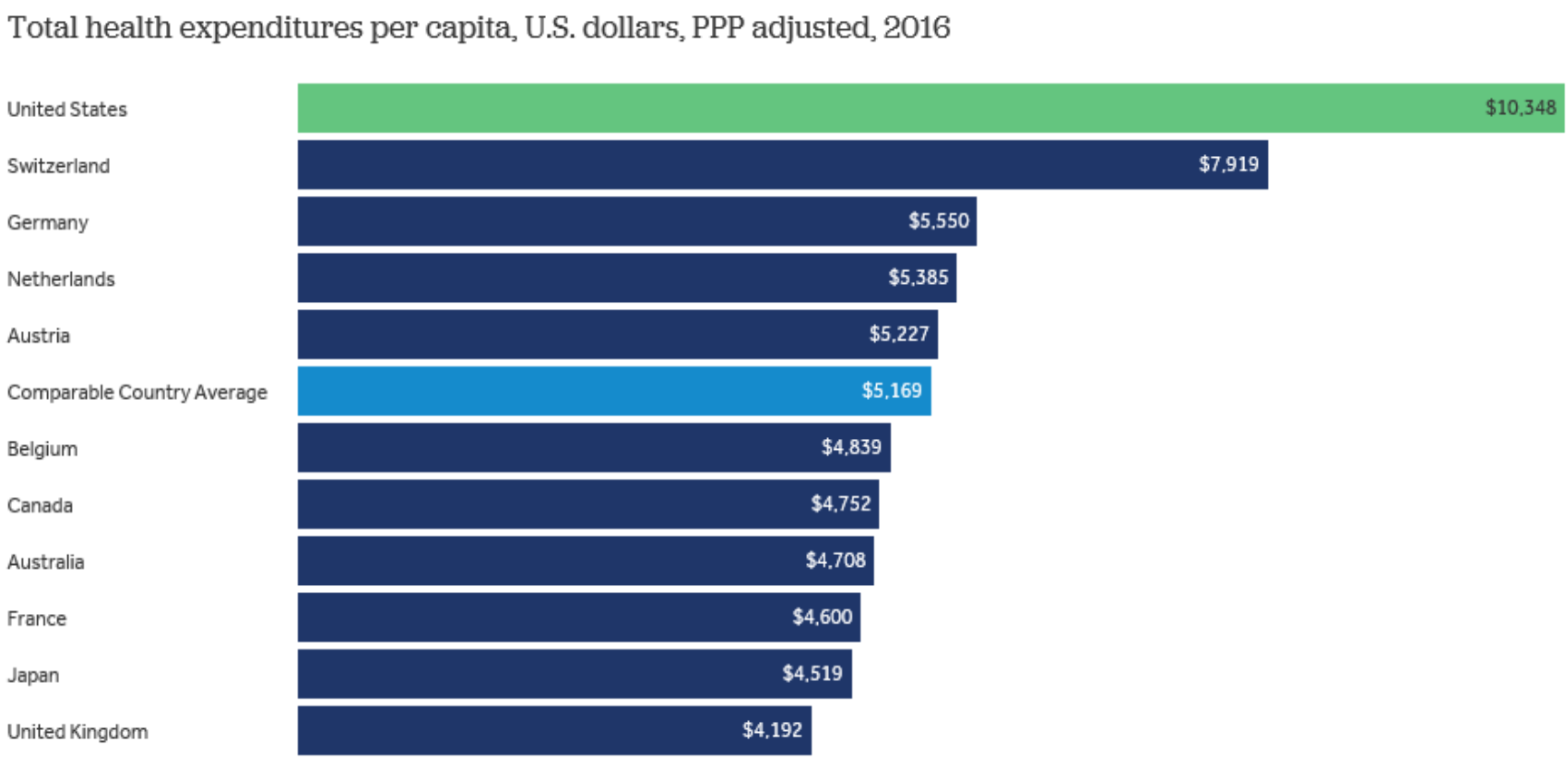
Sources: ^CMS. National Health Expenditures 2018. https://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/NationalHealthExpendData/NationalHealthAccountsHistorical#:~:text=U.S.%20health%20care%20spending%20grew,spending%20accounted%20for%2017.7%20percent.

*Kaiser Family Foundation. Health Care Costs: A Primer. http://kff.org/health-costs/issue-brief/health-care-costs-a-primer/

† National Expenditure Projections 2012-2022, CMS. http://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/NationalHealthExpendData/downloads/proj2012.pdf

How does the US compare as opposed to other countries?

On average, other wealthy countries spend about half as much per person on health than the U.S. spends



The US value was obtained from the 2016 National Health Expenditure data

Source: Kaiser Family Foundation analysis of data from OECD (2017), "OECD Health Data: Health expenditure and financing: Health expenditure indicators", OECD Health Statistics (database) (Accessed on March 19, 2017). • Get the data • PNG

Peterson-Kaiser
Health System Tracker

Some procedures we definitely overspend on

And not because we are sicker

Where the United States health system does MORE than other countries

	United States	Rank compared with OECD countries	OECD average
MRI units	31.6 per million population	2nd	12.5 per million population
MRI exams	97.7 per 1 000 population	2nd	46.3 per 1 000 population
CT scanners	40.7 per million population	3rd	22.6 per million population
CT exams	265.0 per 1 000 population	3rd	123.8 per 1 000 population
Tonsillectomy	254.4 per 100 000 population	1st	130.1 per 100 000 population
Coronary bypass	79.0 per 100 000 population	3rd	47.3 per 100 000 population
Knee replacements	226.0 per 100 000 population	1st	121.6 per 100 000 population
Caesarean sections	32.9 per 100 live births	6th	26.1 per 100 live births

Source: OECD Health Data 2012.

Its not just the quantity, it's the price tags too

Clearly that will reduce the value for every dollar paid

US prices for certain procedures are much higher than in other OECD countries

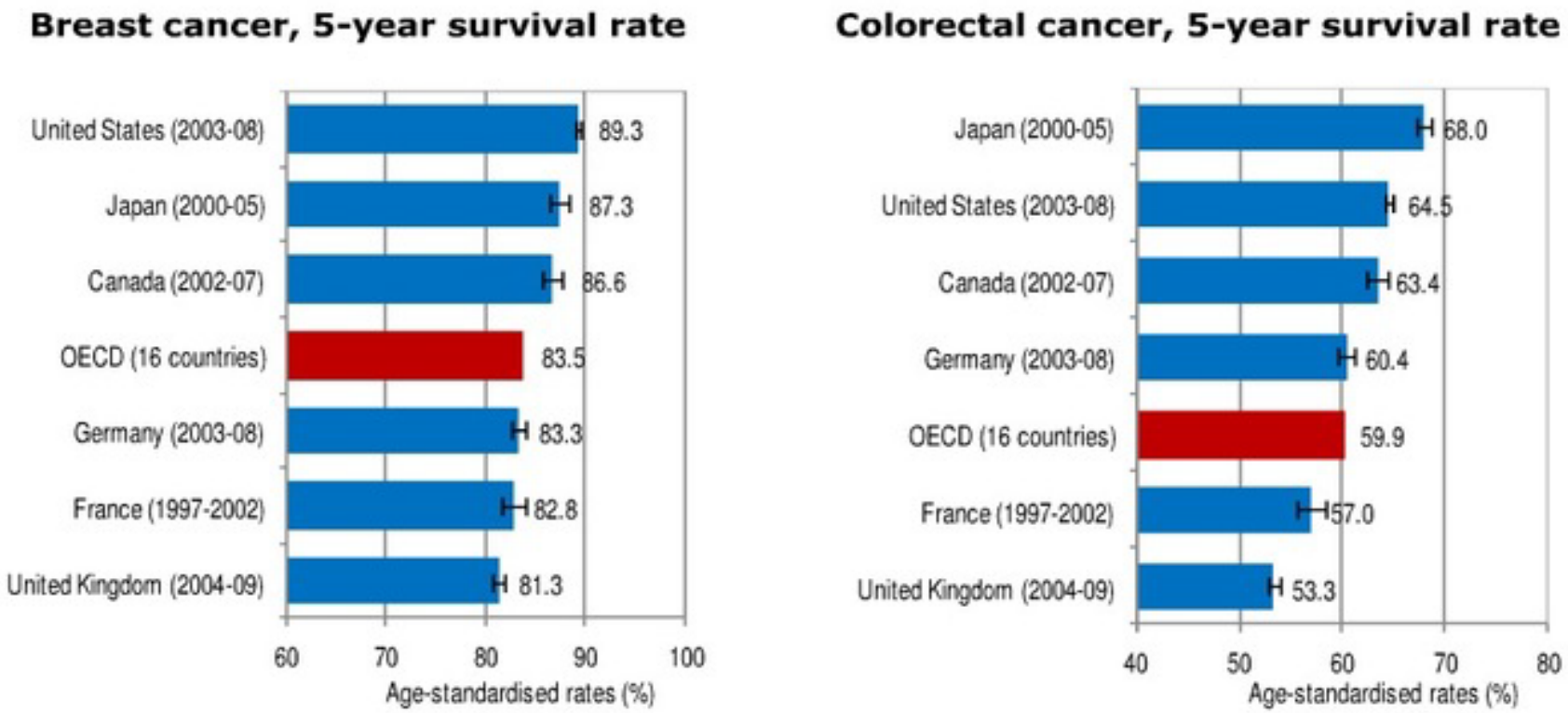
(US dollars, 2007)

Procedures	AUS	CAN	DEU	FIN	FRA	SWE	USA
Appendectomy	5 044	5 004	2 943	3 739	4 558	4 961	7 962
Normal delivery	2 984	2 800	1 789	1 521	2 894	2 591	4 451
Caesarean section	7 092	4 820	3 732	4 808	5 820	6 375	7 449
Coronary angioplasty	7 131	9 277	3 347	5 574	7 027	9 296	14 378
Coronary artery bypass graft	21 698	22 694	14 067	23 468	23 126	21 218	34 358
Hip replacement	15 918	11 983	8 899	10 834	11 162	11 568	17 406
Knee replacement	14 608	9 910	10 011	9 931	12 424	10 348	14 946

Source: Koechlin et al. (2010).

We generally do very well with ailments requiring cutting edge research and technology

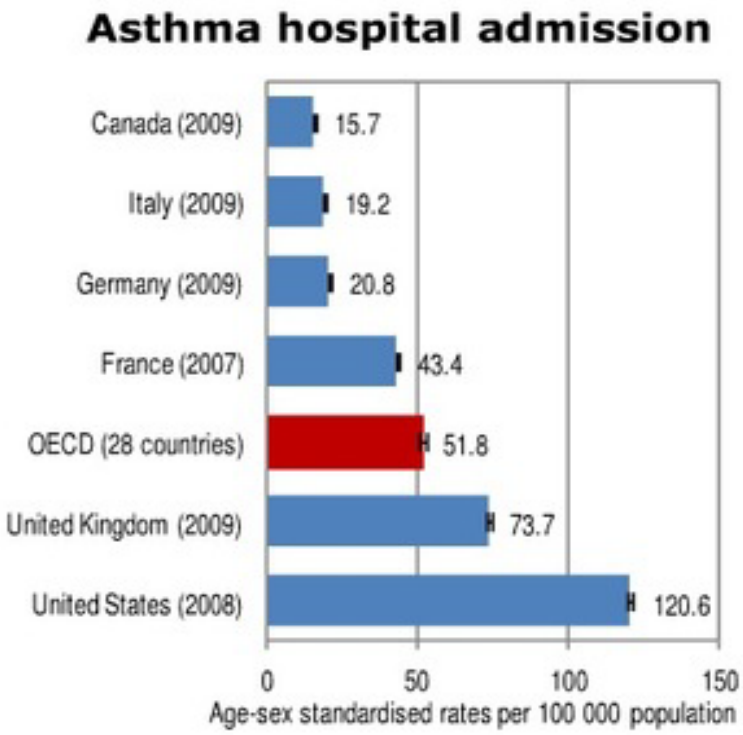
Cancer system is generally performing well

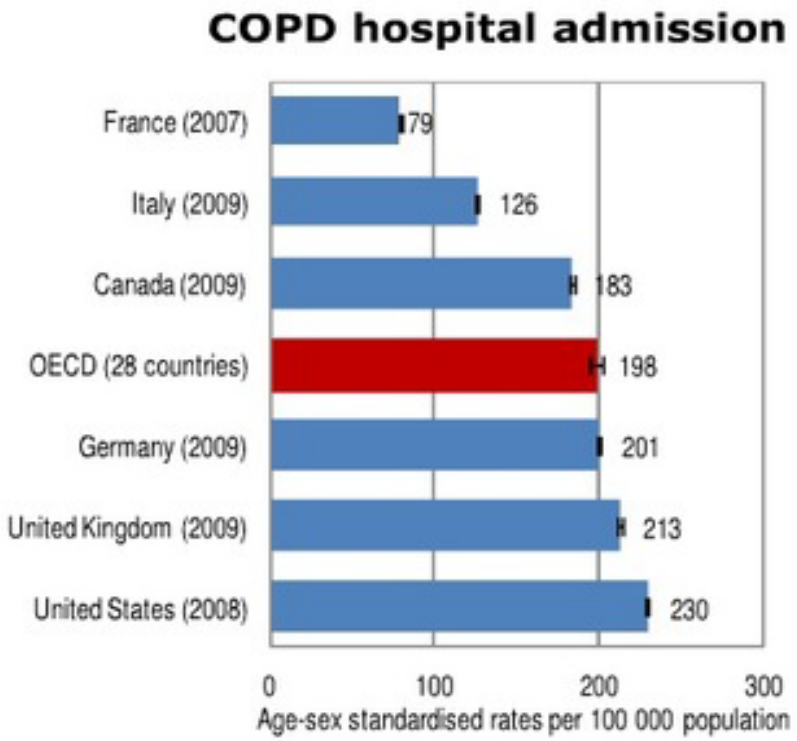


Note: 95% confidence intervals are represented by H.
Source: OECD Health Data 2012.

But fall back when it comes to low cost basic care and preventive care

Primary care sector is not performing so well





Note: 95% confidence intervals are represented by H.
Source: OECD Health Data 2012.

Why be Concerned About High Costs and Efficiency?

- **Higher spending on health care**

  •Resources are not infinite: Limits spending for other goods and services, e.g. education.

  •Equity: Makes it increasingly difficult to expand coverage to the uninsured and underinsured.

  •Affects Income and Wealth: Reduces wages and corporate profits.

  •Value or "Bang for the Buck": May not be generating commensurate benefits.

Stages of Health Care Reform

- The extension of public funding or health insurance coverage to a high proportion of the (or the entire) population. e.g. ACA
- The control of the subsequent surge in health expenditure.
- The focusing of reforms on efficiency and remaining inequities/disparities.
  - Reason why economic evaluation is part of drug approval and medical decision making in most developed countries

Economic Evaluation

Tools for decision making to:

- ❖Understand value of dollar spent
- ❖Make investment, purchase and reimbursement decisions
- ❖Choose between different technologies – Comparative Effectiveness and Health Technology Assessment

- CEA cost-effectiveness
- CBA cost-benefit
- CUA cost-utility analyses
- BIA budget impact analysis
- Other economic analysis methods

The CEA Principle

- CEA begins with the presumption that the objective of medical technology is to improve health.
- CEA is intended to show the relationship between resources used (costs) and the health benefits achieved (effects) for a given technology.
- The objective of such analyses is to illustrate how we can **maximize the health benefits with a given amount of resources**.

Advantages of Economic Evaluation

- CEA can play an important role by guiding more sensibly the entry and diffusion of new technology into the population.
- Use of the CE criterion will provide an incentive for producers to develop CE products.
  - Technology is a fundamental "cost driver"

Limitations of Economic Evaluation

- A finding that a new technology is cost-effective will not assure its use or reimbursement.
- CEA cannot resolve the question of whether society should pay for a new technology (because the comparison is often relative). To do this, we need to
  - determine how much society is willing to pay for health benefits.
  - consider other factors such as equity.

Stakeholder Concerns about Using CEA

- It will inappropriately limit access to services and facilitate the use of **rationing** in the delivery of services.
- General soundness of cost-effectiveness analysis **methodology** and **lack of trust** in the cost-effectiveness **data** currently being produced.
- Use of cost-effectiveness analyses in the coverage decision-making process, particularly by Medicare, may inhibit technical **innovation** in health care.

Source: American College of Physicians. "Improved Availability of Comparative Effectiveness Information: An Essential Feature for a High-Quality and Efficient United States Health Care System". 2008.

Summary

- Healthcare is expensive, costs are raising, there is high financial burden on consumers/patients, there is a need to contain costs, and need to provide high value healthcare services
- Economic evaluation will help assess healthcare technology and services so we can invest in high value products

Part 2

Healthcare Market and Market Failure

Market Failure in Health Care

- In the previous class we learnt about “Market” “Demand” “Supply” and how “Markets” help determine the equilibrium price and quantity to be supplied.
- However, these simple properties of the market do not hold for the “Healthcare Market”

Market Failure in Health Care

- Externalities and Public Goods in Healthcare
- Lack of competitive conditions
  - Who demands the quantity of healthcare? Supplier induced demand
  - Are we capable of comparing healthcare products/procedures/services? Asymmetric information
  - Cost of Medical training and technology - No free entry/exit
  - Price collusion and discount negotiation in groups
  - Insurance – Price Insensitivity, Moral Hazard and Adverse Selection

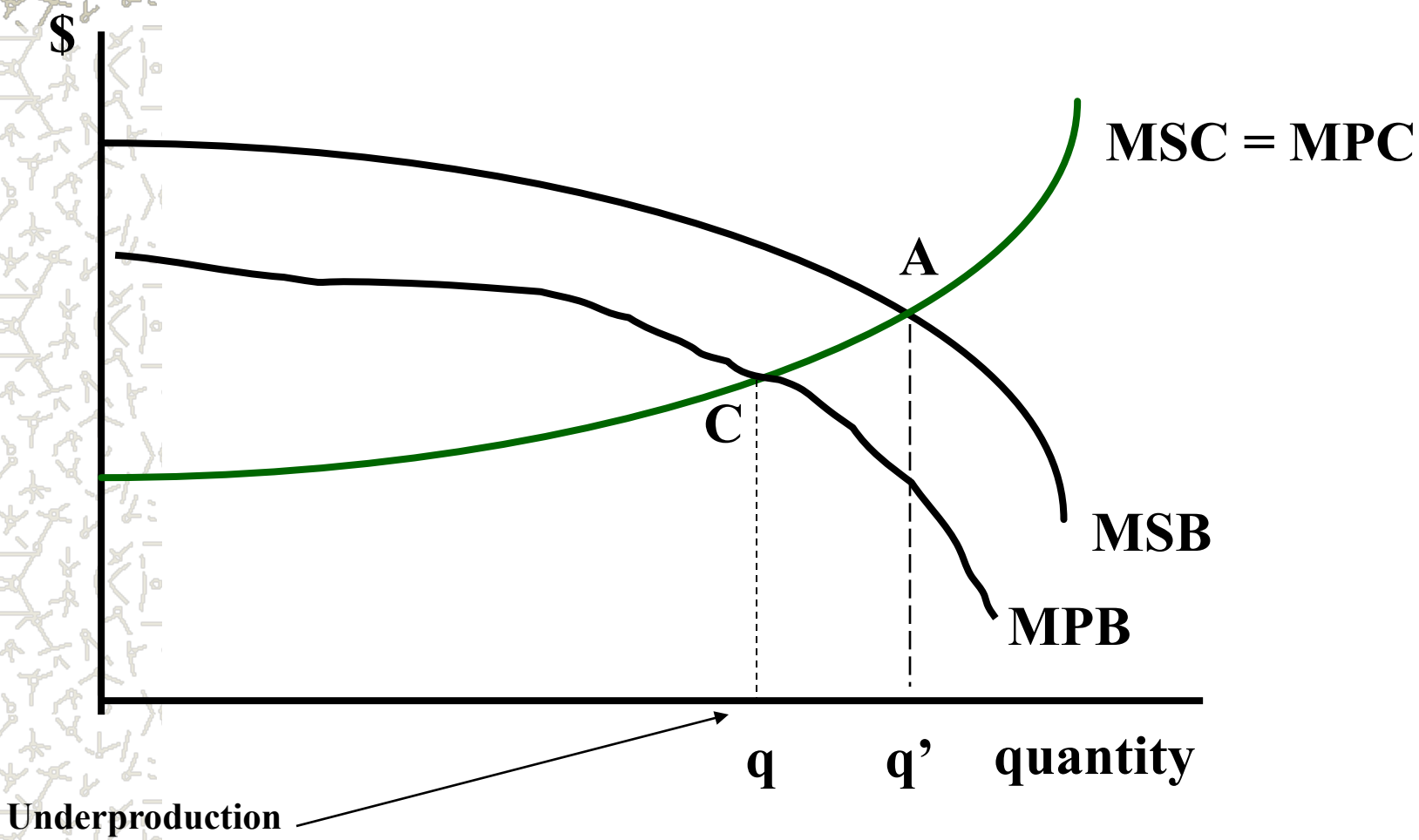
Market Failure in Healthcare

- Overproduction or underproduction due to externalities. E.g. underproduction of vaccines due to positive externality
- Insurance insulates consumers from making price conscious decisions
- The primary decisions makers are neither payers nor consumers, but suppliers
- Consumers incapable of making informed decisions
- In addition to all these there are concerns of inequity
- **At the end, the price and quantity set in the market are not socially optimal**

Externalities

- Are the effects of a transaction between parties on outsiders; The uncompensated effects of an action (e.g. Pollution has negative externalities and Vaccines have positive externality)
- Consumers are unable to compare the true social cost or benefit of goods in order to purchase the utility maximizing (socially optimal) amount of goods.

Positive Externality Implies MSB>MPB



Public Goods

- Goods that are consumed or financed collectively (e.g., Clean air, national defense, discovery of vaccine) either because it is impossible to exclude any consumer who does not pay, or because once produced, there is no additional cost for additional consumers.

General Attributes of Public Goods

- **Nonprovision** (or gross underprovision) individuals will not provide the good themselves, even though total benefits outweigh total cost.
- **Nonrivalry** one person's use does not reduce another's consumption, hence it is inefficient to exclude those who do not pay.
- **Nonexcludability** it is impossible or impractical to exclude noncontributors.
- Some goods are purely public and some are mixed

Characteristics of Goods (4)

	Rival in consumption	*Non rival in consumption* *(=> efficient price is 0!)*
Excludable *(=> Can charge!!!!)*	**PRIVATE GOODS** •Wheat, bread, cars, phones, CDs,….	**CLUB GOODS** •Computer software •Toll roads (uncongested) •Cable TV
Non Excludable	**COMMON RESOURCES** •Sidewalks •Clean water •Biodiversity	**PUBLIC GOODS** •National Defense •Street lights •Public sanitation

Government's Role In The Health Sector

Why is there a need for government involvement in the economic system if private markets have such desirable attributes, i.e. efficiency?

- Market failure
  - Causes of market failure/lack of competitive conditions
  - Public goods
  - Externalities
- Government responses to market failure

Types of Government Intervention

- Improve the functioning of the market by improving the flow of information or enforcement of competition.
- Tax citizens and directly provide the good or service.
- Regulate prices and quantities to counter externalities and non-competitive markets
- Take up the role of insurers/payers for the vulnerable

Types of Government Intervention

- Universal insurance to counter Moral Hazard, Adverse Selection, Selective Negotiations, Collusion, Inequity
- Ensures equity through subsidies
- Subsidize medical training, technology development
- Government's intervention has a moral or social justice dimension, as well as an economic one.

Summary

- The simple properties of a market do not apply to healthcare due to the nature of the healthcare product, how's it demanded/supplied and how its paid for
- Also, healthcare products have characteristics of public goods and externalities
- Government intervention and healthcare reform becomes imperative