EDO UNIVERSITY IYAMHO
Department of Economics
ECO 313: Public Finance

Instructor: *Dr. Anthony Imoisi,* email: imoisi.anthony@edouniversity.edu.ng

Course Code: ECO 313
Course Title: Public Finance
Number of Units: 2 units
Course Duration: Two hours per week

Course Lecturer: Imoisi Anthony Ilegbinosa (Ph.D)

Intended Learning Outcomes
At the completion of this course, students are expected to:
- Define clearly the meaning scope and nature of Public Finance.
- Have a knowledge of various tools of normative analysis
- Understand various roles of government in the economy
- Discuss the difference between public and private goods
- Discuss why government should intervene in economic activities

Course Details:
Week 1: Public Finance and Ideology
- Organic view of Government
- Mechanistic view of Government
- Government at a Glance

Week 2: Tools of Normative Analysis
- Welfare Economics
- The First Fundamental Theorem of Welfare Economics
- Fairness and the Second Fundamental Theorem of Welfare Economics

Week 3: Market Failure
- Market Power
- Nonexistence of Markets
- An Overview of Market Failure

Week 4 & 5: Public Goods and Privatization
- Definition of Public Goods
- Efficient Provision of Public Goods
- Privatization
- Public Goods and Public Choice

Week 6: Externalities

- The Nature of Externalities
- Graphical Analysis
- Private Responses

Week 7 & 8: Public Responses to Externalities
- Taxes and Subsidies
- Emission Fee
- Cap and Trade
- Emission Fee versus Cap and Trade
- Command and Control Regulation
- Implications for Income Distribution
- Positive Externalities

Week 9 & 10: Cost-Benefit Analysis
- Present Value
- Inflation
- Private Sector Project Evaluation
- Discount Rate for Government Projects
- Valuing Public Benefits and Costs

WEEK 11: Taxation and Income Distribution
- Tax Incidence: General Remarks
- Partial Equilibrium Models
- General Equilibrium Models

Week 12: Revision

Lecturer's Office Hours:
• Imoisi, Anthony Ilegbinosa (Ph.D) Wednesdays 12-2pm & Thursdays 9-11am

Course lecture Notes: http://www.edouniversity.edu.ng/oer/Eco /Eco 312.docx

Recommended Text

- Boardman, A. (2017): Cost-Benefit Analysis: Concept and Practice. Cambridge University Press

- Gruber, J. (2015): Public Finance and Public Policy. Worth Publishers Inc. U.S.A

- Holcombe, R. G. (1983): Public Finance and Political Process. Southern Illinois University Press

- Hyman, D. N. (2013): Public Finance: A Contemporary Application of Theory to Policy. Cengage Learning

- Krugman, P. (2001): The Public Interest. New York Times. (October 10, 2001): p. A19

- Musgrave, R. (1959): The Theory of Public Finance. McGraw Hill, New York

- Rosen, H. S., & Gayer, T. (2014): Public Finance, Global Edition, McGraw Hill Education, U.K

- Wellish, D. (2000): Theory of Public Finance in a Federal State. Cambridge University Press

- Samuelson, P. A. (1955): The Pure Theory of Public Expenditure. Review of Economics and Statistics. 36: 387 – 389

- Samuelson, R. J. (1986): The True Tax Burden. Newsweek (April 21, 1986): p. 68

- Stiglitz, J. E. (2015): Economics of the Public Sector. W. W. Norton & Company

- Stiglitz, J. E. & Atkinson, A. B. (1980): Lectures on Public Economics. McGraw Hill, New York

- Tim, H. (2006): The Undercover Economists. Oxford: Oxford University Press

Class work:
• Must be done in class

Assignments & Grading
• Assignments + Class Work + Term Paper: ~ 30% of final grade.

Exams & Grading:
• Final, comprehensive (according to university schedule): ~ 70% of final grade

Academic Honesty:
• All class work should be done independently, unless explicitly stated otherwise on the assignment handout.
• You may discuss general solution strategies, but must write up the solutions yourself.

No Late Assignments Accepted
• Turn in what you have at the time it's due.
• All assignments are due at the start of class.
• If you will be away, turn in the assignment early.
• Late assignment will not be accepted, but penalized according to the percentages given on the syllabus.

Preamble:

Introduction

Right from inception, there has always been a need to have government in a society. Historically, the bible gave an illustration for the need of a government; for example, the Israelites asking the Prophet Samuel for a King. The Israelites saw government as a necessity because of all nations

has it. Samuel tried to tell them the disadvantages of having a government but they insisted on having one. The King (government) will provide what the people need such as army (government expenditure). The resources to fund these government expenditure will ultimately come from the private sector (Taxation) which will be borne by the people.

Public Finance is defined as the field of economics that analyzes government taxation and spending (fiscal policy). The term is something of a misnomer, because the fundamental issues are not financial (relating to money), rather the key problems relate to the use of real resources, i.e. allocation of resources and distribution of income. For this reason, some authors prefer to call it Public Sector Economics or Public Economics. The function of the government can be viewed from the microeconomic as well as the macroeconomic perspectives or viewpoint. **Microeconomic function of government –** the way government affects the allocation of resources which are limited in supply or scarce as well as the distribution of income among her citizens.

Macroeconomic function of government – the use of fiscal (government expenditure and taxation) and monetary policies (money supply and interest rates) to affect unemployment and the general price level.

The boundary of public finance is unclear; some policy goals that can be achieved by fiscal policy can also be achieved by regulations, e.g. if the government wishes to limit the size of companies, one way is to impose taxes on them, while another way is to issue regulation making companies that exceeds a particular size illegal

Public Finance and Ideology - There are two approaches or ideological views on how government should function or perform in the economy. These include the following:
a) Organic view of Government – Here the society is seen as a natural organism. Each individual is part of this and the government can be thought of as its heart; examples of such organic view includes: Plato's Republic, Hitler's Nazism (National Socialism), Ayatollah khomeini of Iran (Man is half angel and half devil).

The critical question is under this view is how societal goals are selected? Proponents of this view believe that certain goals are natural for the societal organism e.g. pursuit of sovereignty over some geographical area (Nazi drive for domination of Europe; conquering of Boko Haram

in the North Eastern region in Nigeria as well as defeating Biafra in the South Eastern region in Nigeria.

b) Mechanistic view of Government – Here the government is not an organic part of the society but a contrivance created by individuals to better achieve their individual goals. Here the individual and not the group take centre stage. See Henry Clay's comment in 1929;

The key question is what is beneficial to the people and how should the government promote it? Protection of the people, provision of basic social amenities. See Thomas Hobbes, Adam Smith.

There are divergent views on mechanistic view of government. These include:

i. **Libertarians view** – This school of thought supports limited role of government on economic activities

ii. **Social Democrat view** – This school of thought supports more government involvement in economic activities

Government at a glance: Here we look at how the government actually functions. What legal constraints are imposed on the public sector? What does the government spend money on and how these expenditures are to be financed?

Legal Framework: The legal framework shows how the federal, state and local government are backed by the Nigerian constitution to carry out their functions i.e. expenditure functions and revenue generation

According to Musgrave (1959), the functions of a government includes the following

i. **Economic Stabilization** - is the result of the governmental use of direct and indirect controls to maintain and stabilize the nation's economy during emergency conditions. The direct control measures employed by the government include setting or freezing of wages, prices, and rents or the direct rationing of goods.

ii. **Distribution of Income -** is the smoothness or equality with which income is dealt out among members of a society. If everyone earns exactly the same amount of money, then

the income distribution is perfectly equal. If no one earns any money except for one person, who earns all of the money, then the income distribution is perfectly unequal. Usually, however, a society's income distribution falls somewhere in the middle between equal and unequal.

iii. **Allocation of Resources -** is the assignment of available resources to various uses. In the context of an entire economy, resources can be allocated by various means, such as markets or central planning.

In his view, in a federal system, the first and second functions should be carried out by the federal government, while the third function should be carried out by the state and local government

Table 1   **Nigeria: Expenditure Assignments**

Tier of Government	Expenditure Category
i. **Federal only**	Defense; Shipping; Federal trunk roads; Aviation; Railways; Posts, telegraphs and telephones; Police and other security services; Regulation of labor, interstate commerce, telecommunications; Mines and minerals; Social Security; Insurance; National statistical system; National Parks; Guidelines for minimum education standards at all levels; Water resources affecting more than one state;
ii. **Federal-State (shared)**	Antiquities and monuments; Electricity; Industrial, commercial and agricultural development; Scientific and technological research; Statistics and surveys; University, technological and post-primary education; Health and social welfare;

iii.	**Local government**	Economic planning and development; Cemeteries, burial grounds; Homes for the destitute and infirm; Markets; Sewage and refuse disposal; Roads, streets, street lighting, drains, other public facilities.
iv.	**State-Local (shared)**	Primary, adult and vocational education; Health services; Development of agriculture and non-mineral natural resources;

Source: 1999 Constitution and various sector policy reports

Revenue Control in Nigeria

Nigerian fiscal federalism is distinguished by the overwhelming concentration of tax jurisdiction and collection at the level of the federal government. All the major sources of government revenue—petroleum profits tax, import duties, excise duties, mining rents and royalties, and companies income tax—are controlled by the federal government. State and local governments have jurisdiction only over minor and low-yielding revenue sources, with the exception of personal income tax at the state-level and property tax at the local level.

Taxes Collected by the Federal Government

i. Company income tax.

ii. Withholding tax on companies, residents of the Federal Capital Territory, Abuja and non-resident individuals.

iii. Petroleum profits tax.

iv. Education Tax.

v. Value Added Tax.

vi. Capital gains tax on residents of the Federal Capital Territory, Abuja, corporate and non-resident individuals.

vii. Stamp duties on bodies corporate and residents of the Federal Capital Territory, Abuja.

viii. Personal income tax in respect of

a. Members of the armed forces.

b. Members of the Nigeria Police Force.

c. Residents of the Federal Capital Territory, Abuja; and

d. Staff of the Ministry of Foreign Affairs and non-resident individuals

Taxes and levies collected by the State Government.

i. Personal income tax in respect of:

  a. Pay-As-You-Earn (PAYE);

  b. Direct taxation (Self-assessment)

ii. Withholding tax for Individuals

iii. Capital gains tax for individuals

iv. Stamp duties on instruments executed by individuals.

v. Pools betting, lotteries, gaming and casino taxes.

vi. Road tax.

vii. Business premises registration

viii. Development levy for individuals

ix. Naming of street registration fees in State Capitals.

x. Right of Occupancy fees on lands owned by the State Government.

xi. Market taxes and levies where State finance is involved.

Taxes and Levies to be collected by Local Government

i. Shops and, kiosks rates

ii. Tenement rates

iii. On and off liquor license fees

iv. Slaughter slab fees.

v. Marriage, birth and death registration fees.

vi. Naming of street registration fee, excluding any street in the State Capital

vii. Right of Occupancy fee on lands in rural areas, excluding those collectable by the Federal and State Governments.

viii. Market taxes and levies excluding any market where State Finance is involved.

ix.   Motor Park levies.

 x.   Domestic animal license fees.

xi.   Bicycle, truck, canoe, wheelbarrow and cart fees, other than a mechanically propelled truck.

xii.   Cattle tax payable by cattle farmers only.

xiii.   Merriment and road closure levy.

xiv.   Radio and television license fees (other than radio and television transmitter).

xv.   Vehicle radio license fee (to be imposed by the local government of the State in which the car is registered.

xvi.   Wrong parking charges.

xvii.   Public convenience, sewage and refuse disposal fees.

xviii. Customary burial ground permit fees.

xix.   Religious places establishment permit fees.

xx.   Signboard and advertisement permit fees

The Size of the Government – In Bill Clinton's State of the Union address in 1996, he said "the era of big government is over". Such a statement presupposes that we can determine whether a government is big or not. The question now is: How do we measure the size of government?

One measure used by politician and journalist is the number of workers in the public sector. This can be misleading based on the following:

a. Imagine a scenario where few public workers operate a powerful computer that guides all economic decisions

b. Also, a scenario where large number of workers is associated with a relatively weak public sector

The number of public sector employees is useful information for some purposes but it does not cast light on the central issue, i.e. the extent to which society resources are controlled by the government. A more sensible (and common) approach to measure the size of government is by the volume of its annual expenditures. Basically, we have three types;

a. **Purchase of Goods & Services** – The government buys a wide variety of goods & services, ranging from artilleries to services provided by teachers

b. **Transfer of Income to People, businesses or other government –** Here the government takes income from some people or organization and gives it to others. E.g. welfare programmes such as state bursaries to students, subsidies given to farmers for production of certain commodities

c. **Interest Payments** – The government often borrows to finance its activities and, like any borrower, must pay interest to its creditors

The government itemizes its expenditure in a document referred to as the **UNIFIED BUDGET –** A document that includes all the federal government's revenues and expenditures. Normally, when expenditures go up, people conclude that the government has grown. But some government activities have huge impact on the economy; even though they involve minimal government spending e.g. issuing regulations per se is not very expensive.

For instance, the U.S. government spends $50.4billion annually on developing and enforcing regulations, a figure that is not large relative to the size of the budget.

This estimate is only a small fraction of the full economic cost of regulations, which include the costs to individuals and businesses of complying with the rules as well as their effects on economic activity. E.g. Airbags raised the cost of cars, various permit and inspection fees increase the price of housing, minimum wage creates unemployment etc.

Some economists believe the economic costs of government regulation should be published in an annual **REGULATORY BUDGET** - An annual statement of costs imposed on the economy by government regulations. (Currently, the government publishes no such budget)

Most economists are willing to accept conventionally defined government expenditures as a rough and useful measure of government size. Though it has its deficiencies, e.g. it misses the impact of regulatory cost. In addition, when using government expenditure as a measure of government size, we should also see if it has increased in the following areas:

a. Real absolute terms (Inflation)

b. Per capital income (Population) and

c. Government spending as a percentage to GDP

Tools of Normative Analysis

There is a general debate concerning government's role in the economy. Some school of thought believes that the main objective of the government is the welfare of the people while others see the government as maintaining just law and order and should not be involved in economic activities

Welfare Economics – The framework used by most public finance specialist is **welfare economics.** It is the branch of economics that evaluates social desirability of alternative economic states.

Pure Economy Exchange

Let's consider a simple economy consisting of:

a. two people, let's say Anthony & Ruth
b. who consume two commodities with fixed supply

The only economic problem here is to allocate amount of the two goods between the two people. As simple as this model is, all the result from these two-goods, two-person case holds in economies with many people and many commodities. We are analyzing this two by two case because of its simplicity. Let's take two people say Anthony and Ruth and the two commodities are rice and beans.

An analytical device known as the **Edgeworth Box** depicts the distribution of goods (rice & beans) in a two good-two person world (Anthony & Ruth). The Edgeworth box, named after Francis Ysidro Edgeworth, is a way of representing various distributions of resources. Edgeworth's original two-axis depiction was developed into the now familiar box diagram by Pareto in his 1906 book "Manual of Political Economy" and was popularized in a later exposition by Bowley. The modern version of the diagram is commonly referred to as the Edgeworth–Bowley box. The Edgeworth box is used frequently in general equilibrium theory. It can aid in representing the competitive equilibrium of a simple system or a range of such

outcomes that satisfy economic efficiency. A graphical illustration of the edgeworth box is shown below.

Fig 1: The Edgeworth Box
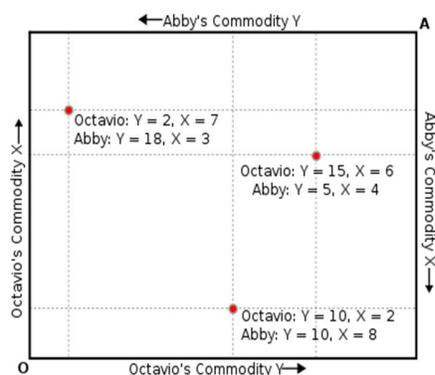
Pareto Efficiency – It is often used as the standard for evaluating the desirability of an allocation of resources. It is an allocation of resources such that no person can be made better off without making another person worse off. If an allocation of resources is not "Pareto Efficient", it is considered wasteful because it is possible to make someone better off without making another worse off. A related term is **Pareto Improvement** – a reallocation of resources that makes at least one person better off without making anyone else worse off.

Contract curve – The locus of Pareto-efficient allocations in an exchange economy. In an Edgeworth box the contract curve is the set of tangency points between the indifference curves of the two consumers. It is termed the contract curve since the outcome of negotiation about trade between two consumers should result in an agreement (a 'contract') that has an outcome on the contract curve. The competitive equilibrium of an economy is always located on the contract curve. In microeconomics, the contract curve is the set of points representing final allocations of two goods between two people that could occur as a result of mutually beneficial trading between those people given their initial allocations of the goods. It is illustrated below.

Fig 2: The Contract Curve
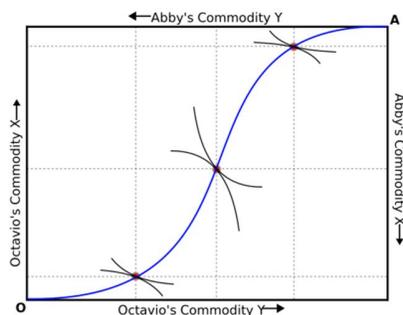
Note for a point to be Pareto efficient, it must be a point where the indifference curve of Anthony and Ruth are barely touching. In mathematics terms, the two indifference curves are tangent – the slopes of the indifference curves are equal. The absolute value of the slope of the indifference curve is called the marginal rate of substitution (MRS).

The Marginal Rate of Substitution (MRS) is the rate at which an individual is willing to trade one good for another. Hence, Pareto efficiency requires that the marginal rate of substitution must be equal for all consumers: Thus,

$$MRS^{Anthony} = MRS^{ruth} \qquad\qquad (1)$$

Where $MRS^{Anthony}$ is the marginal rate of substitution of rice for beans for Anthony and MRS^{ruth} is Ruth's.

Production Economy

So far, we have assumed that supplies of all the commodities are fixed. Let's now consider what happens if productive inputs can shift between the production of rice and beans, so the quantity of the two goods can vary. Provided the inputs are efficiently used, if the production of rice increases, then beans production must necessary fall; vice versa.

Production Possibility Curve (PPC) – It is also called the **Production Production Possibility Frontier (PPF)** – it shows the various combinations of commodity bundles that are available to society, given the productive inputs and level of technology. It is the maximum quantity of one output that can be produced, given the amount of the other output i.e. it shows the maximum quantity of rice that can be produced along with any given quantity of beans. The absolute value of the slope of the PPC or PPF is called the Marginal Rate of Transformation (MRT). It is the rate at which the economy can transform one good into another i.e. it is the rate at which the economy can transform rice into beans. It is useful to express the MRT in terms of Marginal Cost – This is the additional cost in producing one more unit of output. Thus, the Marginal Rate of Transformation is the ratio of the marginal cost of both commodities i.e.

$$MRT_{rb} = \frac{MC_r}{MC_b} \tag{2}$$

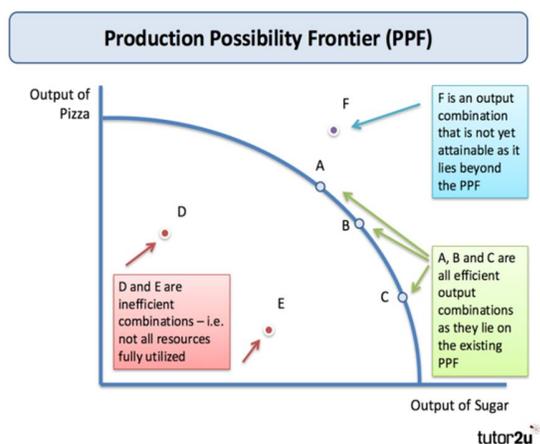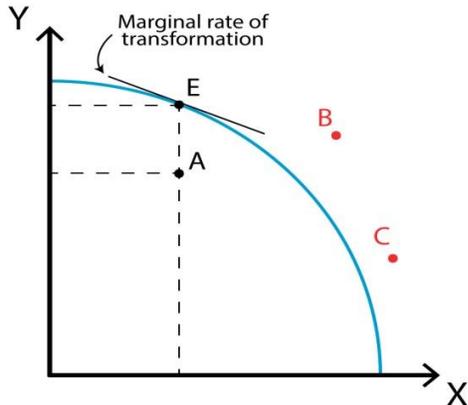**Fig 3: The Production Possibility Curve**

Fig 4: The Marginal Rate of Transformation

Efficiency Conditions with Variable Proportions – when the supplies of rice and beans are variable, the condition for Pareto Efficiency must be extended and now the condition becomes:

$$MRT_{rb} = MRS_{rb}^{Anthony} = MRS_{rb}^{ruth} \tag{3}$$

Let's use an arithmetic example to illustrate this: Suppose at a given allocation, Anthony's $=$ MRS_{rb} is 1/3 and the MRT_{rb} is 2/3. By the definition of MRT_{rb} at this allocation, 2 additional beans could be produced by giving up 3 rice. By the definition of MRS_{rb} if Anthony lost 3 extra rice, he would require only 1 beans to maintain his original utility level. Thus, Anthony could be made better off by giving up 3 rice and transforming them into 2 beans and no one else would be made worse off in the process. Such a trade is always possible as long as the marginal rate of substitution does not equal the marginal rate of transformation. Only when the slopes of the curves for each are equal is it impossible to make a Pareto Improvement. Hence, $MRT_{rb} = MRS_{rb}$ is a necessary condition for Pareto Efficiency. The rate at which rice can be transformed into beans MRT_{rb} must be equal to the rate at which consumers are willing to trade rice for beans $= MRS_{rb}$. Thus the condition for Pareto Efficiency can be reinterpreted in terms of marginal cost as follows:

$$\frac{MC_r}{MC_b} = MRS_{rb}^{Anthony} = MRS_{rb}^{ruth} \tag{4}$$

The First Fundamental Theorem of Welfare Economics

With the necessary conditions for Pareto Efficiency in hand, we may ask if a given economy will achieve this desirable state. It depends on what assumptions we make about the operations of that economy.

Assumptions of the First Fundamental Theorem of Welfare Economics

The assumptions of the first fundamental theorem of welfare economics include the following:

a. All market producers and consumers are perfect competitors; that is no one has any market power

b. A market exist for each and every commodity

Under these assumptions, the so-called First Fundamental Theorem of Welfare Economics states that under certain conditions, competitive markets lead to Pareto efficient outcomes. In effect, this stunning result tells us that a competitive economy "automatically" allocates resources efficiently, without any need for centralized direction. (Think of Adam Smith's invisible hand). In a way, the first welfare theorem merely formalizes an insight that has long been recognized: that free enterprise system is efficient in providing goods and services. The essence of competition is that everyone faces the same prices – each consumer and producer is so small (infinitesimal) relative to the market that his or her action alone cannot affect prices. From our example, this means that Anthony and Ruth both the pay the same prices for rice P_r and beans P_b. A basic outcome from theory of consumer behaviour is that the necessary condition for Anthony to maximize utility is:

$$MRS_{rb}^{Anthony} = \frac{P_r}{P_b} \tag{5}$$

Similarly Ruth's utility maximization is

$$MRS_{rb}^{ruth} = \frac{P_r}{P_b} \tag{6}$$

Thus, putting the two equations (5) & (6) together:

$$MRS^{tony} = MRS^{ruth}$$

This condition, though, is identical to equation 1, one of the necessary conditions for Pareto Efficiency. However, as emphasized previously, we must consider the production side as well. Basic economic theory tells us that a profit maximizing competitive firm produces output up to the point at which marginal cost and price are equal. In our example, this means: $P_r = MC_r$ and $P_b = MC_b$ or

$$\frac{MC_r}{MC_b} = \frac{P_r}{P_B} \tag{7}$$

But recall from Equation 2 that MC_r/MC_b is just the marginal rate of transformation. Thus, we can rewrite equation 7 as:

$$MRT_{rb} = \frac{P_r}{P_b} \tag{8}$$

Now consider equations 5, 6 & 8 and notice that P_r/P_b appears on the right hand side of each. Hence, these three equations together imply that $MRT_{rb} = MRS_{rb}^{Anthony} = MRS_{rb}^{ruth}$ which is the necessary condition for Pareto Efficiency. Competition along with maximizing behaviour on the part of all individuals, leads to an efficient outcome. Finally, we can take advantage of equation 4 to write the conditions for Pareto Efficiency in terms of marginal cost. Simply substitute equations 5, or 6 into 4 to find
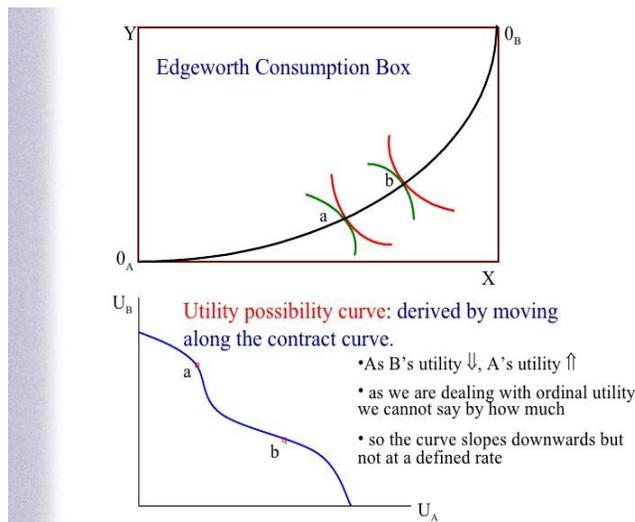
$$\frac{MC_r}{MC_b} = \frac{P_r}{P_B} \tag{9}$$

Fairness and the Second Fundamental Theorem of Welfare Economics

If properly functioning competitive markets allocate resources efficiently, what economic role does the government have to play? Only a very small government would appear to be appropriate and its main function would be to protect property rights so that markets can work. However, such reasoning is based on the understanding of the first welfare theorem. For one thing, it has been assumed that efficiency is the only criterion for deciding if a given allocation of resources is good. It is not obvious; however, that Pareto efficiency by itself is desirable. The key point is that the criterion of Pareto efficiency by itself is not enough to rank alternative allocation resources. Rather, explicit value judgments are required on the fairness of the distribution of utility.

Utility Possibilities Curve (UU) – is derived from the contract curve. It shows the maximum amount of one person's utility given the other individual's utility level.

Fig 5: The Utility Curve

Edgeworth Consumption Box

Utility possibility curve: derived by moving along the contract curve.
• As B's utility ⇓, A's utility ⇑
• as we are dealing with ordinal utility we cannot say by how much
• so the curve slopes downwards but not at a defined rate

All points on or below the utility possibilities curve are attainable by society: all points above it are not attainable. By definition, all points on the Utility Possibility Curve are Pareto efficient, but they represent very different distributions of real income between Anthony and Ruth. The key question now is "which point is the best?" The conventional way to answer this question is to postulate a social welfare function. A social welfare function embodies a society's views on the relative deservedness of Anthony and Ruth. It is simply a statement of how the well-being of society's members translates into the well-being of society as a whole. Think of it this way; just as an individual's welfare depends on the quantities of commodities she consumes, society's welfare depends on the utilities of each of its members. Algebraically, social welfare (W) is some function of each individual's utility:

$$W = f(U^{Anthony}, U^{Ruth}) \qquad\qquad (10)$$

We assume the value of social welfare increases as either $U^{Anthony}$ or U^{Ruth} increases; society is better off when any of its members becomes better off. Note that we have said nothing about how society manifests these preferences. Under some conditions, members of society may not be able to agree on how to rank each other's utilities, and the social welfare function does not even exist. For the moment, we assume it does not exist.

Social Indifference Curves – it shows how society is willing to trade off one person's utility for the other. Social welfare increases as we move towards the north east.

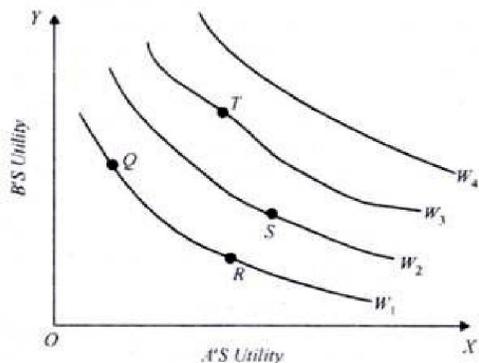**Fig 6: The Social Indifference Curve**

Fig. 42.1. Social Indifference Curves depicting Social Welfare Function

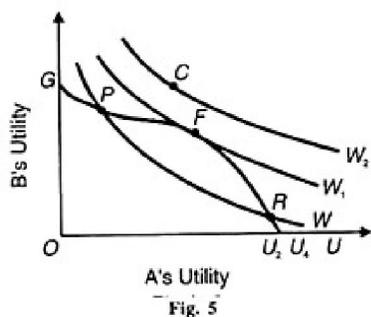**Fig 7: Maximizing Social Welfare**

Fig. 5

Maximizing social welfare: from the diagram, after superimposing the social indifference curves on the utility possibilities curve; point p is Pareto Efficient, but social welfare is higher at the point c. Of course, point f is preferred to either of these because it is both efficient and fair. The First Welfare Theorem indicates that a properly working competitive system leads to some allocation on the utility possibility curve. However, even though it is efficient, this particular allocation does not necessary maximize social welfare. Thus, we conclude that, even if the economy generates a Pareto Efficient allocation of resources, government intervention may be necessary to achieve fair distribution of utility.

Does the government have to intervene directly in markets in order to move the economy to the welfare – maximizing points? According to the Second Fundamental Theorem of Welfare Economics, society can attain any Pareto Efficient allocation of resources by making a suitable

assignment of initial endowments and then letting people freely trade with each other, as in our Edgeworth Box model. Roughly speaking, by redistributing income suitably and then getting out of the way and letting markets work, the government can attain any point on the utility possibilities frontier. The Second Fundamental Theorem of Welfare Economics shows that equity can be achieved without inhibiting efficiency.

The Second Welfare theorem is important because it shows that, at least in theory, the issues of efficiency and distributional fairness can be separated. If the society determines that the current distribution of resources is unfair, it need not interfere with market price and impair efficiency. Rather, society need only transfer resources among people in a way deemed to be fair. Of course, the government requires some way to reallocate resources, and problems arise if the only available mechanisms for doing so (such as taxes) themselves induce inefficiencies.

Market Failure

An economy may be inefficient for two general reasons – market power and nonexistence of markets.

Market Power

The First Welfare Theorem holds only if all consumers and firms are price takers. If some individuals or firms are price makers (they have power to affect prices), then the allocation resources is generally inefficient. Why? A firm with market power may be able to raise price above marginal cost by supplying less output than a competitor would

Price making behavior can arise in several contexts. An extreme case is a MONOPOLY, where there is only one firm in the market, and entry is blocked. Even in the less extreme case of oligopoly (few sellers), the firms in an industry may be able to increase price above marginal cost. Finally, an industry with many firms, but each firms has some market power because the firms produce differentiated products e.g. a lot of firms producing sneakers, yet many consumers prefer Nike, Addidas, Reeboks as distinct sneakers

Nonexistence of Markets

The proof behind the First Welfare Theorem assumes a market exists for every commodity. After all, if a market for a commodity does not exist, then we can hardly expect to allocate it efficiently. In reality, markets for certain commodities may fail to emerge. Consider, for instance, insurance, a very important commodity in a world of uncertainty. Despite the existence of firms such as Life Assurance, First Bank Insurance, Union Insurance etc, there are certain events for which insurance simply cannot be purchased on the private market. For example, suppose you wanted to purchase insurance against the possibility of becoming poor. Would a firm in a competitive market ever find it profitable to supply "poverty insurance"? The answer is no, because if your purchased such insurance, you might decide not to work very hard. To discourage such behavior, the insurance firm would have to monitor your behavior to determine whether your low income was due to bad luck or to goofing off. However to perform such monitoring would be very difficult or impossible. Hence, there is no market for poverty insurance-it simply cannot be purchased.

Basically, the problem here is asymmetric information (a situation in which one party engaged in an economic transaction has better information about the good or service traded than the other party). One rationalization for government income support programs is that they provide poverty insurance that is unavailable privately. The premium on this "insurance policy" is the taxes you pay when you are able to earn income. In the event of poverty, your benefit comes in the form of welfare payments.

Another type of inefficiency associated with the non existence of a market is an externality-a situation that occurs when the activity of one entity directly affects the welfare of another in a way that is outside the market mechanism. For example, suppose your roommate begins smoking cigarettes, polluting the air and making you worse off. Why is this an efficiency problem? Your roommate consumes a scarce resource, clean air, when he smokes. However, there is no market for clean air and therefore "overuses" it. The price system fails to provide correct signals about the opportunity cost of a commodity.

Closely related to externality is public good-a commodity that is non rival and non excludable. Non rival means that the fact that one consumes it does not prevent anyone else from doing so as well. Non excludable means that it is either very expensive or impossible to prevent anyone from

consuming it. The classic example of public good is a lighthouse. When it is on, all ships in the vicinity benefits. The fact that one person takes advantage of the lighthouse's services does not keep anyone else from doing so simultaneously and it is very difficult to prevent others from using the lighthouse. People may have an incentive to how much they value a public good. Suppose that the lighthouse benefits you. You know, however, that once it is lit, you enjoy its services, whether you pay for them or not.

Pure Public Goods – it refers to a commodity that is non rival and non excludable in consumption.

Consumption of a commodity is non rival once it is provided; the additional resource cost of another person consuming the good is zero. Consumption of a commodity is non excludable when to prevent anyone from consuming the good is either very expensive or impossible

Private Good – it refers to a commodity that is rival and excludable.

From the definition of public goods, we can note the following:

Even though everyone consumes the same quantity of the good, it need not be valued equally by all – Consider cleaning up your hostel with many roommates. This activity is a public good. Everyone benefits from a clean hostel, and it is hard to exclude any student from these benefits. Yet some students care about cleanliness much more than others.

Classification as a public good is not an absolute; it depends on market conditions and the state of technology – Think about a lighthouse, once it is lit, one ship can take advantage of it without impinging on another ship ability to do the same. Moreover, no particular vessel can be excluded from taking advantage of the signal. Under this condition, the lighthouse is a pure public good

In many cases, then it makes sense to think of "publicness" as a matter of degree. **An impure public good** is rival and excludable to some extent. There are not many examples of pure public goods.

A **commodity can satisfy one part of the definition of a public good and not the other** - That is non excludability and non rivalry does not have to go together, e.g. many people can enjoy the

beach without diminishing the pleasure of others. Despite the fact individuals do not rival each other in consumption; exclusion is easy if there are gate fees. As before, the characterization of a commodity depends on the state of technology and on legal arrangements.

Some things that are not conventionally thought of as commodities have public good characteristics – A key example is honesty. If everyone is honest in commercial transactions, all of society benefits because the costs of doing business are lower. Such cost reduction are both non excludable and non rival, thus honesty is a public good

Private goods are not necessarily provided exclusively by the private sector – There are many publicly provided private goods-rival and excludable commodities that are provided by governments. Medical services and housing

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