

INTRODUCTION TO HEALTH ECONOMICS & POLICY

7MHPH010 – Health Economics and Health Policy

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Spring 2012

TODAYS LECTURE

OUTLINE

- Health Economics
- Health Care Systems

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- Health Economics
 - What is Health Economics
 - Economic Questions
 - Why is Health Economics a distinct field of Economics
- Health Care Systems

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- Health Economics
- Health Care Systems
 - What is a Health Care System
 - Topologies of Health Care Systems
 - Brief Comparison of Selected Health Care Systems

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WHAT IS HEALTH ECONOMICS?

THREE POINTS OF VIEW

- 1 The Romantic View
- 2 The Monotechnic View
- 3 The Economic View

WHAT IS HEALTH ECONOMICS?

THE ROMANTIC VIEW

- Health is the most important thing and we should do everything possible to provide good health to everyone
- This view fails to recognize the scarcity of resources relative to wants
- This view is sometimes combined with the authoritarian views on what people “need” or “should have” (“Health is a right!!”)
 - What does this mean?
 - Does this statement have any content?
- Denies the inevitability of choice
 - Therefore has no ability to deal with the basic economic problem that faces every society
- When wants exceed resources, the authoritarian-romantic may label some of these wants as “unnecessary” or “inappropriate”
 - This projects the illusion that there is no real scarcity

WHAT IS HEALTH ECONOMICS?

THE MONOTECHNIC VIEW

- Health is a technical issue, better left to the experts – economics is irrelevant
 - An engineer sees the best engineered bridge as socially optimal
 - A physician sees best medical care as socially optimal
- Fails to recognize multiplicity of wants and the diversity of individual preferences
 - I like to drive fast red cars and I like to do it in good health
 - I prefer to drive fast red cars than spend money on useless things like health insurance
- A solution that is optimal to the engineer or a physician may not be optimal for society as a whole

WHAT IS HEALTH ECONOMICS?

THE ECONOMIC VIEW

This point of view is rooted in three fundamental observations about the world

- ① Resources are scarce relative to wants
- ② Resources have alternative uses
- ③ People have different wants and there is significant variation in the importance people attach to them
 - Items 1 and 2 imply the necessity of choice
 - Item 3: “Health is the most important thing”, is it true? Is it true for everyone? If so, then why do people smoke, drink and not exercise?

WHAT IS HEALTH ECONOMICS?

THE ECONOMIC PROBLEM

Given the 3 fundamental observations, the *economic problem* is how to allocate scarce resources to best satisfy human wants

- An allocation of resources which accomplishes this is called “*efficient*” or “*optimal*”
- **Pareto optimality** - cannot reallocate resources so that at least one person is better off and no one is worse off
- Note a few things about this notion
 - Peoples’ wants are taken as given. If I want to smoke, drink, shoot heroin, then that is what I want
 - Distribution/equity is *not* a criterion for Pareto efficiency
 - Equity is not necessarily contrary to Pareto efficiency, but not part of it either

HEALTH ECONOMICS

WHAT IS HEALTH ECONOMICS?

- The study of the allocation of resources to and within the health economy
- How do people evaluate their own health?
- Health as an input in the process of producing goods and services
- Features of economics applied to the health sector
 - Scarcity of societal resources
 - Assumption of rational decision making
 - Concept of marginal analysis
 - Use of economic models
- The analysis requires
 - Interdisciplinary knowledge (economics, medical science, psychology, sociology, etc.)
 - Institutional knowledge (hospitals, insurers, regulators, politicians, etc.)

HEALTH ECONOMICS

WHAT DO HEALTH ECONOMISTS DO?

- Try to understand individual demand for health care and health insurance
 - What determines the consumption of health care and who gets it?
- Try to understand the market (i.e. market forces of supply and demand) and its institutions
- Evaluate efficiency and allocation of resources
 - For example, research helps to clarify economies of scale and scope in hospital care
- Help design policy
 - Government policy is integral to the functioning of the health care sector

HEALTH ECONOMICS

FOUR ECONOMIC QUESTIONS

- **1. How much medical care?**
- **2. What type of medical care?**

HEALTH ECONOMICS

FOUR ECONOMIC QUESTIONS

- **1. How much medical care?**
 - What mix of nonmedical and medical goods and services should be produced in the economy?
- **2. What type of medical care?**

HEALTH ECONOMICS

FOUR ECONOMIC QUESTIONS

- **1. How much medical care?**
- **2. What type of medical care?**
 - What mix of medical goods and services should be produced in the health economy, i.e. more infant and child care or more end of life care?

HEALTH ECONOMICS

FOUR ECONOMIC QUESTIONS

- **1. How much medical care?**
- **2. What type of medical care?**
- These two questions deal with issue of **allocative efficiency** – maximize the value of output through distribution

HEALTH ECONOMICS

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- **2. What type of medical care?**
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HEALTH ECONOMICS

FOUR ECONOMIC QUESTIONS

- **3. How to produce it?**
- **4. Who gets care?**

HEALTH ECONOMICS

FOUR ECONOMIC QUESTIONS

- **3. How to produce it?**

- What specific health care resources should be used to produce the chosen medical goods and services, more nurses per bed or more monitoring equipment per hospital bed?
- This question relates to **production efficiency** – maximize output for a given cost and technology

- **4. Who gets care?**

HEALTH ECONOMICS

FOUR ECONOMIC QUESTIONS

- **3. How to produce it?**
- **4. Who gets care?**
 - Who should receive the medical goods and services that are produced?
 - This question deals with **distributive justice** or **equity**

HEALTH ECONOMICS

FOUR ECONOMIC QUESTIONS

- **3. How to produce it?**
- **4. Who gets care?**

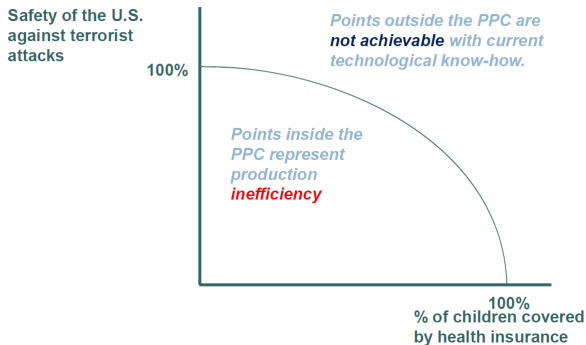
The **Production Possibilities Curve (PPC)** is a good model for answering these questions

PRODUCTION POSSIBILITIES CURVE

TRADEOFFS AND OPPORTUNITY COST

Consider the first question of how much medical care to produce (versus spending on national defence)?

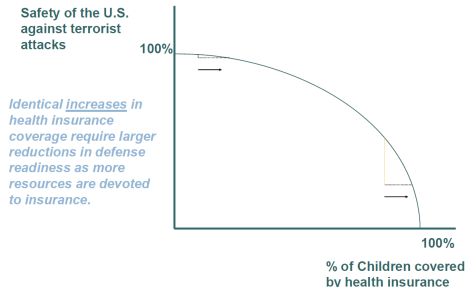
- The federal govt must make tradeoffs – spending more on health insurance implies spending less on defense
- Tradeoffs imply the PPC slopes downwards



PRODUCTION POSSIBILITIES CURVE

TRADEOFFS AND OPPORTUNITY COST

- Tradeoffs imply **opportunity costs**: the value resources would yield if they were put to an alternative use
- The opportunity cost of raising health insurance coverage by 1% could be a 2% reduction in the armed forces trained to deal w/ terrorist attacks
- The PPC is concave
 - Resources are imperfectly substitutable
 - Each additional unit of production has a *rising opportunity cost*

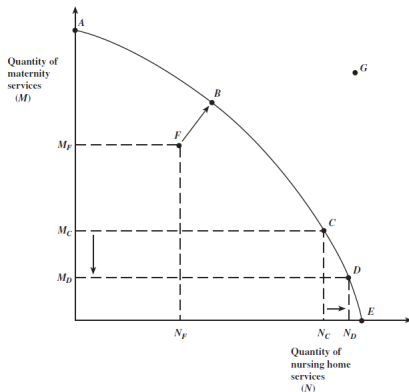


- Raising health insurance coverage from 10 to 20% may reduce the fool-proofness of the defense system from 95% to 94%
- But raising insurance coverage from 90% to 100% could reduce the readiness of the defense system from 10% to 0%

PRODUCTION POSSIBILITY CURVE

PRODUCTION AND ALLOCATIVE EFFICIENCY

- The PPC shows the trade-off between any two goods given a fixed stock of resources and technology
- Any point on the PPC, such as points A through E, reflects **production efficiency** because units of one good must be given up to receive more of the other
- A point in the interior, such as F, reflects inefficiency because more of one good can be attained without necessarily reducing the other
- A point outside the PPC, such as G, is not yet attainable but can be reached with an increase in resources or through institutional or technological changes that improve productivity



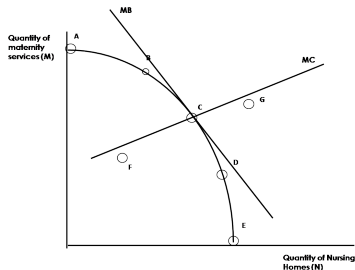
Allocative efficiency is attained when society chooses the best or most preferred point on the PPC. All points on the PPC are possible candidates for allocative efficiency. The ideal, or optimal, point for allocative efficiency depends on society's underlying preferences for the two medical services.

PRODUCTION POSSIBILITIES CURVE

PRODUCTION AND ALLOCATIVE EFFICIENCY

- When we cannot produce more of any one good without giving up some of the other good, we have achieved production efficiency and we are producing at a point on the PPC
- When we cannot produce more of any one good without giving up some other good that we *value more highly*, we have achieved allocative efficiency, and we are producing at *the* point on the PPC that we prefer above all other points
- All points on the PPC are efficient, and the point which is chosen will depend on society's preferences
- To determine which of the alternative points on PPC to produce, we compare costs and benefits and select the point where **marginal cost equals marginal benefit**

- The marginal cost of a product or service is the opportunity cost of the units chosen
- To describe preferences, economists use the concept of marginal benefit – the marginal benefit of a good or service is the benefit received from consuming one more unit of it
- We measure marginal benefit by the amount that a person is willing to pay for an additional unit of a good or service
- Marginal benefit curve shows the relationship between the marginal benefit of a good and the quantity of that good consumed
- The curve slopes downward to reflect the principle of decreasing marginal benefit



EFFICIENT AND FAIR?

- Market competition often leads to an efficient allocation of resources
 - Is it always true in health care? If not, why not?
- However, a society may also be concerned with equity
 - Is the optimal point fair?
 - Society can redistribute resources, often using taxation
 - However, taxation leads to inefficiencies
- A tradeoff exists between efficiency and equity

IS HEALTH CARE DIFFERENT?

DISTINCTIVE FEATURES OF HEALTH CARE

Why is health care economics a distinct field of study?

- What is it about the health care sector that set it apart from many other ordinary industries in modern economies?
- Recall that competitive markets reach an equilibrium that is Pareto efficient without the need for public regulation
- But the assumptions required for competitive equilibrium are not met in health care
 - Externalities
 - Uncertainty
 - Information Problems
 - Insurance
 - Government subsidies and public provision
 - Non for profits, entry, regulation, and competition

DISTINCTIVE FEATURES OF HEALTH CARE

EXTERNALITIES

An externality is a cost or benefit that is not captured via prices and is incurred by a party who did not agree to the action causing the cost or benefit

- Communicable diseases
 - Social benefit of immunizations exceeds private benefit (if people balance private costs of immunization with private benefits, they will under invest in immunization)
- Private actions with external consequences/costs
 - Drinking, smoking
 - Unsafe sex
 - Drinking and driving
 - Antibiotics (have negative externalities since the odds increase that a drug resistant strain will emerge)

DISTINCTIVE FEATURES OF HEALTH CARE

UNCERTAINTY

- Uncertainty guides individual behavior, which leads to demand for health insurance, which in turn affects use of resources throughout the health care sector
 - Consumer is uncertain about whether the illness will occur and what type it will be and how severe
 - Uncertainty about the illness, given symptoms
 - Product uncertainties (expected outcomes of treatments)
 - Physicians uncertain about:
 - (a) Diagnostics
 - (b) Efficacy of treatment
- Unique to health care? Note that these aspects of uncertainty are true with respect to repairs of any type

DISTINCTIVE FEATURES OF HEALTH CARE

INFORMATION PROBLEMS

- Asymmetric Information
 - Doctors know more than patients about diagnostics and procedures
 - Patients know more than the doctors (and insurers) about the symptoms and personal health history
- In the patient-doctor relationship, the incentives to reveal information may be different for the two parties
 - Patients may want to reveal the information that they have while the doctors may not, which may lead to docs taking advantage of the patients
- So what happens? (Or what checks are there on the doctors?)
 - Non-market mechanisms: Non-market mechanisms evolve to deal with this situation, e.g., professional ethics, licensure (see Arrow 1963) etc.
 - Ongoing Relationships: Trust due to ongoing relationships solves a lot of these problems (“You can’t fool someone forever”)
 - The market: Reputation of the provider may develop. You could seek friends advice about which doctor in the area may be good (“You can’t fool everyone forever”)
- Economists often use principal agent models to study such situations (conflicting interests as the agent (the doctor) offers both the information and the service)
- Unique to Health Care? Car repairs, advise services (e.g. financial advice) are subject to similar informational problems

DISTINCTIVE FEATURES OF HEALTH CARE

IMPORTANCE OF INSURANCE

- Large portions of cost are indirectly paid through coinsurance and through insurance premiums
- Insurance premiums are mostly purchased through labor force participation
- Separation from direct payment weakens price effects
- Insurance changes the demand for care and also the incentives of providers (known as the moral hazard problem)
- Asymmetric information between insurers and patients leads to adverse selection problems
- Unique to Health Care? Auto, home, theft, fire etc. insurance also exist

DISTINCTIVE FEATURES OF HEALTH CARE

GOVERNMENT SUBSIDIES AND PUBLIC PROVISION

- Public financing of health care
- Public provision of care
- Subsidies to health professional education
- Government provided and financed research

DISTINCTIVE FEATURES OF HEALTH CARE

NOT FOR PROFITS, ENTRY, REGULATION, AND COMPETITION

- Many providers have not for profit (NFP) status, including
 - hospitals
 - nursing homes
 - insurers
- NFPs often have special tax exemptions
- Employer provided health insurance also enjoys special tax treatment
- Economists must understand the differences in their behavior from for-profit firms (do NFPs maximize profit or do they have a different objective and hence act differently from FPs in a market?)
- Barriers to entry
 - licensure restrictions
 - restrictions on advertising
 - standards of ethical behavior
 - regulation on mergers, entry, capacity and price controls
 - patent protection and drug approval in the pharmaceutical industry

DISTINCTIVE FEATURES OF HEALTH CARE

HEALTH CARE SYSTEMS AND INSTITUTIONS

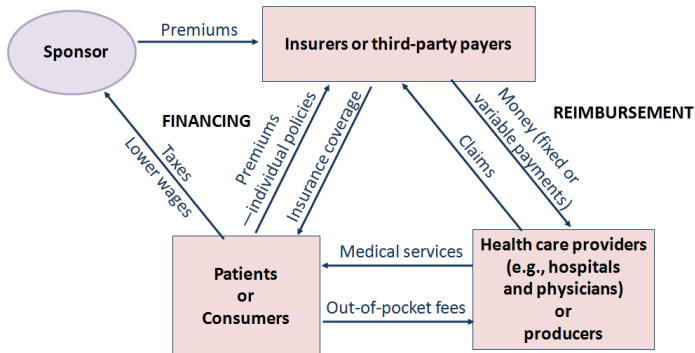
- Many alternative systems exist around the world
- Set of organizations and processes through which a society produces, consumes, and distributes health care services differs across countries
 - Centralized – a single authority makes the decisions
 - Decentralized – health care systems achieve delivery via markets and localized government and nonprofit agencies
- Differences in health care systems (and preferences) in turn imply differences in how much health care is produced, which specific types of health care services are produced, how they are produced and who has uses them (recall the four economic questions)
- In turn, these have implications on costs, utilization, availability of technology, access etc.

We start by understanding what is a health care system

HEALTH CARE SYSTEMS AND INSTITUTIONS

A SIMPLE MODEL

- Players in the health care system
 - Patients or consumers
 - Health care providers or producers
 - Insurers or third-party payers
 - Sponsors (employers or government)



HEALTH CARE SYSTEMS AND INSTITUTIONS

FINANCING AND THIRD PARTY PLAYERS

- Uncertainty in timing and amount of medical treatment costs creates a need for third-party payers
- Third-party payers do three main things
 - Serve as intermediaries between consumers and health care providers (private health insurance companies/ government)
 - Monitor the behavior of providers to maintain quality and control costs
 - Manage the financial risk associated with purchasing medical services

THIRD PARTY PAYERS

PRIVATE VS GOVERNMENT

- Private Insurance

- Consumer pays a premium for a certain amount of medical insurance coverage
- Possible consumer copayments
 - Traditional
 - Deductible: consumer pays first \$500
 - Coinsurance: fixed 20% of each service
 - Cap: don't pay more than \$1500 per year
 - Manage Care
 - Copayment: fixed charge for each service

- Government

- Financing from taxes
- Possible consumer copayments
 - Negligible or no copayment from consumers

- How do taxes compare to premiums?

- Premiums: voluntary and depend on risk category of the buyer
- Taxes: mandatory and are uniform across buyers

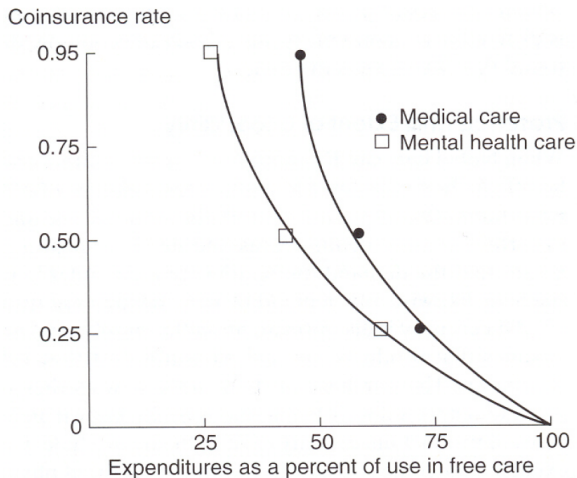
PROVIDER REIMBURSEMENT

RISK SHARING

- Importance of risk
 - Third-party payers pool risk across individuals
 - Consumers are generally risk averse
 - Risk averse consumers are made better off by making a certain preset payment to an insurer to avoid facing the possibility of unknown medical costs
- Consumers are more risk averse than insurance companies
- Providers may also be risk averse
- Two questions
 - How are health care providers reimbursed?
 - What share of medical costs do consumers pay?
- Different reimbursement and cost-sharing methods shift the risk differently among insurers, providers, and consumers
- Incentives go along with risk, so different allocation of risk leads to different utilization, costs, etc.

CONSUMER PAYMENT AND UTILIZATION

INCENTIVES MATTER



Source: Keeler, Manning, and Wells (1988)

PROVIDER REIMBURSEMENT

IMPACT ON RISKS AND COSTS

How does it distribute risk?

How does it distribute costs and quality?

PROVIDER REIMBURSEMENT

IMPACT ON RISKS AND COSTS

How does it distribute risk?

- Fixed payment system
 - Fixed amount of reimbursement for a specific episode, independent of the amount of medical services provided (e.g. DRG payments to providers)
 - Shifts some risk to providers
- Variable payment system
 - Reimbursement amount varies with the quantity of services actually delivered to patients (e.g. FFS payment to providers)
 - Provider bears no risk

How does it distribute costs and quality?

PROVIDER REIMBURSEMENT

IMPACT ON RISKS AND COSTS

How does it distribute risk?

How does it distribute costs and quality?

- Fixed payment system
 - Providers bear some risk (and possibly some costs)
 - On the margin, providers fully bear any additional costs
 - Incentives to reduce costs, volume of medical services (and possibly quality)
- Variable payment system
 - Provider bears no risk or cost
 - Providers earn more if costs are higher
 - Incentives to increase costs, volume of medical services (but not necessarily quality)

CONSUMER COST SHARING

IMPACT ON RISKS AND COSTS

How does it distribute risk?

How does it affect costs?

CONSUMER COST SHARING

IMPACT ON RISKS AND COSTS

How does it distribute risk?

- Full Insurance
 - Consumer pays no out-of-pocket expenses
 - Consumer bears no risk
 - Consumer doesn't care about costs at all
- No Insurance
 - Consumers pays full cost
 - Consumer bears all risk

How does it affect costs?

CONSUMER COST SHARING

IMPACT ON RISKS AND COSTS

How does it distribute risk?

How does it affect costs?

- Full Insurance

- Consumer pays nothing and bears no risk
- Consumer doesn't care about costs at all
- Since $MC = 0$, incentives to consume health care until marginal benefit is zero

- No Insurance

- Consumer pays full cost and bears all risk
- Consumer cares a lot about costs
- Consumer will consume where $MC = MB$

A TYPOLOGY OF HEALTH CARE SYSTEMS

TYPOLOGIES BY GORDON (1988)

- **Traditional sickness insurance**, as provided in Germany, is fundamentally a private insurance market approach with a state subsidy.
 - Austria, Belgium, France, Luxembourg, the Netherlands, and **Germany**
- **National health insurance** plans like Canada's involve a national-level single-payer health insurance system.
 - **Canada**, Finland, Norway, Spain, Sweden
- **National health services** like the United Kingdoms have the state providing the health care.
 - Denmark, Greece, Italy, New Zealand, Portugal, Turkey, and **United Kingdom**.
- **Mixed systems**, as seen in the United States, contain elements of both traditional sickness insurance and national health coverage.
 - Australia, Iceland, Ireland, **Japan**, Switzerland, and the **U.S.**

HEALTH CARE SYSTEMS AND INSTITUTIONS

DIFFERENTIATING FEATURES

Issues to keep in mind when comparing different health care systems

- Is the sponsor government, employer or no one
- What is the financing mechanism? Taxes, employer/employee contributions, other?
- Who are the providers of health care? Private companies (for profit/not for profit) or government?
- How are the providers reimbursed? Fee for service (FFS), fixed payments, combination, global budgets?
- Is there are any cost sharing by consumers/patiets at the time of service?

REIMBURSEMENT AND CONSUMER COST SHARING

LIKELIHOOD OF UTILIZATION OF SERVICES

- Fixed payment: Health care provider unlikely to supply a large volume of medical services to a patient unnecessarily (risk for cost overruns)

- Variable-payment:
Health care providers do not absorb the financial risk of the higher costs associated with additional services

Out-pocket price to consumer

Low
(low risk)

High
(high risk)

Type of reimbursement scheme

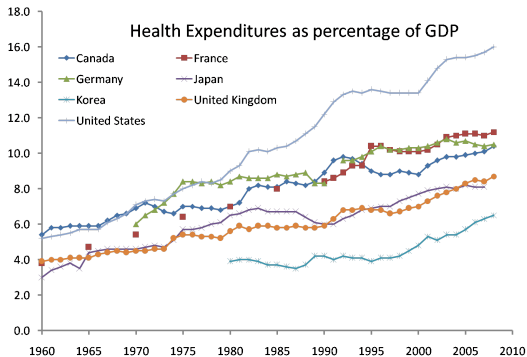
Fixed Payment (high risk)	Variable Payment (low risk)
Low quantity (1)	High quantity (2)
Very low quantity (3)	Moderate quantity (4)

- Low out-of-pocket price: Consumers more likely to seek out additional medical services
- High out-of-pocket price: Consumers less inclined to seek out medical services given the greater opportunity cost of their money

HEALTH CARE SYSTEMS

HEALTH CARE EXPENDITURES AS PERCENT OF GDP

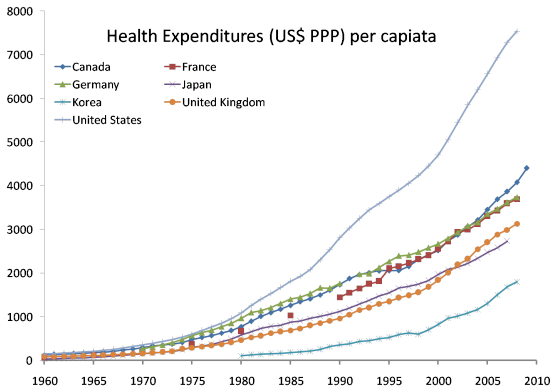
- Health Expenditures (HE) as % of GDP large and rising for all countries
- In 2007, HE as percent of GDP is 10.1% for Canada, 10.4% for Germany, 8.1% for Japan, 8.4% for the U.K. and 15.7% for the U.S.



HEALTH CARE SYSTEMS

HEALTH CARE EXPENDITURES PER CAPITA

- Health expenditures per capita large and rising for all countries
- In 2007, per capita HE is \$ 3,867 for Canada, \$ 3,619 for Germany, \$ 2,729 for Japan, \$ 2,990 for the U.K. and \$ 7,285 for the U.S.



HEALTH CARE SYSTEMS

EXPENDITURES AND OUTCOMES

	<i>Macro-econ. References</i>	<i>Total Exp. on Health/ Capita, US\$ PPP</i>	<i>Expenditure In-pat. Care Tot. Exp. In-patient % THE (2002)</i>	<i>Tot. Pharm. & Other Exp. % THE (2002)</i>	<i>% of GDP Spent on Health Care</i>			<i>Deaths per 1,000 Live Births (2002)</i>	<i>Life Expectancy at Birth, 2002</i>	
					<i>1970</i>	<i>1990</i>	<i>2002</i>		<i>Female</i>	<i>Male</i>
Australia	28,168	2,504 ^b	40.2 ^b	13.8 ^b	4.9	7.8	9.1 ^b	5.0	82.6	77.4
Austria	28,842	2,220	38.2	16.1	4.3	7.1	7.7	4.1	81.7	75.8
Belgium	27,652	2,515			4.0	7.4	9.1	4.9	81.1	75.1
Canada	30,429	2,931	28.8 ^c	16.7 ^c	7.0	9.0	9.6	5.2 ^b	82.2 ^b	77.1 ^b
Czech Republic	15,098	1,118	37.8	22.6			7.4	4.2	78.7	72.1
Denmark	29,228	2,583	50.7 ^c	9.8 ^c	8.0	8.5	9.0 ^c	4.4	79.5	74.8
Finland	26,616	1,943	39.2	15.9	5.6	7.9	7.3	3.0	81.5	74.9
France	28,094	2,736	41.3	20.8		8.6	9.7	4.1 ^c	82.9 ^c	75.8 ^c
Germany	25,843	2,817	36.1	14.5	6.3	8.7	10.9	4.3	81.3 ^b	75.6 ^b
Greece	19,041	1,814		15.3	6.1	7.5	9.5	5.9	80.7	75.4
Hungary	13,891	1,079	29.0	27.6			7.8	7.2	76.7	68.4
Iceland	28,404	2,807	54.6 ^b	14.0 ^b			9.9	2.2	82.3	78.5
Ireland	32,571	2,367		11.0	5.1	6.6	7.3	5.1	80.3	75.2
Italy	25,569	2,166	41.8 ^c	21.9 ^c		8.0	8.5 ^c	4.7	82.9	76.8
Japan	26,860	2,077 ^b	38.9 ^b	18.8 ^b	4.5	5.9	7.8 ^b	3.0	85.2	78.3
Korea	19,524	996	21.5	25.6		4.8	5.1		80.0 ^b	72.8 ^b
Luxembourg	49,207	3,065	40.3	11.6			6.2	5.1	81.5	74.9
Mexico	9,026	553	33.2	21.4			6.1	21.4	77.4 ^c	72.4 ^c
Netherlands	28,983	2,643	40.8	10.4	6.9	8.0	9.1	5.0	80.7	76.0
New Zealand	21,943	1,857			5.1	6.9	8.5	6.3 ^a	80.9 ^b	76.0 ^b
Norway	35,531	3,409	49.0 ^b	9.2 ^b	4.4	7.8	10.0 ^c	3.9 ^b	81.5	76.4
Poland	10,804	654					6.1	7.5	78.7	70.4
Portugal	18,376	1,702					9.3	5.0	80.5	73.8
Slovak Republic	12,256	698	35.0	37.3			5.7	7.6	77.8	69.9
Spain	21,592	1,646	27.6	21.5	3.6	6.6	7.6	3.4	83.1	75.7
Sweden	27,255	2,517	31.2	13.1	6.9	8.5	9.2	2.8	82.1	77.7
Switzerland	30,725	3,446	48.0	10.3	5.6	8.5	11.2	4.5	83.0	77.8
Turkey	6,448	446 ^a		24.8 ^a			6.6 ^a	38.3	71.0 ^c	66.4 ^c
United Kingdom	27,959	2,160			4.5	6.0	7.7	5.3	80.4 ^b	75.7 ^b
United States	36,006	5,267	27.6	12.8	6.9	11.9	14.6	6.8	79.8 ^b	74.4 ^b

HEALTH CARE SYSTEMS

EXPENDITURES AND OUTCOMES

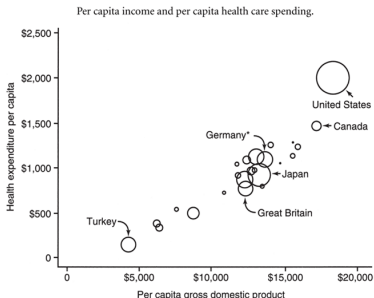
- Some observations
 - The United States has the largest expenditures per capita (\$6,714 in 2005) – it is also the biggest spender as a share of GDP (15.3 in 2005).
 - Several countries, including Canada with a rate of 5.4 (in 2005), have lower rates of infant mortality than the U.S. figure of 6.9 deaths per 1,000 live births (in 2005)
 - Compared to the U.S., several countries also have higher life expectancies at birth
 - Many European countries spend larger percentages on inpatient care than does the U.S.
 - The U.S. pharmaceutical expenditures were among the lowest percentages of spending
- Health, Wealth and Health Expenditures
 - Why do some countries spend more on health care than than others?
 - Is there a relationship between health and wealth?

INCOME AND HEALTH SPENDING

INCOME ELASTICITY OF HEALTH EXPENDITURES

- What explains why some countries spend more on health care than others?
- Aggregate per capita income strongly related to health expenditures

- Relationship so strong that some analysts contend little else remains to be explained by other factors such as ownership of resources, cost controls, nature of health insurance etc.



* Formerly West Germany

- Let $HE = \beta_1 + \beta_2 I$
where HE is health expenditure per capita, I is income per capita and β_1 is the intercept and β_2 is the slope coefficient
- Using data from 24 countries ($N=24$), estimates show that $\beta_1 = -290 (t = 3.5)$ and $\beta_2 = .1 (t = 14.3)$ with an $R^2 = .91$
- Variations on data and estimation equation show slightly different numbers but in the same ballpark
- Income elasticity of HE about 1.35

Income elasticity of HE : Percentage change in health expenditure per capita with respect to percentage change in income per capita

$$\text{Income elasticity of } HE = \frac{\% \Delta HE}{\% \Delta I} = \frac{\Delta HE / HE}{\Delta I / I}$$

Per this relationship, a 10% increase in income per capita is associated with a 13.5% increase in health expenditure per capita

INCOME AND HEALTH SPENDING

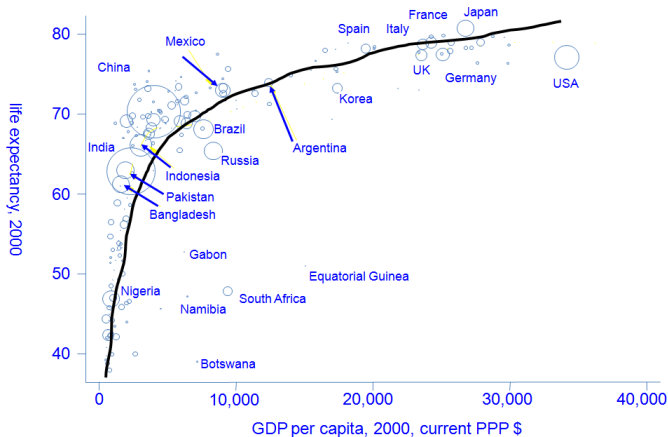
INCOME ELASTICITY OF HEALTH EXPENDITURES

Income elasticities: the empirical evidence

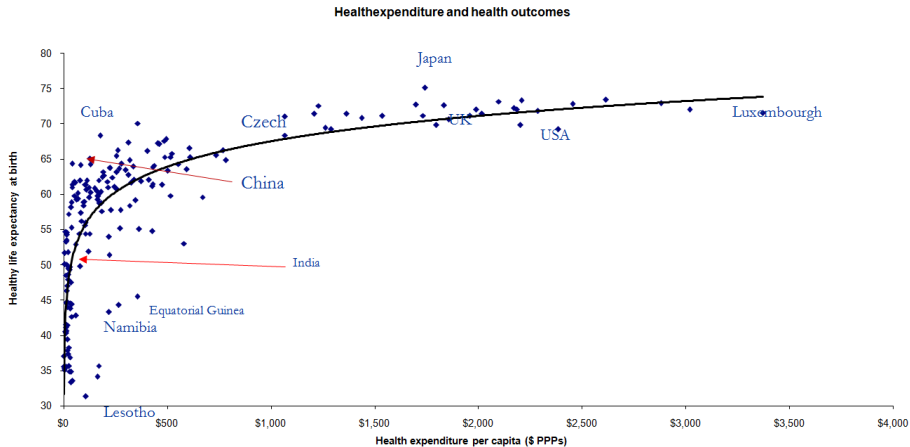
Individual (micro)	Income elasticity
<i>Insured</i>	
Newhouse and Phelps (1976)	≤ 0.1
Hahn and Lefkowitz (1992)	≤ 0
<i>less insured/uninsured</i>	
Falk et al (1933)	0.7
Andersen and Benham (1970) - dental	1.2
AHCPR (1997) - dental	1.1
Regions (intermediate)	
Fuchs and Kramer (1972) – 33 states, 1966	0.9
Di Matteo and Di Matteo (1998) – 10 Canadian provinces, 1965-91	0.8
Freeman (2003) – US states, 1966-98	0.8
Nations (macro)	
Newhouse (1977) – 13 countries, 1972	1.3
Getzen (1990) – US, 1966-87	1.6
Schieber (1990) – seven countries, 1960-87	1.2
Gerdtham and L��thgren (2000, 2002) - 25 OECD countries, 1960-97	Co-integrated
Dreger and Reimers (2005) – 21 OECD countries	Unitary elasticity not rejected

HEALTH AND WEALTH

ARE HEALTH IMPROVEMENTS DUE TO WEALTH?



HEALTH AND HEALTH EXPENDITURES



HEALTH CARE SYSTEMS - A CLOSER LOOK

COMPARISON OF SELECTED ECONOMIES

- U.S., U.K, Canada, Germany and Japan are all major industrialized nations with large populations
- U.K and Canada have common legal heritage with U.S.
- Japan and Germany rely heavily on employer-related insurance - same in U.S.
- Japan, Germany and Canada have private ownership of health care system
- All except U.S. have some form of universal health insurance

UNITED STATES

MIXED SYSTEM

- General Description

- No single nationwide health insurance system
- Privately purchased in market place (typically via employers) for about 68% of the population, about 27% are insured via public programs (medicare, medicaid, children's health program, etc.) and the remaining are uninsured
- Reimbursement to providers takes various forms, depending on third-party payer – most common is fee-for-service (FFS) or discounted fees from private insurance plans

- Physicians

- Most physicians function in the private for-profit sector and often operate in group practices
- Physicians servicing medicare enrollees are reimbursed by the federal govt. on a FFS basis but the fee is set by government (not so for private patients)
- Physicians contracted by managed care organizations may be reimbursed via capitation (\$X/month/enrollee) or on salaries

- Hospitals

- Hospitals may be government owned or private and among private could be for-profit or not-for-profit (NFP)
- About 70% of hospital beds are owned by NFPs – however, more than 70% of nursing homes are for-profit
- Since 1983, federal govt. has reimbursed hospitals (for medicare patients) on prospective payment system (PPS)
- Under this scheme, a prospective payment is set for each of the (about) 500 diagnosis-related groups (DRGs) in which patients could be classified

UNITED KINGDOM

THE NATIONAL HEALTH SERVICE (NHS)

- Description

- NHS established in 1946 and provides care to all residents
- About 10% of population also buys private health insurance (why?)
- Largely financed through general revenues
- Most services require no out-of-pocket contributions but not all services are free - private rooms pay extra, surcharge for drugs filled outside the hospital, co-pays for dental and eye care
- District health authorities (DHAs) purchase from public and private health care providers

- Physicians

- GPs paid on capitation bases and hospital docs on salary basis
- GPs are self-employed, act as gatekeepers and make about 50% income from capitation contracts

- Hospitals

- Hospital services provided by nongovernmental trusts. Until 1990 all hospitals publicly owned but have since become self-governing trusts (similar to NFPs in the U.S.)
- Compete among themselves and with private hospitals for DHA contracts
- A reimbursement system for hospitals that is more similar to the U.S. Medicare DRG system

UNITED KINGDOM

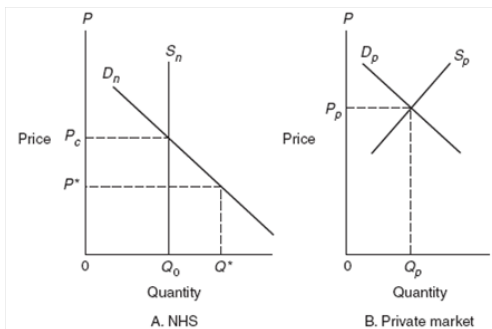
THE NATIONAL HEALTH SERVICE (NHS)

- Compared to the U.S.,

(Year = 2001) Country	Beds per 1000	Beds % of U.S.	Physicians per 1000	Physians % of U.S.	Nurses per 1000	Nurses % of U.S.
Canada	3.2	110.3	2.1	87.5	10.0	126.6
France	4.0	137.9	3.3	137.5	7.0	88.6
Germany			3.3	137.5	9.7	122.8
United Kingdom	3.9	134.5	2.0	83.3	9.0	113.6
United States	2.9		2.4		7.9	

- U.K. spends less per capita
- U.K. has more acute inpatient beds per 1,000
- U.K. employs fewer physicians per 1,000 but more nurses per 1,000
- The NHS devotes considerable resources to high-return services such as prenatal care and infant care
- Though patients have relatively easy access to primary and emergency care, specialty care is rationed through waiting lists and limits on the availability of new technologies

- A model of rationed health care and private markets



- There will be a shortage of NHS services equal to $Q_0 - Q^*$ which gives rise to a private market like that shown in panel B.

GERMANY

TRADITIONAL SICKNESS INSURANCE

● General Description

- All workers required to enroll in sickness funds
- Costs divided equally between employer and employee – employees pay payroll tax at rate proportional to gross wages (13.6% in 1997)
- Employees with incomes above a ceiling can buy into private health systems
- 10% of population in private plans, 88% have social insurance and 2% free
- Sickness funds are required to provide a comprehensive set of benefits

● Physicians

- Physicians required to enroll in regional association of physicians
- Sickness fund pays a lump sum to association, which in turn pays to the docs (usually on fee-for-service basis but could be on salary as well)
- Ambulatory care private practice doctors typically do not have admitting privileges

● Hospitals

- Hospitals paid on prospective bases (private and public hospitals exist, and public hospitals account for about half the beds)
- Hospitals use salaried doctors (salaries come from operating costs of the hospital which are negotiated between the hospital and the sickness funds)
- Hospital doctors not allowed to have ambulatory practice

GERMANY

TRADITIONAL SICKNESS INSURANCE

- Compared to the U.S., Germany has lower costs and lower cost increases
 - Between 1970-1977, spending increased at 14.4% annual rate
 - Dropped to 6.5% from 1977 to 1983 and to 5.1% from 1983 to 1989
 - Since 1990, health expenditures as % of GDP rose from 8.7% to 10.4% ... partly an artifact of Germanys reunification – East Germany added to the health care expenditure but not as much to the GDP
- Universal coverage but has avoided queues
- Compared to the U.S., Germany has
 - more visits per year (11 visits per year vs. 5.4 in the U.S.)
 - more beds per 1000 (9.6 vs. 4.1)
 - more docs per 1000 (3.3 vs. 2.6)
 - However, compared to the U.S., Germany has
 - fewer employees per bed (1.25 vs. 2.8 in the U.S.)
 - fewer nurses per bed (0.51 vs. 1.57 in the U.S.)
 - visits to G.Ps last about 9 mins in Germany (15 mins. in the U.S.)
 - In recent years, costs per capita have been rising faster than incomes per capita
- The financing system itself has negative effects on labor markets – Payroll taxes discourage expanding the labor force

- General Description

- Canadian system originated in 1930s when compulsory HI programs were introduced by some provinces
- Canada has universal governmental insurance with mostly private production of health but with strong governmental regulatory control on physician and hospital prices
- Under federal guide lines, coverage is universal, comprehensive and portable
- Since 1971, all ten provinces have provided universal coverage for hospital & physician care
- Federal govt. shares the cost of hospital and physician services

- Physicians

- Physicians operate in private practices
- Physicians negotiate (FFS rates) with the provinces through physician associations
- Unlike Britain's NHS, physicians in private practice have hospital admitting privileges

- Hospitals

- Hospitals are private institutions but under central regulatory authority in each province
 - Total budget cap for all hospitals in a province
 - Within the cap, each hospital receives a budget

CANADA

NATIONAL HEALTH INSURANCE

	Canada	United States
Population—2007 in millions	33.4	301.1
Population over 65 (2008, %)	13.5	12.6
GDP—2008 (billions of 2004 \$US)	1,274	13,860
GDP per capita—2008 (\$2008)	38,200	46,000
Government expenditures as % of GDP (2006)	39.3	36.6
Health spending per capita—2006	3,678	6,714
Health spending—2006 (% of GDP)	10.0	15.3
Percent of health spending (2006):		
Public expenditures	70.4	45.8
Inpatient care	28.4	25.9
Outpatient care	25.0	44.8
Pharmaceuticals	18.2	12.8
Acute care inpatient beds/1,000 population (2006)	2.8 ^a	2.7
Average length of stay in days (2005)	7.2	4.8
Uninsured population in percent (2007)	0.0	14.6
Out-of-pocket payments per capita (\$US)—2006	532	856
Private insurance % expenditure on health—2006	12.6	36.0
Tobacco (% population older than 15)—2006	17.3 ^a	16.7
Alcohol consumption (liters/capita)—2005	8.0	8.4
Life expectancy (in years) at birth—females (2005)	82.7	79.8
Life expectancy (in years) at birth—males (2005)	80.4	75.2

^a 2005

Sources: www.photius.com/rankings/economy/gdp_purchasing_power_parity_2008_0.html; CIA World Factbook 2008; Health, OECD Health Data 2008.

- Until the 1960s, the U.S. and Canadian Health Systems evolved similarly (in 1971, both countries spent approximately 7.5% of GDP on health care). Since then, the the systems have diverged
- Compared to the U.S., Canada has
 - no uninsured persons
 - more beds per 1000
 - longer stays in hospitals
 - lower per-capita health spending and lower health spending as share of GDP
- Canadians also have lower mortality rates at birth and higher life expectancy at birth
- Like the U.K., health care in Canada is rationed via longer waiting times

COMPARISON OF SELECTED ECONOMIES

OTHER FACTORS TO CONSIDER

- Quality of care
- Availability of technology/services
- Access to technology/services

COMPARISON OF SELECTED ECONOMIES

ACCESS TO TECHNOLOGY AND WAITING TIMES

- Waiting time for knee-replacement surgery in Ontario was 8 weeks vs. three weeks in United States (Coyote et. al. 1994)
- According to U.S. Govt. Accounting Office
 - Patients classified as “urgent” had to wait upto to 30 days for MRI; 30 days for cardiovascular surgery, and 1 year for lithotripsy
 - patients classified as “elective” had to wait upto 16 months, 6 months and 2 years for the above

COMPARISON OF SELECTED ECONOMIES

ACCESS TO TECHNOLOGY AND WAITING TIMES

- Anderson et. al., (1993) found age adjusted rates for CABG to be much lower in areas in Canada (62 per 10,000) compared to areas in the U.S. (113 for CA and 88 for NY)
- In hospitals with similar technologies in the U.S. and Canada, Katz et. al. (1996) found that the U.S. patients received 22% more tests
- Rouleau et. al. (1993) examined patients admitted to coronary care units in hospitals in the U.S. and Canada and found that 51% of Canadian patients suffered from myocardial infarction compared with 35% of the U.S. patients ... more serious cases being treated in Canada
 - Also found that there were no differences in mortality rates but that there was a slightly higher rate of activity limiting angina in Canada

HEALTH CARE SYSTEMS

SUMMARY OF SELECTED SYSTEMS

Feature	Country (Type of System)			
	Canada	Germany	United Kingdom	United States
Health insurance	Universal	Near universal	Near universal	84 percent
Financing	General taxes	Payroll and general taxes	General taxes	Voluntary premiums or general taxes
	Single-payer system	Single-payer system*	Single-payer system	Multipayer system
Reimbursement	Global budgets to hospitals	Fixed payments to hospitals	Global budgets to hospitals	Mostly fixed payments to hospitals
	Negotiated fee-for-service to physicians	Negotiated point-fee-for-service to physicians	Salaries and capitation payments to physicians	Mostly fee-for-service to physicians
Consumer out-of-pocket price	Negligible	Negligible	Negligible	Positive, but generally small
Production	Private	Private	Private but public contract	Private
Physician choice	Unlimited	Unlimited	Limited	Relatively limited

NHI = national health insurance program; SI = socialized insurance; PC = public contracting

*Multiple third-party payers are responsible for paying representatives of the health care providers, but the universal fees are collectively negotiated by the third-party payers.

HEALTH CARE SYSTEMS

SUMMARY OF SELECTED SYSTEMS

- Countries vary widely in the proportion of expenditure on health care that is publicly funded
- The United States stands out as the country with the highest expenditures on health care as well as the highest percentage of the GDP devoted to health care
- In the largely private U.S. system, however, waiting times tend to be shorter than in rationed systems (Canada, U.K.)
- Systems that ration their care by government provision or government insurance incur lower per-capita costs
- If prices are not allowed to allocate scarce resources, something else must do so - waiting lists and limited access to technology
- In Germany, system of comprehensive, universal coverage is expensive (average individual contribution in 2003 was 14.2%) and is a much higher proportion of wages than is the Medicare tax in the U.S.

HEALTH ECONOMICS & POLICY

TOPICS TO BE COVERED THIS SEMESTER

	Date	Topic
1.	Jan 16, 2012	Introduction to Economics
2.	Jan 23, 2012	Production of Health
3.	Jan 30, 2012	Economic Evaluations in Health Care
4.	Feb 06, 2012	Demand for Health and Medical Care
5.	Feb 13, 2012	Introduction to Firms and Markets
6.	Feb 20, 2012	Insurance & Market for Insurance
7.	Feb 27, 2012	Insurance & Market for Insurance (continued)
8.	Mar 05, 2012	Hospitals
9.	Mar 12, 2012	Health Care Professionals
10.	Mar 19, 2012	Pharmaceuticals
11.	Mar 26, 2012	Recap/Capstone