

LABOUR ECONOMICS (ECON -4051)



DISTANCE EDUCATION MODULE

ARBA MINCH UNIVERSITY COLLEGE OF BUSINESS AND ECONOMICS DEPARTMENT OF ECONOMICS

COMPILED BY: TEFERI DABA (Msc)

EDITED BY: RAHEL ELIAS (Msc)

JANUARY, 2020

ARBA MINCH, ETHIOPIA

TABLE OF CONTENTS

<i>Preface</i>	<i>v</i>
<i>Course Objectives</i>	<i>vi</i>
Chapter One: Introduction to Labor Economics	1
1.1. Introduction	1
1.2. What is Labor economics.....	2
1.3. Background of Labor Economics	3
1.4. The Economic Perspective of Labor Market.....	4
1.5. Unique Characteristics of Labor market.....	6
1.6. Chapter Summary	8
1.7. Self Test Exercise.....	8
Chapter Two: The Theory and Applications of Labor supply	9
2.1. Introduction	9
2.2. Basic Concepts and Measurement of Labor Supply	10
2.3. The Short Run theory of labor supply	25
2.4. Labor Supply in the Long Run	50
2.5. Chapter Summary	57
2.6. Self Test Exercise.....	58
Chapter Three: Labor Demand	59
3.1. Introduction	59
3.2. Rationale of labor demand Study	60
3.3. Review of Firm's Production Function	61
3.4. Derivation of the Demand for Labor	68
3.5. The Market Demand for Labor.....	75
3.6. The Wage Elasticity of Labor Demand	78
3.7. Chapter Summary	82
3.8. Self Test Exercise.....	83
Chapter Four: The Labor Market & Wage Determination	84
4.1. Introduction	84
4.2. The Labor Market.....	85
4.3. The Market Wage Determination	87

4.4.	Minimum Wage	98
4.5.	Basic Wage Forms	105
4.6.	Review of Wage Theories	112
4.7.	Labor market Segmentation	119
4.8.	Labor market Discrimination.....	120
4.9.	Chapter Summary	122
4.10.	Self Test Exercise.....	123
Chapter Five: Qualitative Aspect of the Labor Supply.....		124
5.1.	Introduction	124
5.2.	The Human Capital Theory.....	125
5.3.	The Model	126
5.4.	Critisims of Human capital Theory	134
5.5.	Chapter Summary	135
5.6.	Self Test Exercise.....	136
Chapter Six: Institutions and the Labor Market.....		137
6.1.	Introduction	137
6.2.	Labor Unions: Meaning, Origin, and Objectives.....	138
6.3.	Unions & the Labor market	142
6.4.	Government & the Labor Market.....	154
6.5.	Chapter Summary	164
6.6.	Self Test Exercise.....	165
Chapter Seven: Theory of Unemployment		166
7.1.	Introduction	166
7.2.	What is unemployment.....	167
7.3.	Types of Unemployment	170
7.4.	Measuring Unemployment.....	175
7.5.	Causes of Unemployment.....	177
7.6.	Benefits & Costs of Unemployment	179
7.7.	Actions Against Unemployment	182
7.8.	Chapter Summary	183
7.9.	Self Test Exercise.....	184
References		185

Preface

This course presents theories of labor markets and applies the theory to analyze the operation of labor markets. It analyzes labor demand decisions made by profit-maximizing firms, labor supply decisions made by rational workers, and the equilibrium patterns of employment and wages resulting from the interaction of these decisions in competitive markets. As an applied subject, labor economics takes empirical evidence seriously. Hence, students are recommended to take intermediate microeconomic theory before taking this course. Students are expected not to be intimidated by numbers. It is assumed that students have some elementary knowledge of the calculus. However, familiarity with mathematics and statistics is an advantage but not a pre-requisite.

The topics in this module are arranged in the order presented in most introductory texts and course outline of Arba Minch University (AMU). The methodology used and the contents of the material are developed from my class room teaching at AMU. But to make the module a helpful text for self-study, brainstorming questions, chapter end summary and self-test exercises are incorporated.

The preparation of this material would not have been completed without the contribution and encouragement of many people. In this regard, my debts are great and too many; specially like the debt of Economics Department and Continuing Education Program Division (CEPD) of AMU for providing me the opportunity to write teaching material on Labor Economics. The reference section of this module carried only few among the hundreds that deserve special thank. Of course, I am grateful to the entire profession of economists whose writing on labor economics provide the foundation for this module. Special thank goes to my colleagues namely Kumsa Dandana, Fikru Debele, and Reji D. Nair from whom I received a very constructive comments on the first draft of this material. I am also gratefully indebted to my colleagues for their *Mrs. Rabel Elias*, for the final editorial service, Of course, I remain responsible for the final adaptations, inclusions and exclusions in the material.

*Teferi Daba Lemma,
Arba Minch University,
January 2010.*

COURSE OBJECTIVE

Dear Student! In your microeconomics course, you have studied the theories demand and supply of consumer goods. In the same course, I hope you have studied the decision making behaviour of individuals, firms and society. Labor economics applies these theories to analyze labor demand decisions made by profit-maximizing firms, labor supply decisions made by rational workers, and the equilibrium patterns of employment and wages resulting from the interaction of these decisions in competitive markets.

The specific objectives this course are:

- to acquaint students with traditional topics in labor economics
- to enable the students to use the fundamental economic concepts in evaluating labor market outcomes
- to encourage the development of independent research interests.

Therefore, upon successful completion of this module, please, make sure that you have attained the specific and general objectives mentioned above.

Good Reading!

CHAPTER ONE: INTRODUCTION TO LABOR ECONOMICS

1.1. INTRODUCTION

Overview:

Dear student! In your introductory economics course you might have learnt that economics has two major branches: microeconomics and macroeconomics. This classification demarcates the theoretical dimension of the subject matter. On the application part, however, economics has plenty of branches: monetary, international, fiscal, health, natural resource, etc. they are the application of macro and microeconomics to a certain group of social/economic problem. They differ on the type of economic/social problem their application is focusing. Labor economics is one of the many branches of applied economics that focuses on the economic problem related to employment and pay. In this chapter, you will be exposed to the nature of labor economics and the peculiar characteristic of the market it is studying.

Chapter Objective:

- understand the nature of labor economics,
- clearly distinguish the concern of labor economics from other branches of economics,
- explain the workings of labor market,
- compare and contrast labor market and commodity market, and
- identify the unique characteristic of labor market.

Chapter Content:

- Nature and definition of labor economics
- Background of labor economics

The Economic perspective of labor market

- Unique characteristic of labor market
- Chapter Summary
- Self Test Exercise

1.2. WHAT IS LABOR ECONOMICS?

Dear student! What is labor economics? What do you think is the concern of this course? Please, write your answer on the space provided below.

Good! Compare your answer with the definition and explanation given below.

Labor economics is the branch of economics that studies the nature and determinants of employment and compensation. Labor economics is the study of the workings and outcomes of the market for labor. More specifically, it is primarily concerned with the behavior of employers and employees in response to the general incentives of wages, prices, profits, and non pecuniary aspects of the employment relationship (such as work environment, risk of injury, personality of managers, flexibility of work hours etc). It examines the organization, functioning and outcomes of labor markets; the decision of prospective and present labor market participants and the public policies relating to employment and payment of labor resources.

In general, labor economics places due emphasis on the role played by social institutions and different types of market structures that jointly determine the pattern and mobility or speed of adjustment in the labor market where human labor inputs are bought and sold.

1.3. BACKGROUND OF LABOR ECONOMICS

Dear student! How did labor economics emerge? Please, write your answer on the space provided below.

Good! Compare your answer with the explanation given below.

As a distinct discipline, labor economics today is not quite a century old. Before, it was simply analogical part of the central tradition of theoretical speculation that began with Adam Smith. In his "*The Wealth of Nations*" (1776), Smith pointed out the centrality of labor to the economy and the special characteristics of labor as a participant in the economy. This thought of Smith motivated some latter age economists to carry a separate study on the nature and problems of workers-employers relationship.

Almost from its inception (and especially during the post-World War II period), the analytical scope of labor economics mushroomed far outside the domain of traditional economics, making it a difficult field to define in a strict economic sense. Many labor economists caution that the word "labor" should not be understood as exclusively linked to the discipline of "economics." Instead, they advocate a more interdisciplinary approach that draws critically from insights provided by the disciplines of sociology, political science, psychology, and organizational theory and behavior. As a result, labor economics has concerned itself with a large range of topics, including race and gender discrimination; labor-management relations; demographic economics; personal or social expenditures on education, medical care, and training (referred to as human capital investments); and a multitude of issues surrounding behavior in the workplace, a subject area germane to industrial and human relations schools.

When Labor Economics finally did emerge as a specialized field, the older theories of value and distribution were destined to occupy a subordinate place, because the founders of the new discipline were so strongly oriented to other interests: unions and unionism, labor history, collective bargaining, social and protective labor legislation and industrial disputes. In

consequence, topics such as *wage and employment theory* were typically considered to be a part of general economics, rather than Labor Economics itself. The specialized study of wages, labor markets, and institutions did not begin to occupy a prominent position in the field until the later 1920's.

Labor Economics is now firmly established as an area of theoretical and empirical inquiry in the main stream of economics. The tools that labor economists use to explain and investigate economic phenomenon display the same theoretical rigor and require application of the same degree of econometric expertise as other major areas of the subject. In short, the old study of labor was highly descriptive, emphasizing on historical developments, facts, institutions, and legal considerations. But now, Labor Economics increasingly has become applied micro and macro theory.

1.4. THE ECONOMIC PERSPECTIVE OF LABOR MARKET

Dear student! Is labor market real market? Does it have the basic characteristic of market? Please, write your answer on the space provided below.

Good! Compare your answer with the explanation given below.

The market that has the job of allocating workers to jobs and coordinating employment decisions is the labor market. Every market has buyers and sellers and the labor market is no exception: *the buyers are employers and the sellers are workers*. Because there are so many buyers and sellers of labor at any given time, the decisions that are made in any particular case are influenced by the behavior and decisions of others. The labor market is thus composed of all the buyers and sellers of labor.

Contemporary labor economics employs theories of choice to analyze and predict the behavior of labor market participants and the economic consequences of labor market activities. It focuses on **choices** – why they are made and how they generate particular out comes.

The implicit assumptions underlying this economic perspective are:

Relative scarcity (of resource relative to wants)

Opportunity cost (purposeful behavior based on the comparisons of costs and benefits)

Adaptability (of behavior to changing circumstances)

Methods of studying economics of labor

Dear student! How do we study economics of labor? Please, write your answer on the space provided below.

Good! Compare your answer with the explanation given below.

Like any other applied field of study, you may the following steps in studying economics.

Construct models of behavior, using the same tools that economists use to study other goods. These tools are found in standard **microeconomic theory**: budget constraints, indifference curves, cost curves, isoquants, supply and demand curves, etc. Occasionally, we will also use some calculus. *(You should know all the above tools from intermediate microeconomics; will assume you know)*

Test models of behavior, using simple **descriptive statistics** and **regression analysis**.

If the model doesn't fit, it is revised or rejected *(I hope you know regression from econometrics.)*

Rationale of studying economics of labor

Dear student! If labor is just like another commodity and can be analyzed just like any other commodity, then why do we need a special course/subfield of economics (with lots of researchers, etc.)? We don't have a special subfield of economics for other commodities: banana economics; haircut economics, etc. Why for labor? Please, write your answer on the space provided below.

Good! Compare your answer with the explanation given below.

The main reason is the importance of market for labor: For virtually all households in the economy, sale of their labor services to firms constitutes by far their major source of income. The price of this good that they sell (i.e. wage/salary) is the main determinant of their economic well-being. Thus, to understand the distribution of income in society, who earns what and why, we need to understand labor markets, how equilibrium wages are determined.

Secondary reason is that it has a number of special features/peculiarities that must be taken into account in a more in-depth analysis. Each of these has important implications for how labor markets work, for equilibrium prices and quantities.

1.5. UNIQUE CHARACTERISTICS OF LABOR MARKET

Dear student! Why we need to study labor market separately? What makes labor market different from other markets? Please, write your answer on the space provided below.

Good! Compare your answer with the explanation given below.

Labor should not be considered as being bought and sold like so much grain oil or bonds. Labor is somewhat unique. Hence, the market in which labor service is bought and sold embodies special characteristics and peculiarities calling for separate study.

On the supply side: *inseparability of labor service*

Labor service can only be rented. Workers themselves cannot be bought and sold. Further, because labor service cannot be separated from workers, the conditions under which services are rented are often as important as price. Putting differently, non pecuniary factors loom larger in employment transactions than they do in market for commodities; i.e. beside remunerations, non monetary aspects of the job become extremely significant. These non monetary factors include:

- job's health and safety features
- arduousness (difficulty) of the work

stability of employment

opportunity for training and advancement

Thus the supply decisions of workers are more complex than the supply concept which applies to product markets

On the demand side: *indirect/ derived demand of labor service*

While the demand for a product is based on the satisfaction or utility it yields labor is demanded because of its contribution to productivity in creating goods and service.

☞ Demand for labor is derived from the demand for the products it produces. Hence, the complexity of labor markets means that the concept of supply and demand must be substantially revised and reoriented when applied to labor markets.

A list of the labor's distinctive characteristics is given in the accompanying table. As we go through the course, covering the three main areas of supply, demand and wage structure in turn, we shall study the effects of most of these distinctions.

Table-1: Distinctive characteristics of labor from other commodities

S. No.	Aspect of Labor	Explanations & Examples
1	Labor is a factor of production, not a final product.	Unlike most goods which households buy, labor is one of the few goods they sell.
2	Like capital, labor is a flow of services attached to a stock of "equipment".	The "stock" in this case is the worker and the skills he/she possesses. The "flow" is the right to use it for a period of time.
3	Unlike capital, the "stock" cannot be bought and sold.	Slavery is prohibited; For various reasons, people can't sell "shares" in themselves, for example to finance education
4	Labor is a very heterogeneous commodity	-Workers are differentiated by type of skill, amount of skill, demographic characteristics.
5	The quality of labor services being supplied is often hard to measure.	-workers may simply "shirk"; poor management decisions may not be apparent for years
6	Sometimes the demanders and/or suppliers of labor have considerable monopoly power.	-employers' associations, company towns, other Monopsonists; unions; -search costs, relationship-specific skills and bilateral monopoly.
7	Labor markets are highly regulated; the exchange of labor is both highly taxed and subsidized	income and payroll taxes; income support programs; workplace safety legislation; immigration policy; industrial relations legislation; affirmative action, comparable worth

1.6. CHAPTER SUMMARY

Labor economics is primarily concerned with the behavior of employers and employees in response to the general incentives of wages, prices, profits, and non pecuniary aspects of the employment relationship

While the old study of labor was highly descriptive, the modern study is more of an applied micro and macro theory.

Like all other markets, labor market has its own sellers-employees and buyers-employers.

The unique characteristic of labor market is inseparability (on the supply side) and indirect demand (on the demand side) of labor service.

1.7. SELF TEST EXERCISE

Dear student! Now it is your turn to reflect the important issues presented above. The following questions are designed to evaluate the extent to which you understood the main points discussed in this chapter. You are strongly advised to answer all of them. If you encounter challenges in answering them, you are strongly advised to refer back to the note provided in this chapter.

What are the central objectives of labor economics? What about that of labor market?

Does labor market really a market? Does it have characteristics of market?

What makes labor market different from commodity market?

Mention at least five non wage factors that influence labor supply.

Discuss how the non wage factors influence labor supply.

“Demand for all labor service is a derived demand” do you agree? Explain.

CHAPTER TWO: THE THEORY & APPLICATIONS OF LABOR SUPPLY

2.1 INTRODUCTION

Overview:

Dear student! From the previous chapter, you have got an overview of the concern of labor economics and the peculiar characteristic of labor market. In this and next chapter, we will decompose the agents of labor market and separately study how they make decision regarding the sell and buy of labor service. Labor market has two main actors: employee (supplier) and employer (buyer). Now we will begin our study with the theory and application of labor supply.

Chapter Objective:

- understand the basic concepts and theories of labor supply,
- identify the major factors that affect the labor supply and activity rate,
- able to measure the activity rate and labor supply of a given economy,
- point out the peculiarities and problems of Ethiopian labor supply,
- learn the basic model and applications of individual labor supply,
- critically evaluate the economics of fertility and migration,

Chapter Content:

- Basic concepts and measurements of labor supply
- The short run theory of labor supply
- Labor supply in the long run
 - Demographic changes
 - Migration
- Chapter Summary
- Self Test Exercise

2.2 BASIC CONCEPTS & MEASUREMENTS OF LABOR SUPPLY

2.2.1 Basic Concept of Labor Supply

Dear student! I hope you can easily define the term supply. But how do you apply that concept to the labor service? Please, write your answer on the space provided below.

Good! Compare your answer with the definition given below.

Definition: Labor supply is the term used to describe the human input in to the production process. It describes the supply of that factor of production which results from the activity of individuals.

2.2.2 Measurements of Labor Supply

Dear student! How do you think economists measure labor supply of a given economy? Please, write your answer on the space provided below.

Good! Compare your answer with the explanation given below.

The concepts and measurements of labor supply is one of the problem areas and probably the most active area of the labor economics. Although a “*head count*” or the number of people are sometimes used to measure labor supply, it does not convey the notion of engagement in economically productive activities, which is implied by the concept of labor supply – because it might include even under-age children. The important difference of countries of high people and low economic performance and low population but high economic performance is not made by population size, but the quality or productivity of the working population.

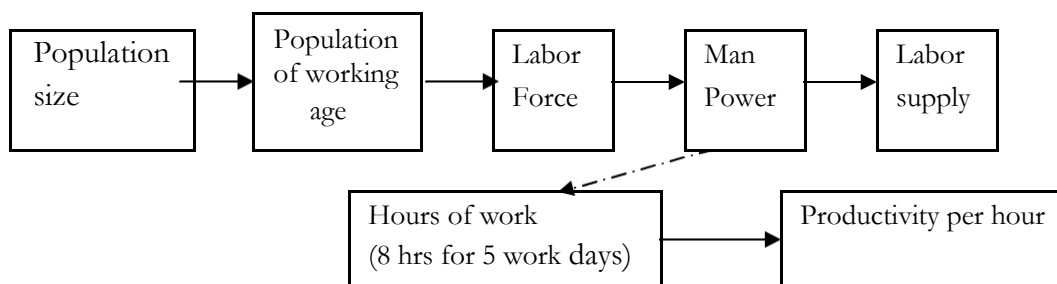
Counting only people of *working age category* improves the measurement of labor supply. The working age category excludes under age children, retired people and over-age adults. But this

classification has defects in the sense that it includes even currently inactive groups like disabled people and college student etc. Yet, some think that “productivity” is a key element of the concept of labor supply and imparted by the notion of “labor force”.

Labor force is an improvement in measuring labor supply over the crude head count approach. But the labor force does not bring clearly the relation (linkage) with output. Even some think that the attributes of “productiveness” in labor supply is conveyed by the notion of *skill, education, experience, etc* which are contained in the concept of *manpower*. Manpower contains the essential elements of labor supply such as education, skill training, experience etc. and hence it is a better approximation of labor supply. We cannot have an ideal measure of labor supply but as an alternative, the most appropriate measure (approximate) of labor supply is manpower.

Clearly there are many ways (alternative methods) of measuring labor supply. But a disadvantage of having many measures is that unless standards are set, labor supply estimates from various time and places may not be comparable, although we may use the advantage of checking on the accuracy and consistence of measurement.

According to the labor force approach labor supply is measured by the product of labor force and its activity rate. Estimates of labor force and its activity rate is obtained by sample survey or population census or based on the concept of current economic status of the work force. (That is, based on the economic activity of the labor force during the reference period.)



Note that the labor force estimation method used earlier was based on the concept of *gainful occupation and gainfully occupied population*.

Dear student! Can you see any definite procedure of labor force estimation? Please, write your answer on the space provided below.

Good! Compare your answer with the explanation given below.

The labor force estimation procedure (based on the activity principle) involves three step or stages.

First: *the working age population is defined and measured.*

By convention, which varies from country to country and set temporally, this class ranges from years of 14/ 15 to 65. But for a country like Ethiopia, the lowest age limit of 14 is not rational because even a boy with age of 8 is active participant in the economy; Example he may look after sheep. But in advanced countries it gives sense because they do have both strong legislation of child labor and favorable economic conditions.

In advanced countries like USA, the age of retirement is the time where people begin life; they subscribe to one or more security agency during their working age; then after retirement they will be paid back. For such countries, it is an age of enjoyment. But in LDCs, although retirement is forced where public work dominates, age of retirement is not really an end to work: rather it is an age where people become active and more productive (because of experience etc).

Second: *the economically active population of working age or labor force is defined and measured.*

The labor force is grouped into two: employed and unemployed.

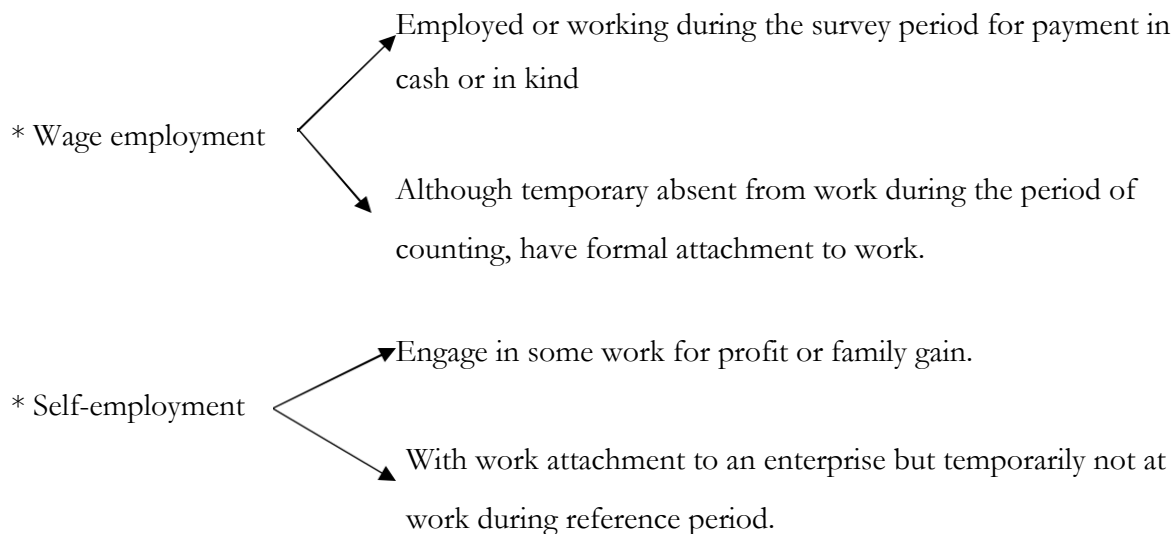
$$\Rightarrow \text{Labor force} = \text{employed} + \text{unemployed working age population}$$

Dear student! What do we mean by employment? Whom shall we consider as employed? Please, write your answer on the space provided below.

Good! Compare your answer with the explanation given below.

According to International Labor Organization (ILO) convention, the concept of employment refers to engagement in certain types of economic activities during the short reference period (day, week, month, etc.)

*The **employed** are all persons in the labor force who, during the reference period, performed some work (at least for an hour) in wage or in self-employment.*



The **unemployed** consist of the working age population but during the reference period are “without work”, “currently available for work” and are “seeking work” According to ILO convention, these three criteria should be met simultaneously for the individual to be counted as unemployed. Detail explanation on unemployment will be given in chapter seven.

Third: *identification and measurement of the population that is not in the labor force.*

Those “not in the labor force” constitutes economically inactive population. It includes inactive labor force and the under-school-age children. The *not economically active labor force* includes students, home makers, and persons of working age suffering from infirmity or disablement. In many cases, the inactive labor force is measured as a “residual” and this procedure does not permit the demographic and economic analysis of the economically inactive labor force

In general labor supply could be whichever you like: working age population, labor force, employed, etc. However, variables like efforts of job, productivity, etc are the true measure of

labor supply. Note that the reference period is important to measure the labor supply: the shorter the reference periods the more credible the statistics is.

Dear student! What do you think are the factors that affect the aggregate of labor services available to a society? Please, write your answer on the space provided below.

Good! Compare your answer with the explanation given below.

For the economy as a whole, the concept of labor supply has many dimensions. The aggregate of labor services available to a society depends on:

- the size and demographic compositions of the population, which in turn depends on births, deaths, and net immigrations;
- the labor force participation rate: i.e. the percentage of working age population which is actually working or seeking work;
- the number of hours worked per week or year; and
- the quality of the labor force.

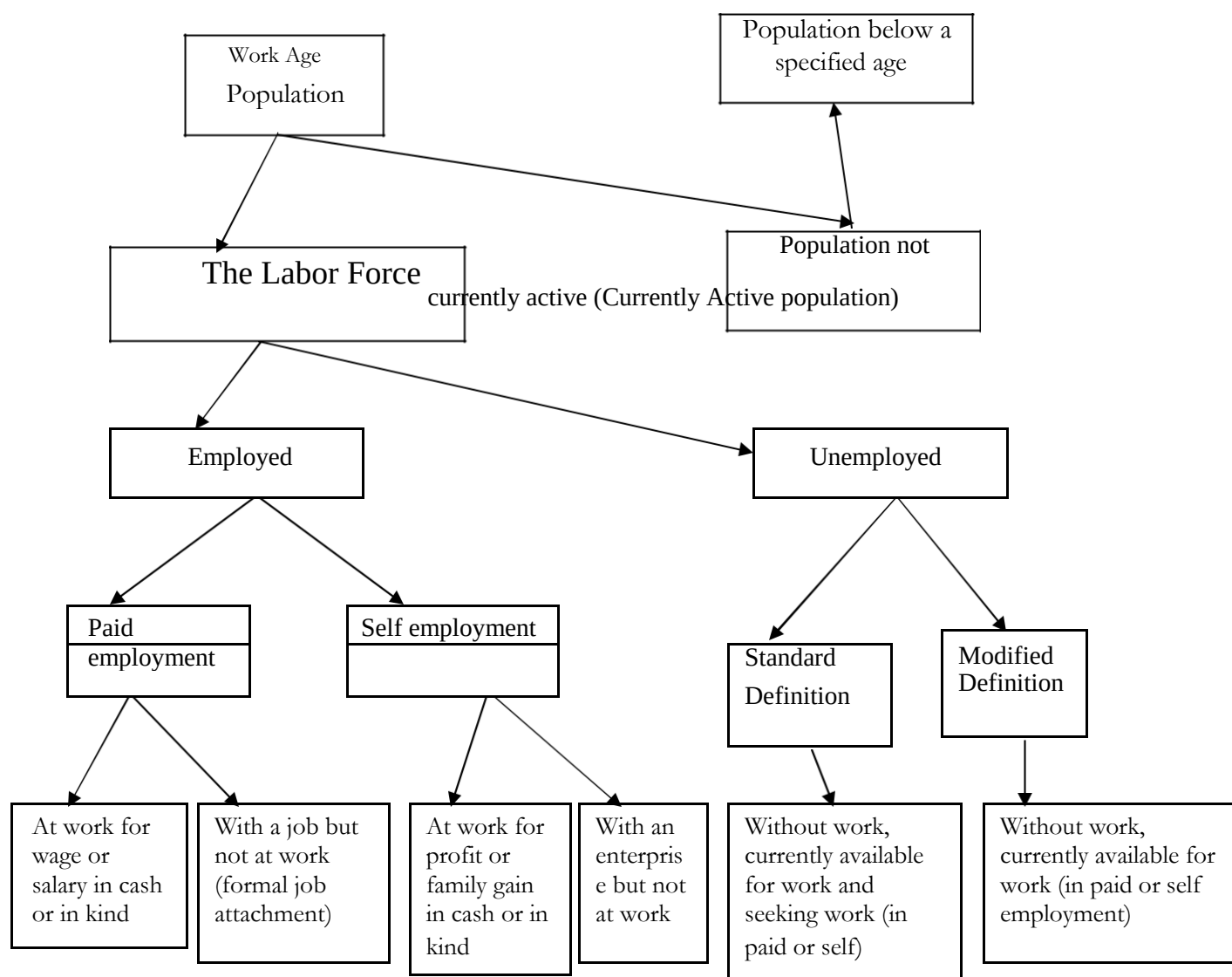


Fig. 2.1 Labor supply framework

Activity rate

Dear student! What does activity rate mean? And what is its relation to labor force? Please, write your answer on the space provided below.

Good! Compare your answer with the explanation given below.

Activity rate, also called participation rate, measures the extent of involvement in economic activities, or the participation in the production and distribution of goods and services. The activity status of an individual is determined by what the individual is doing during the reference period. Only if he is engaged in the production and distribution of economic goods & services will he be counted as economically active or currently active population or the labor force.

labor force

$$\text{Activity Rate} = \frac{\text{working age population}}{\text{Labor force} = \text{employed} + \text{unemployed}} \times 100$$

$$= \text{actual labor force}$$

$$\text{Working age population} = \frac{\text{employed} + \text{unemployed (but actively seeking job)}}{\text{economically inactive working age population}}$$

$$\text{potential labor force}$$

$$\text{age eligible population}$$

$$\longrightarrow \text{LFPR} = \frac{\text{Actual labor force}}{\text{Potential labor force}} \times 100$$

Potential labor force = total population less (young people under 16 years of age and people who are institutionalized). Examples of institutionalized people are those in penal or mental institutions, nursing homes and so on.

Dear student! Do the above two measures yield the same result? Definitely! The two measures are exactly the same.

Note that the activity rate can be computed for the total population or for any sub- groups (male, female, urban, rural, regions, age group etc). But it should be possible to differentiate all activities in to the two mutually exclusive categories of *economic activities* and *non- economic activities* (basic assumption in labor force estimation).

**It is only the engagement in “economic activities” that qualifies individuals to be counted in to the labor force or economically active labor force.*

Economic activity refers to all market production. It excludes unpaid activities such unpaid domestic activities and volunteer community service (by convention). In subsistent economies, however, there are non – marketable productions that the national income account often fails to register but the exclusion of it from economic activity leads to erroneous estimate of labor supply.

2.2.3 Factors Affecting Activity Rates

Dear student! What do you think are the factors that affect the activity rate of an individual? Please, write your answer on the space provided below.

Good! Compare your answer with the explanation given below.

Although we have a lot of factors that affect the participation rate of a given population the most powerful are the individual's job attachment and the business cycle. Below is the explanation for both of them.

a. Job attachment

Evidences show that extent of *job attachment* is not evenly distributed in the population.

Based on the nature of their job attachment, workers may be grouped as:

Primary workers: maintain permanent attachment to the labor force until retirement. In spite of small changes in the wage rate and working conditions, they tend to remain in the labor force as employed or unemployed person. Their behavior has a stabilizing influence on employment levels during period of economic down turn, in that the rate of employment

decline would be less than would be the case if workers left their jobs when the wage rate drops. Male household heads are the archetypical primary workers.

Secondary workers: since they have *highly valued options to market work*, they lack labor force attachment to the same degree as primary workers. The income differential between market work and non market work will have to be raised significantly to induce their increased participation in market work.

Examples: - married women with children: household work ∇ s market work;
student of working age: going to school ∇ s earn the income;
elderly people past the retirement age: leisure ∇ s market work

All these three groups don't have permanent attachment to the Labor Force.

Therefore we can conclude that *for the same age and sex group* primary workers have relatively higher labor force participation rates than secondary workers.

Business cycle

Labor force participation rate, whether for primary or secondary workers, are also affected by the business cycle. But the net effect on overall participation rates depends on the size of the added worker effect and the discouraged – worker effect.

Additional worker hypothesis: participation rate tend to decline during period of economic prosperity and increase during economic recessions, as household members (particularly secondary workers) leave and enter the labor market, respectively, to maintain family income. ☞ Labor force participation rate move counter-cyclically and hence tend to stabilize employment.

Discouraged worker hypothesis: during a recession some unemployed workers become so pessimistic about finding a job with an acceptable wage rate that they cease to actively seek employment and there by actively become non participants. The fall in real wages and family incomes during economic recession results in greater job cuts as potential work force is deterred from entering labor market because they “believe there is no jobs for them”

Dear student! Whether the discouraged worker effect or the added worker effect is dominant is an important policy question. Furthermore, there are clear differences in male and female participation rates, between different cultures, different levels of development, different social classes etc that are clearly brought out by less aggregated studies.

2.2.4 Limitations of the Estimated Labor Supply

Dear student! Can you point out the major drawbacks of labor supply estimation technique discussed above? Please, write your answer on the space provided below.

Good! Compare your answer with the explanation given below.

Like the concept and measurement of labor supply, even the estimate provided by the approach causes many problems. Reasons why it fails to achieve a wholly satisfactory approximation of labor supply include:

The concept of labor supply encompasses notions which go beyond the number of people in the workforce like *supply of hours of work*, *effort on the job*, *labor commitment etc* which the activity frame work fails to include.

It is difficult to identify and measure comprehensively the level of economic activities which the labor force approach uses as criteria. The problem is more serious in the under developed or subsistent economies where a large portion of the production is non – marketable, labor market are disorganized, labor force is largely self or family employed, and multiple jobs not one “primary jobs” is common.

There are many cases where treatment by a standard procedures or criteria set is not always possible e.g.- it is difficult including in the labor force cases like begging with services, seeking only specific job, etc

The simple method of counting into the labor force individuals “who are able to work and either are working, temporarily absent from work (with job commitment) or actively seeking work” is not easy to apply in all cases.

The reference period also affects the estimated labor supply. Example Census of short reference period conducted during the slack seasons underestimate labor supply whereas it over estimate it if it were in peak seasons.

The measurement of labor supply is difficult when the frequency of economic status change is high; i.e. it overestimate or underestimate if large proportions of the labor force are in and out of the labor force count too frequently.

Dear student! It is worth mentioning that the labor force approach of estimating labor supply, despite all these limitations, is a popular one. As a result, it is widely recommended that rather than abandoning, it should be refined or improved by using complementary method of estimation. Time-use surveys, labor efficiency approaches, etc can supplement the labor force frame work to produce a relatively more efficient measure of labor supply than is provided by the pure activity method.

2.2.5 The Ethiopian Case

Demographic surveys in Ethiopia are of recent origin. However, guess estimates of population size were dates back to 1930. Furthermore, sample survey (excluding Eritrea, Bale, Ogaden, and the nomadic frontier regions) have been attempted in 1960, 1971, 1974. A comprehensive population and housing census was first conducted in 1984. By then, Ethiopian population (including Eritrea) was 42.6 million.

The activity of collecting and announcing statistics on national labor force survey (including national census) is performed by the Ethiopian Central Statistics Agency. The major labor market indicators collected and organized by the agency are the labor force, activity rate, inactivity rate, employment to population ratio, employment status, unemployment rate, duration of unemployment. The following are the descriptions of the major labor market indicators used by CSA.

Economically active population/the labor force: The economically active population comprises the population aged ten years and above that furnishes labor to the economy, that is employed and unemployed population. It is measured using long reference period (i.e.; during the last 12 months prior to the date of interview) and short reference period (i.e.; during the last 7 days prior to the date of interview). According to the 2005 national labor force survey, the size of the economically active population of the country as measured in the 12 months prior to the survey was 32,158,392, while the economically active population in the last 7 days (also termed as the labor force) is 33,088,793.

Activity rate of the population: Economic activity rate (labor force participation rate) is calculated by dividing number of persons in the labor force as a percentage of the working-age

population where the labor force is the sum of the number of persons employed and the number unemployed. The 2005 national labor force survey data reveals an activity rate of 80.7 percent for the last 7 days and 78.4 percent during the last 12 months.

Inactivity rate: The inactivity rate is the proportion of the population that is not in the labor force. When added together, the inactivity rate and the labor force participation rate will sum to 100 per cent. According to the 2005 national labor force survey, about 19.3 percent were inactive population. The proportion of not economically active population was higher (42.3 percent) in urban areas as compared to rural areas (15.8 percent).

Employment to population ratio: Employment-to-Population Ratio provides information on the extent to which the population is engaged in productive labor market activity. Employment to Population Ratio is calculated as a percentage of total employed to that of the total working age population. A high ratio means that a large proportion of an economy's population is employed, while a low ratio means that a large share of the population is not involved directly in productive market activities, because they are either unemployed (more likely) or out of the labor force altogether.

The Employment to Population Ratio for the country, according to the 2005 national labor force survey, is reported to be 76.7 percent. This means about 77.0 percent of the total population of the country aged 10 years and over were working during the reference period. The employment to population ratio for rural and urban areas is 80.2 and 50.2 per cent, respectively.

Employment status: During the 2005 national labor force survey period, 50.3 and 40.9 percent of the employed population aged 10 years and above of the country were unpaid family workers and self employed (own account workers), respectively. The paid employee altogether constituted only about 8.0 percent of the total working population. In rural areas, the percentages of the unpaid family workers make up 54.6 percent. Higher proportion of paid employees (42.8 percent) was found in urban areas and small proportion (3.6 percent) in rural areas.

Unemployment rate: The overall unemployment rate for a country is a widely used measure of its unutilized labor supply. Though, the unemployment rate may be considered the single, most

informative labor market indicator reflecting the general performance of the economy as a whole, it should not be interpreted as a measure of economic hardship or of well-being. The unemployment rate simply tells us the proportion of the labor force that does not have a job but is available to work.

The survey result reveals that in March 2005, unemployment rate in urban areas of the country is 20.6 percent and while unemployment rate for rural areas is only 2.6 percent. In 1994 Population and Housing Census, the urban unemployment rate was 22 percent and then increased to 26.4 percent in 1999 National Labor Force Survey (CSA, 1997, 2000). The unemployment rate as registered in the Urban Biannual Employment and Unemployment surveys of October 2003 and April 2004 were 26.2 percent and 22.9 percent, respectively. In this survey i.e., in March 2005 National Labor Force Survey (NLFS), the rate declined to 20.6 percent. Decline in unemployment could occur either due to creation of jobs or shift from unemployment to inactive status.

Duration of unemployment: According to the 2005 national labor force survey, the majority i.e. (52.3 percent) of the unemployed persons have been without work for 0-6 months. The data reveals also 22.8 percent and 8.2 percent of unemployed urban population remained jobless for 7-12 months and 13-24 months, respectively. The proportion of unemployed person with previous work experience is higher in rural areas (68.6 percent) than that of urban areas (38.5 percent).

Dear student! What do you think of Ethiopian activity rate? Do you think that we are workaholic? Please, write your answer on the space provided below.

Good! Compare your answer with the explanation given below.

The 1984 census shows a high participation rate (46%) by the lower age group (10-14), and a slowly declining participation rate reaching the level of 53% for those ages 70 and above. The participation rate reaches its maximum level (82%) for the age group 45-50.

Table-2: Activity of Rates of Total Population by Sex and Location (1984 Census)

Age Group	Aggregate Activity Rate	Activity Rate by sex		Activity Rate by location	
		Male	Female	Rural	Urban
10-14	45.6	47.5	43.1	52.8	11.4
15-19	59.3	63.6	54.9	66.6	28.7
20-24	69.7	80.6	60.1	72.4	54.5
25- 29	75.2	94.2	60.8	77.5	59.8
30 – 34	76.6	96.6	60.8	79.2	62.7
35 -39	79.2	97.6	61.8	82.0	63.4
40 – 44	79.9	97.2	63.1	81.6	67.9
45 -49	81.6	97.4	63.5	83.7	68.0
50 -54	77.4	95.4	61.3	80.1	58.8
55 -59	78.1	94.2	59.4	82.2	53.9
60 -64	72.2	91.5	53.2	75.3	48.5
65 -69	71.5	89.3	49.0	75.9	45.0
70+	53.1	70.9	33.3	56.1	30.4

The 1999 estimate for labor market indicators reveal similar attributes to that of 2004 census. The activity rate tend to increase across the age group up to 35-39 age group and then begun to decline continuously. Similar to the 1984 census, the 1999 data shows a high participation rate (45 percent) by the lower age group (10-14). The participation rate reaches its maximum level (86.2 percent) for the age group 35-39 and reaches the minimum level of 47.3 percent for those ages 65+ and above.

Table-3: Activity of Rates of Total Population by Sex and Location (1999 estimate)

Age Group	Aggregate Activity Rate	Activity Rate by sex		Activity Rate by Location	
		male	female	urban	Rural
All ages	71.1	80.4	62.2	55.4	74.0
10 - 14	45.3	51.6	38.5	12.1	50.8
15 - 19	68.5	73.7	63.3	37.7	75.4
20 - 24	80.7	90.1	72.9	68.2	83.5
25 - 29	85.3	96.8	75.3	81.0	86.2
30 - 34	86.0	97.4	76.3	83.3	86.4
35 - 39	86.2	97.8	76.5	82.6	86.9
40 - 44	84.2	97.2	73.2	80.4	84.7
45 - 49	83.2	96.4	70.0	79.0	83.0
50 - 54	79.5	95.3	65.0	70.4	80.8
55 - 59	76.0	92.5	57.3	62.2	78.1
60 - 64	69.1	87.8	50.2	55.2	71.1
65+	47.4	64.1	26.2	36.4	49.0

Source:- Central Statistics Authority, 1999

When we compare with a typical profile of developed economy, the Ethiopian activity rates are relatively higher for each age group, and the activity rate differentials are most marked for the extreme age groups.

Factors accounting for high participation rate among youth in Ethiopia include:

- dominancy of family & self employment,
- the subsistence or traditional economy,
- low level development of social infrastructure (like child care and schools),
- absence or non implimentarity of child protective laws, and
- absence of body of law specifically developed and directed at the right and welfare of the youth in the country.

The main factors accounting for high activity rate of the elderly are:

- low wage income,
- low level of development of non wage income sources, and

the inadequacy of nontraditional social security systems (the pensions scheme for public sector employees constitutes the only social security system in the economy).

Activity rates are also differentiated across the sex groups and between urban and rural areas. The 1984 Census result show that for each age cohort, male participation rates are higher than female participation rates. Activity rate for each age group are lower in the urban than in the rural areas. Factors explaining these differentials include constricted job opportunities and the *discouraged workers effect* in the urban areas. The differential for the age cohort of 10-14 may be explained by the relatively higher school enrolment ratio in urban.

Social variables also determine participation rates for both male and female or urban and rural. It is reported that married males have higher Participation rates than unmarried males, and that married females have higher activity rates than unmarried widowed or divorced females.

2.3 THE SHORT RUN THEORY OF LABOR SUPPLY

(The Theory of Individual Labor Supply)

Dear student! From your previous studies, I hope you can distinguish between short run and long run. But it would be good to redefine the concept in the context of labor supply. The **short run** is the period in which the size of the population of working age and the skills they possess are held constant, and the **long run** is the period over which these are allowed to vary.

2.3.1 The Work–Leisure Decision: Basic Model

Dear student! How does an individual allocate his/her limited time to the unlimited wants? What determines how long to stay on job? Please, write your answer on the space provided below.

Good! Compare your answer with the explanation given below.

An individual having a fixed amount of time available must decide how that time should be allocated among work (labor time activity) and leisure (non- labor market activity). *Note that in the present context, **work** is time devoted to paying job and the term **leisure** is used here in a broad sense to include all kinds of activities for which the person does not get paid.* Example: home work, consumption time, education, rest, relaxation, etc.

Two set of information are necessary to determine the optimal distribution of an individual's time between work and leisure.

Subjective (psychological) information concerning the individual's work-leisure preferences. This information is embodied in *indifference curves*.

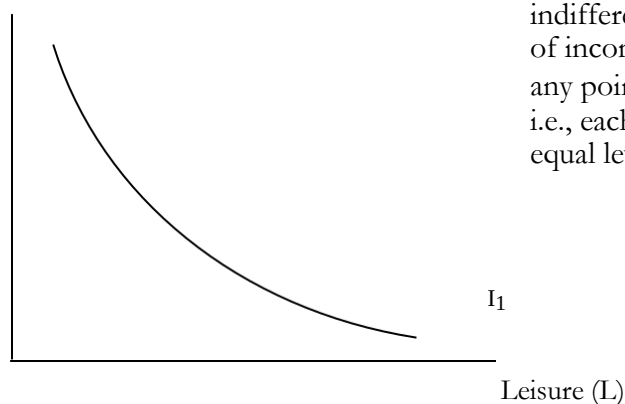
Objective (market) information, which is reflected in *budget constraints*.

Dear student! Do you remember the concept of indifference curve and budget line from your microeconomics course? How can that concept be applied to labor supply? Please, write your answer on the space provided below.

Good! Compare your answer with the explanation given below.

Indifference curves:

As applied to the work leisure decision, an indifference curve shows the various combinations of real income and leisure time which will yield some specific level of utility or satisfaction to the individual.



According to the law of indifference curves each combination of income and leisure designated by any point on I_1 is equally satisfactory; i.e., each point on the curve yields equal level of utility to the individual.

Fig. 2. 2. A well behaved indifference curve

Indifference curves embody several silent properties.

Negative slope

Never cross each other.

Convex to the origin  the absolute value of the curve's slope diminishes as we move down the curve. *Slope of indifference curve shows individuals subjective willingness to substitute between leisure and income¹*

On the indifference map, the one to the right side designates higher work-leisure preferences

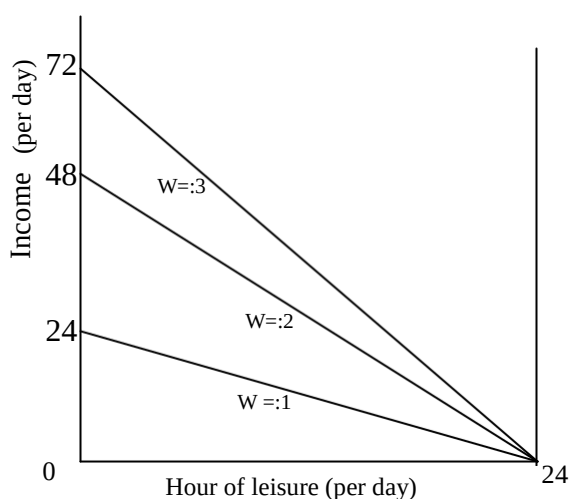
Budget Constraint:

The individual is constrained by the amount of money income which is available to him. In constructing this budget line, the following assumptions are important.

an individual's only source of money income is from work. $\Rightarrow$ no non labor income, no accumulated savings to draw on, no borrowings

an individual is a wage rate taker. $\Rightarrow$ wage rate is fixed and an individual can't alter.

Hence, the budget (wage) constraint line is the line which shows all the various combinations of income (good) and leisure which a worker might realize or obtain, given the wage rate.



Note: If the going wage rate is \$1, we can draw a budget line from 24 on the vertical income axis. Given the \$1 wage rate, at the extremes, an individual could attain 24 hours of leisure and no real income or 24 of real income and no leisure.

But the line connecting these two points reveals all other attainable options. E.g.: \$8 of real income & 16 hrs of leisure, \$12 of real income and 12 hrs of leisure and so forth. Note that Slope of the line is 1 (in absolute term) reflecting real wage of \$1.

Fig -2. 3: Budget constraints corresponding to different wage rates

Note that the individual's willingness to substitute leisure for income or vice versa varies with the amounts of leisure and income initially possessed. In more technical terms, the slope of the indifference curve is measured by the marginal rate of substitution of leisure for income (MRS_{LY}). The MRS_{LY} is the amount of income one must give up to compensate for the gain of 1 more unit (hour) of leisure.

2.3.2 Utility Maximization

Dear student! You may recall from your microeconomics lesson that the individual's optimal or utility maximizing position can be determined by bringing together the subjective preferences embodied in the indifference curve and the objective market information contained in each budget line. Note that the further the indifference curve from the origin, the greater the person's total utility. Therefore, an individual will maximize total utility by attaining the highest possible indifference curve.

Assumes that the wage rate is \$2 and the resulting budget constraint is HW. Given this budget constraints and indifference map, the highest attainable level of utility is at u_1 where the budget line is tangent to the indifference curve. At this point the individual will choose to work 8 hour earning a daily income of \$16 and enjoying 16 hours of leisure.

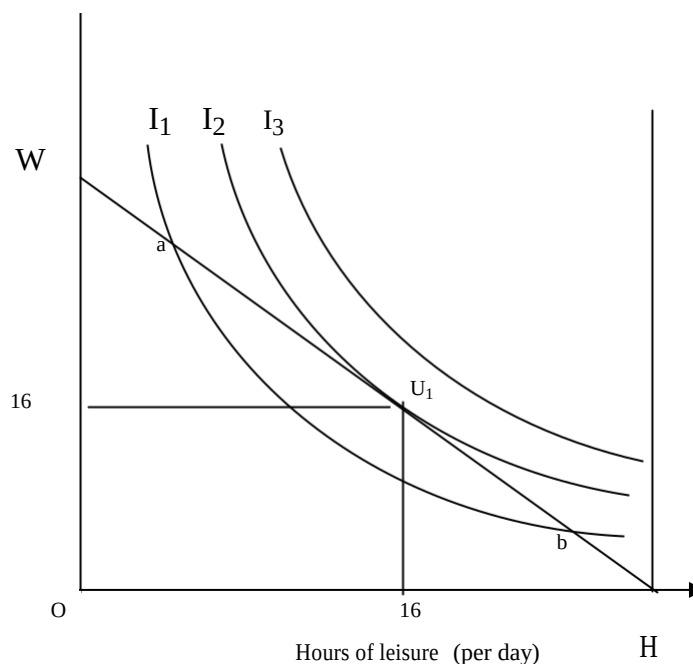


Fig. 2. 4. Determination of equilibrium level of leisure and income

It is important to recognize that at this optimal position, the individual and the market are in agreement as to the relative worth of leisure and income at the margin. At U_1 the slope of indifference curve I_2 and the slope of the budget line are equal. The individual's preferences are

such that he/she is subjectively willing to substitute leisure for income at precisely the same exchange rate as the objective information of the labor market requires.

The optimal work leisure position is achieved where MRS_{LY} (slope of the indifference curve) is equal to the wage rate (the slope of the budget line). By definition, these slopes are only equal at the point of tangency.

Dear student! Why points a & b are not optimal? Please, write your answer on the space provided below.

Good! Compare your answer with the explanation given below.

At **b**, the indifference curve I_1 is steeper than the budget line; i.e., MRS_{LY} is greater than the wage rate. Example, MRS_{LY} might be 4 while the wage rate is \$2. What does this mean? It indicates that an additional hour of leisure is worth 4 to this individual but that she will have to sacrifice only \$2 of income to obtain that extra hour of leisure. Acquiring something worth \$4 at the cost of something worth \$2 is clearly a beneficial exchange. Thus, “trading” income (by working fewer hours) will be beneficial to him/her. These trades in effect move him/her down budget line HW and on to a successively higher indifference curves. At point u_1 all such trades are exhausted and this individual and the market are in agreement as to the value of work (income) and leisure at the margin

Note that at point b the individual will feel *over employed* in that he/she can increase him/her total utility by working fewer hours; that is, by moving to a point such as u_1 where she has more leisure and less income. The situation is just the opposite at point **a**.

The effect of wage rate change on labor supply

Dear student! How does a change in wage rate affect the labor supply? Do you remember the concept of substitution and income effects from your microeconomics course? How can that concept be applied to labor supply? Please, write your answer on the space provided below.

Good! Compare your answer with the explanation given below.

What will be the work leisure decision of an individual as the wage rate changes (increases)? Will the individual choose to work more or fewer hours as the wage rate increases? **It depends.** The effect of a wage rate change on labor supply (or hours of work) is decomposable into a *substitution* and *income effect*. When the wage rate changes, these two effects tend to alter one's utility maximizing position.

Income effect: the income effect refers to the change in the desired hours of work resulting

from a change in income, holding the wage rate constant $\frac{\Delta H}{\Delta Y} \Big|_{\bar{W}}$ where: H= hours of work, Y= income, $\bar{W}$ = constant wages). The income effect of a wage increase is found by isolating the increase in work resulting solely from the increase in potential income per hour of work, as if the price of leisure (the wage rate.) A wage rate increase means that a larger money income is obtained from a given number of hours of work. We would expect an individual to use a part of this enhanced income to buy goods and service. But if we make a reasonable assumption that leisure is a normal good [a good of which more is consumed as income rises], then we can expect that a part of one's expended income might be used to 'purchase' leisure. Consumers do not derive utility from goods alone, but from combination of goods and non market time (leisure).

Dear student! How does one purchase leisure or non market time? In a unique way: *by working fewer hours*. This means that when wage rate rises and leisure is a normal good, the income effect results in a reduction in the desired number of hours.

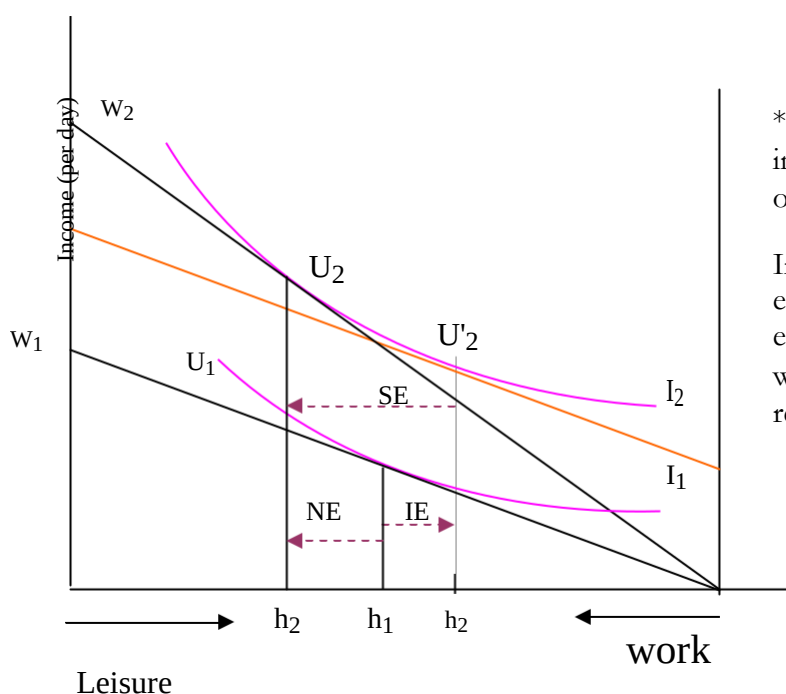
Substitution effect: The substitution effect indicates the change in the desired hours of work

resulting from a change in the wage rate, keeping income constant $\frac{\Delta H}{\Delta W} \Big|_Y$

When wage rate increases the relative price of leisure is altered. Specifically, an increase in the wage rate raises the 'price' or opportunity cost of leisure. Because of higher wage rate, one must now forego more income for each hour of leisure consumed. The basic theory of economic choice implies that an individual will purchase less of any normal good when it becomes relatively more expensive. In brief, the higher price of leisure prompts one to consume less leisure (or to work higher hours in the market).

The substitution effect merely tells us that when wage rates rise and leisure become more expensive, it is reasonable to substitute work for leisure. For a wage increase, the substitution effect results in the person desiring to work more hours.

Net effect: The overall effect of an increase in the wage rate on the number of hours an individual wants to work depends on the relative magnitudes of these two effects. Economic theory does not predict the net outcome. If the substitution effect dominates the income effect, the individual will choose to work more hours when the wage rate rises. But if the income effect is larger than the substitution effect, a wage increase will prompt the individual to work fewer hours. (For detail explanation on how the following graph is drawn please refer your microeconomics notes.)



*This figure depicts the income and substitution effect of wage rate increase.

In this instance, the substitution effect outweighs the income effect, and the worker chooses to work h_1 h_2 additional hours as a result of higher wage rate.

Fig. 2.5. Demonstration of the income and substitution effect of wage rate increase.

Table: 2. 2. Summary of the implications of the relative size of the substitution and income effect for the desired hours of work.

Size of effect	Impact on hours of work		Slope labor supply curve
	a) wage rate increase	b) wage rate decrease	
Substitution effect exceeds income effect	Increase	Decrease	Positive
Income effect equal substitution effect	No change	No change	Vertical
Income effect exceeds substitution	Decrease	Increase	Negative

The back ward bending labor supply curve

Dear student! If you keep changing the wage rate, how would a rational individual adjust his labor supply? Please, write your answer on the space provided below.

Good! Compare your answer with the explanation given below.

As the wage rate increases, the budget line rotates up along the vertical axis; i.e. the income that the individual earn increases and hence the *y intercept* increases $\Rightarrow$ the budget constraint gets steeper. From the figure below, we observe that for the wage rate increase which moves the budget line from W_1 to W_2 and changes the optimal point from U_1 to U_2 . On the horizontal axis we find that individual chooses fewer hours of leisure and more hours of work.

Similarly, the wage rate increase, which shifts the budget constraint from W_2 to W_3 , also entails more hours of work and fewer of leisure at U_3 than is the case at U_2 . But the further wage rate boost reflected by the shift of budget line from W_3 to W_4 produces an optimum level at u_4 which involves less work and more leisure than the prior optimum u_3 . Similarly the wage increase depicted by the increase in budget line from W_4 to W_5 causes a further reduction in hours of work at U_5 .

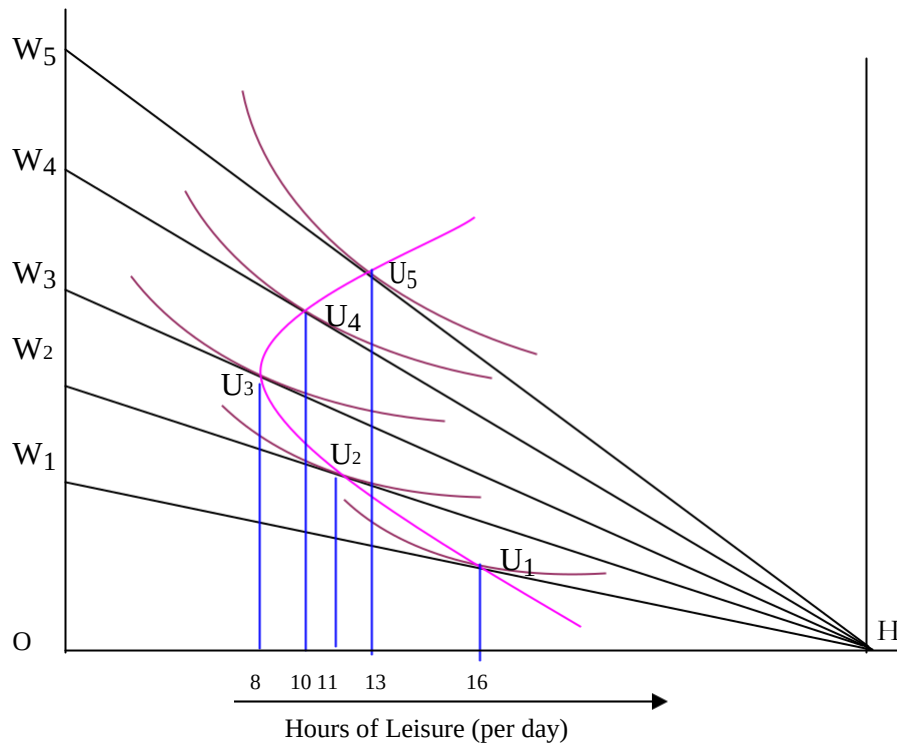


Fig. 2.6. Response of individuals toward a continuously increasing wage rate

Dear student! What does the above analysis imply to the shape of the individual labor supply curve? Please, write your answer on the space provided below.

Good! Compare your answer with the explanation given below.

This analysis suggests that for specific person, hours of work may for a time increase as wage rate rise, but beyond some point, further wage increase may lead to fewer of labor being supplied.

The labor income- leisure figure can be transformed in to a diagram which has traditional axis measuring wage rates on the vertical axis and hours of labor supplied left to right on the horizontal axis. In so doing, we find that this individual's labor supply curve is forward rising for a time and then back ward bending.

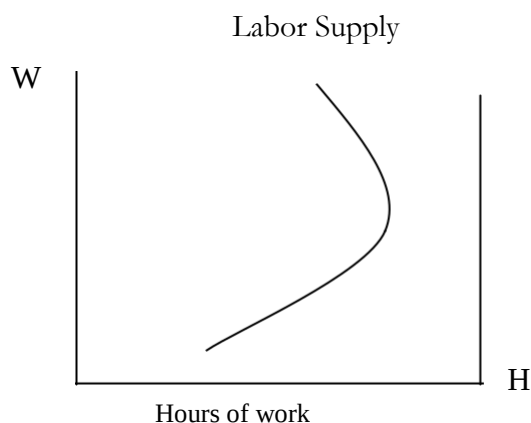


Fig. 2.7. A backward bending individual's labor supply curve

This curve is known as a *backward bending supply curve*, the forward rising portion being expected or taken for granted. We can envision an individual labor supply curve for each person in the Economy. But keep in mind that each individual's preference for work versus leisure is unique and hence the exact location, shape, and point of the backward bend of the curve vary from person to person.

Rationale for backward-bending supply curve

For the wage increase which shifts the budget line from w_1 to w_3 , the absolute value of the substitution effects must be greater than that of the income effects, yielding the forward rising segment of the labor supply curve. But further increases in the wage rate which shift the budget line from w_3 to w_5 are associated with the choice to work fewer hours. The income effects associated with these wage rate increases are greater than the substitution effects, yielding the backward bending segment of the labor supply curve.

Dear student! *What is the rationale for this reversal?* Please, write your answer on the space provided below.

Good! Compare your answer with the explanation given below.

An individual's taste for leisure and income may change over time as wage rise. It is also possible that these tastes differ between different segments of the population distinguished according to their income level. Note that point U_1 and U_2 are at position on indifference curves where the amount of leisure is higher relative to the amount of income. Since leisure is relatively abundant and income is relatively scarce, the individual is willing to give up substantial amount of leisure for an additional unit of income. That is U_1 and U_2 are located on relatively flat portion of indifference curve and hence, at these points, MRS_{LY} is small. This means that the substitution effect is large- so large that it dominates the income effect. If individuals with low level of income have a low MRS , then a rise in wage at low income level might lead to an offer of increased hours of work. The effect is that the individual's labor supply is forward raising; higher wage rates induce more hours of work.

But points U_3 , U_4 and U_5 are reached only after much leisure has been exchanged in the labor market for income. At these points, the individual has relatively larger amounts of income and relatively little leisure. This is reflected in the relative steepness of the indifference curve. In other words, MRS_{LY} is large indicating that the individual is willing to give up small amounts of leisure for an additional unit of income. This means that the substitution effect is small and in this case it is dominated by the income effect. Consequently, the labor supply curve of the individual becomes backward- bending.

In general, as we move up the income distribution the MRS_{LY} increases and beyond some level a rise in the wage rate may result in a reduction in hours of work. At low income the substitution effect might dominate while at high incomes the income effect might dominate.

Taking together these changes in tastes as the individual's income increases, or the change in tastes as we move up the income distribution, produces the backward bending labor supply curve. Note that individual's tastes are evidently of crucial importance in determining labor supply.

Now we move on to consider the way in which we measure the change in hours worked that results from changes in the wage rate.

2.3.3 Elasticity Versus Change in Labor Supply

Dear student! I hope you know the concept of elasticity. But how do you define it in the context of labor supply? Please, write your answer on the space provided below.

Good! Compare your answer with the explanation given below.

The elasticity of labor supply E_S is defined as the proportional change in the quantity of labor supplied divided by the proportional change in the wage rate. More specifically, wage elasticity of labor supply is defined as

$$E_S = \frac{\text{Percentage Change in Quantity of Labor Supply}}{\text{Percentage Change in Wage Rate}}$$

Over specific ranges of an individual's labor supply curve, the elasticity coefficient given above may be zero (perfectly inelastic), infinite (perfectly elastic), less than one (relatively inelastic), greater than one (relatively elastic), or negative (backward bending).

The elasticity will depend on the relative strengths of the income and the substitution effects generated by a wage rate change.

2.3.4 Applications

The shape of the income-leisure indifference curve and the labor supply

Dear student! What does the slope of indifference curve imply to the work-leisure decision of an individual? Please, write your answer on the space provided below.

Good! Compare your answer with the explanation given below.

A steeper indifference curve indicates a relative preference of leisure to work (or income). This implies the opportunity cost of leisure is relatively high and the individual requires high

compensation price to forego leisure consumption. Likewise, a relatively flat indifference curve implies that the individual attaches low valuation to leisure; i.e., he is prepared to work (increase labor supply) for a relatively low wage.

If the subjective evaluation of an individual to leisure is very high or the opportunity cost of leisure is high (i.e., if he prefers the leisure highly which is given by the slope of the indifference curve) the individual will not supply any labor. This occurs when the slope of the indifference curve at any point is higher than the wage rate. Under such circumstances, the labor supply is zero. The decision not to work is shown by a corner solution such as at point H in figure below.

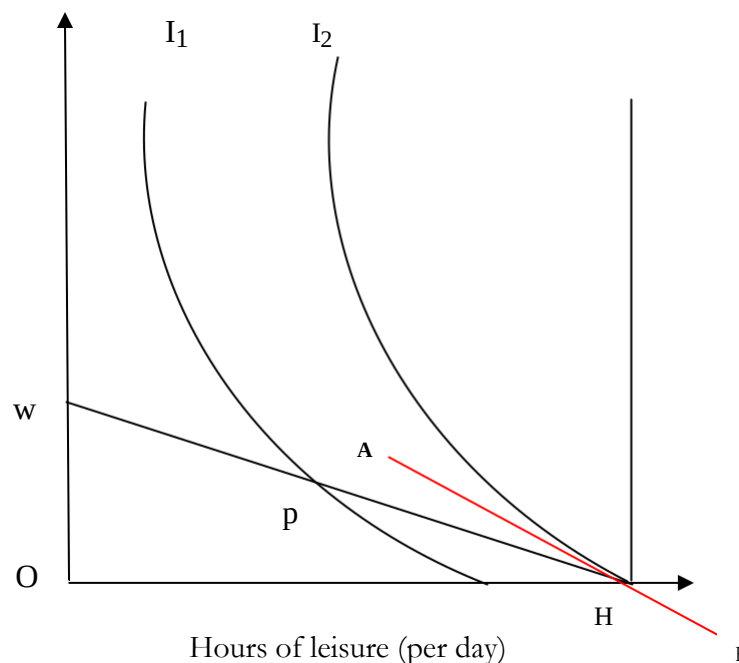


Fig. 2.8. Effect of the shape of indifference curve on labor supply

A point such as **p** is a possibility and indicates a positive supply of hours of work. But given the option of staying on a higher indifference curve, I_2 , the individual would decide not to work. Note that the corner solution does not imply that the indifference curve is tangent to the budget line at H. At point H, the slope of the indifference curve (the amount of compensation the individual seek to forego leisure) is greater than the slope of the budget line (the market wage rate).

Dear student! What would be the minimum wage that will attract the positive labor supply, then? Please, write your answer on the space provided below.

Good! Compare your answer with the explanation given below.

Since the indifference curves span the entire first quadrant, we will get an indifference curve passing through the point on the corner. Then draw a hypothetical budget line tangent to the indifference curve that passes through the corner and then measure the slope of the hypothetical budget line. (Example line AB in the above graph). The absolute value of the slope of the hypothetical budget line (AB) drawn at the corner is the smallest wage rate that attract the positive labor supply, and we call this wage rate “*reservation wage*”. Only if the market offers is marginally greater than this reservation wage will the worker supply labor under the given conditions. Reservation wage is, therefore, a minimum wage rate that induces work. *Alternatively, reservation wage is the highest wage rate at which an individual chooses not to work or, the lower wage rate at which one would decide to work. Or, it is the lowest acceptable wage rate; below this wage a person would decide not to participate in the labor force.*

The effect of non–wage incomes on hours of work

Dear student! So far we have been assuming that the consumer’s budget is only from labor market participation (or earned income only). Now let’s relax this assumption and allow him/her to have some unearned income. What would be the effect of this unearned income on individual’s labor supply? Please, write your answer on the space provided below.

Good! Compare your answer with the explanation given below.

In most market economies, individuals have *earned* (or wage) as well as *unearned* (or non wage) incomes. Depending on the position of the budget constraint and the indifference curve, this unearned income may result in reduction of the labor supply to the total withdrawal from the labor market.

Reduction in labor supply

In the figure below, the *total incomes are measured along the vertical axis and can be decomposed into wages & non wages income components.*

At Y_0 , only earned income is obtained;

At Y_1 , Unearned income of $Y_1 - Y_0 = y_1$ is obtained;

At Y_2 , Y_0 of wage and $Y_2 - Y_0$ of non wage = y_2 .

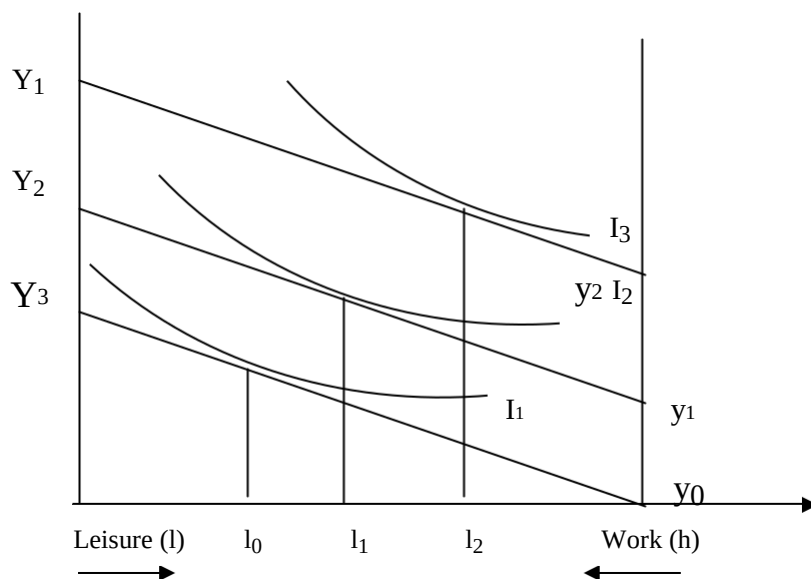


Fig. 2.9. The effect of unearned income on labor supply

Note: the wage rates (the negative of the slope of the wage line) is assumed to remain constant as wage line is shifted upwards in a parallel fashion following increase in the non – wage incomes.

The vertical distance between any two of the parallel lines measures the unearned income differentials.

$$\text{i. e. } \frac{dy}{dl} = \frac{dy_1}{dl} = \frac{dy_2}{dl} = (-)w$$

Change in the level of non wage incomes on hours of work has a pure income effect because of the above stated conditions. Since the income elasticity of normal or superior good is positive, an increase in the level of unearned income tends to increase leisure component, and therefore, reduce the hours of work (for unchanged wage rates).

Non participation

Sometimes the presence of non wage income results in total withdrawal from the labor market. This is particularly prevalent in college students and the elderly.

the case of college student.

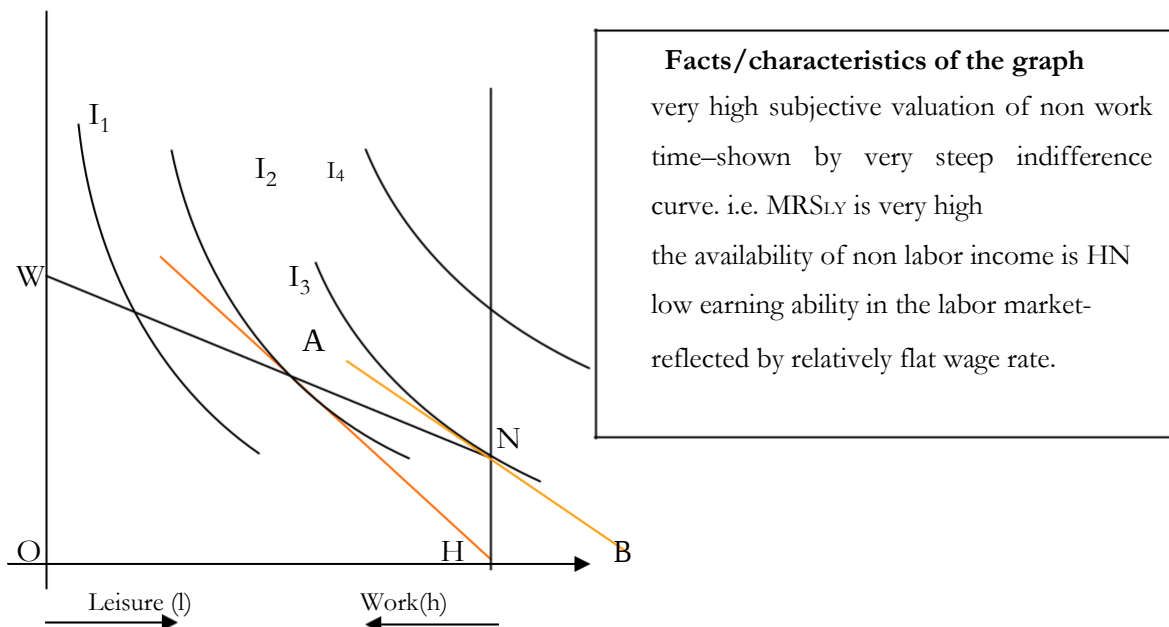


Fig. 2.10 Effect of Unearned income: non participation by the college student

Given the budget line HNW, the highest level of utility achieved is at point N where the budget constraint HNW touches I_3 . At this point the individual is not participating in the labor market because at all points within the diagram, the individual values leisure more highly at the margin than does the market.

Note that the optimal outcome at N is not a tangency position but a corner solution. In general, the three facts stated above put together the rationale for lack of participation or zero participation. For this student to participate in the labor market, a very *high* wage rate is required to overweight the expected outcome of human capital. But as shown by the line WN, the market wage rate is lower than the reservation wage of AB. Hence, the equilibrium is at N where labor supply is zero.

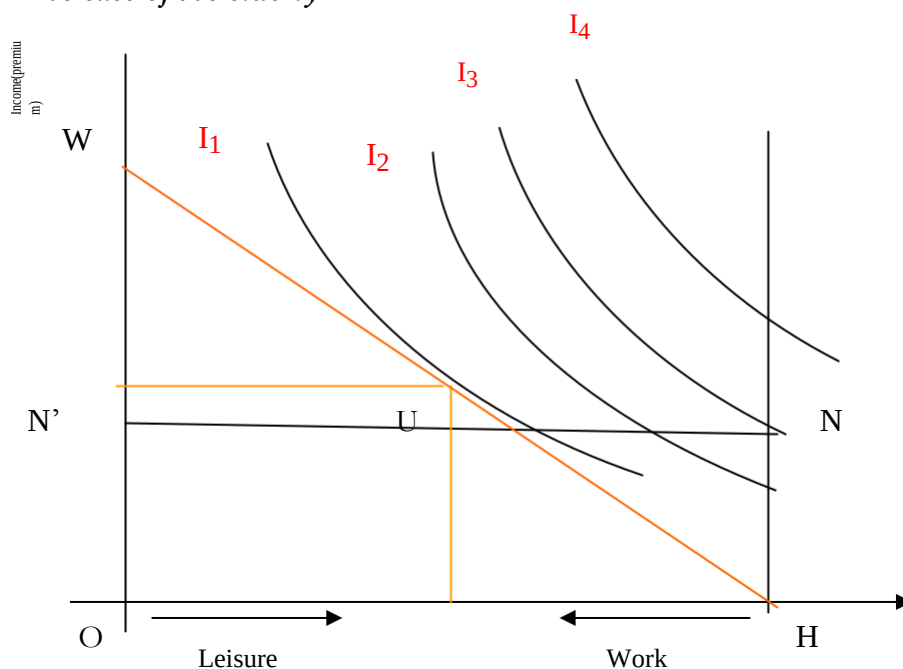
The case of the elderly

Fig. 2.11 Effect of Unearned income- non participation by the elderly

An elderly worker whose wage rate yields the budget line HW will be a labor force participant at U. When the worker reaches a complete retirement age, private or public pension of HN is available. The choice is between the budget line HW (and the associated primal position at U) or the budget line NN' (and the corner solution at point N).

Since N is associated with the higher indifference curve I_3 , N is preferred to U and hence the availability of pension induces the individual to become a non participant. i.e. it shifts ones labor supply curve left ward such that no labor is supplied at the market wage. Note that the decision to be a non participant entails a reduction in money income but a more than compensating increase in leisure. The individual is better off at N than at U even though income is reduced.

The effect of tax on labor supply

Dear student! What would be the effect of income tax on individual's labor supply decision?

Please, write your answer on the space provided below.

Good! Compare your answer with the explanation given below.

It is a day to day fact that an individual's earned income is usually subject to income tax. The imposition of tax affects the slope and possibly the position of the budget constraint facing the individual and hence affects the individual labor supply. Generally, we have two form of tax system.

Single marginal tax rate

multiple marginal tax rate

Tax (be single or multiple) may be imposed on all income levels or only on income above a certain levels. The effect of the different income tax regimes on the slope of the budget constraints facing the typical worker is shown as follows.

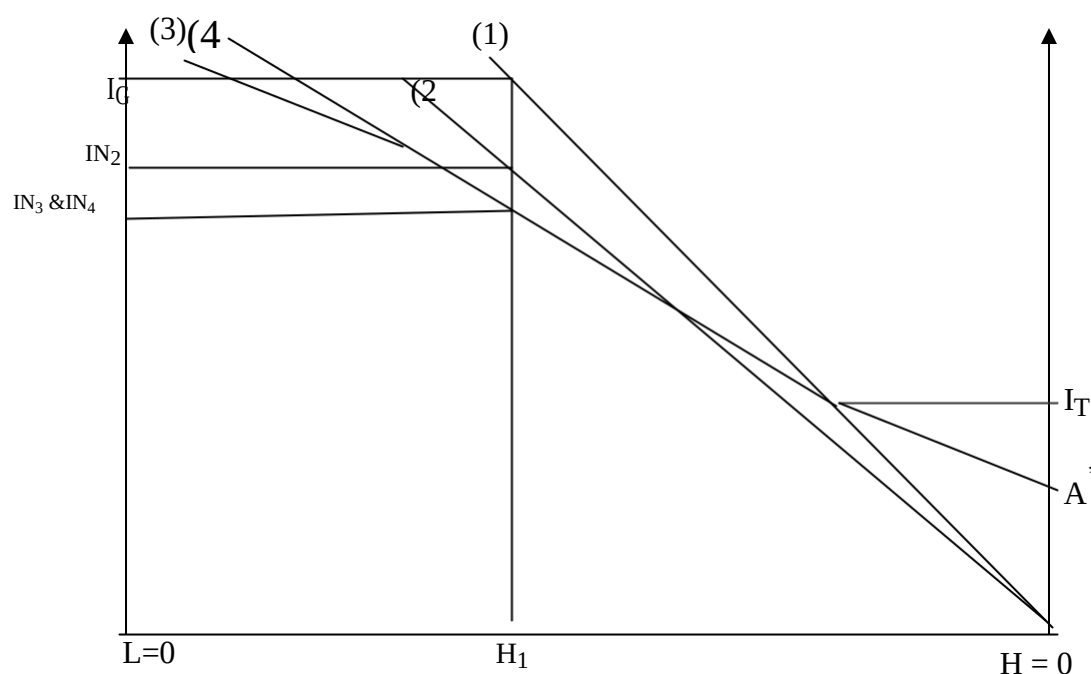


Fig. 2.12. The effect of tax rate on budget constraint

The four schedules in the figure illustrate:

(1). No income tax levied; slope = W/P

(2). Income tax rate t levied at all levels income; slope = $\frac{W}{P} (1-t)$

(3). Income tax rate t on all incomes beyond the threshold I_T slope =

$$\frac{W}{P} \frac{1}{(1-t) + A}$$

(4). A tax schedule with successively higher marginal tax rates

The amount of tax paid is given by the vertical distance between the ray reflecting the pre tax wage rate and the appropriate post tax ray. For an individual working H_1 hours, this amounts to $I_G - I_{N2}$ if taxed according to schedule (2) or $I_G - I_{N3}$ or I_{N4} if taxed according to the schedules (3) and (4) respectively.

Dear student! What might be the effect of a system with single marginal tax rate and/or of a multiple marginal rate system? Please, write your answer on the space provided below.

Good! Compare your answer with the explanation given below.

Let us see whether the applications of tax on wage income increase or decrease the hours of work. The conclusions to be made on non wage income effects of tax on hours of work are the same but ignored not to make thing complicated.

Assuming taxation is appositive function of wage income $T(Y)$

$$Y(h) = wh - T(Y)$$

$$\frac{dY}{dh} = w - \frac{dT}{dy} \frac{dy}{dh}$$

$$\frac{dY}{dh} \left(1 + \frac{dT}{dy} \right) = w$$

$$\frac{dY}{dh} = \frac{w}{1 + \frac{dT}{dy}} \implies \text{Wage rate is a function of the slope of the wage line and taxation.}$$

The marginal propensity to pay taxes (out of incremental incomes) is normally assumed to be in the range of 0 to 1. i.e. $0 \leq dT/dy \leq 1$

If $dT/dy = 0$, (no proportion of the incremental income is taken away in taxes), the slope of the wage line is w and a lump sum tax is implied. A lump sum income tax places the worker on a Lower indifference curve than before, and with wage rate unchanged and income elasticity of demand for leisure positive, it means the worker reduces leisure consumption, or increase hours of work. In this case *pure income effect* takes place and there is no substitution effect.

If $dT/dy = 1$ it means all the incremental income is taken away in taxes and at that point the wage rate is halved.

As marginal propensity to pay taxes is gradually increased from 0 to 1, the wage rate continuous to decline until it is halved. Both the income and the substitution effect would be at work. Since the imposition of tax lowers the individual's income levels, and since the income elasticity of demand for leisure is positive, the income effect would be to lower consumption of leisure (or to increase hours of work). But whether as a wage rate declines the substitution effect will more than offset the income effect the income effect and cause a net increase in the consumption of leisure or is offset by the income effect and resulting in a reduced consumption of leisure depends on the shape of income leisure indifference curve. The tax effect on labor supply depends also on the tax measure (average or marginal?) used as both have different effects on incentive to work.

Supply side economists commonly believe that tax cuts stimulate economic growth (out put expansion) and increase the incentive to work. But what effect taxes have on work incentive is an empirical issue because a cut in tax is equivalent to an increase in wages; it is shown that the effect of an increase in wage on incentive to work depends on whether the income effect is dominated by or dominates the substitution effect.

Payment system and labor supply

Dear student! Do you think that the way some one's salary is paid matters on labor supply decision? Please, write your answer on the space provided below.

Good! Compare your answer with the explanation given below.

The firm the employer requires the service of labor to enable it to produce the goods and services it wishes to sell; in turn the wage that it is prepared to pay its workers is related to the value of the output they produce. Firms manipulate the level and structure of the wages they

offer workers in order to induce them to supply the desired quantity and quality of labor. Below is an example that shows these phenomena.

Premium wages and straight time equivalents

Suppose that in a given industry a 10 hour workday (50 – hour work week) becomes common place. Does it make any difference with respect to work incentives to pay \$ 4 per hour for the first 8 hr of work and 6 per hour for an additional 2 hrs of over time **or** to pay \$4.40 per hr for each 10 hrs of work ? Since both payment yields the same daily income of \$ 44, one is inclined to conclude that it makes no difference. But, with the aid of the following figure, we find that it does make a difference. Note that the initial position is indicated by U_1 on I_1 (a tangency position) and the individual is in equilibrium earning an income of $h_1 U_1$ and working h_1 hours.

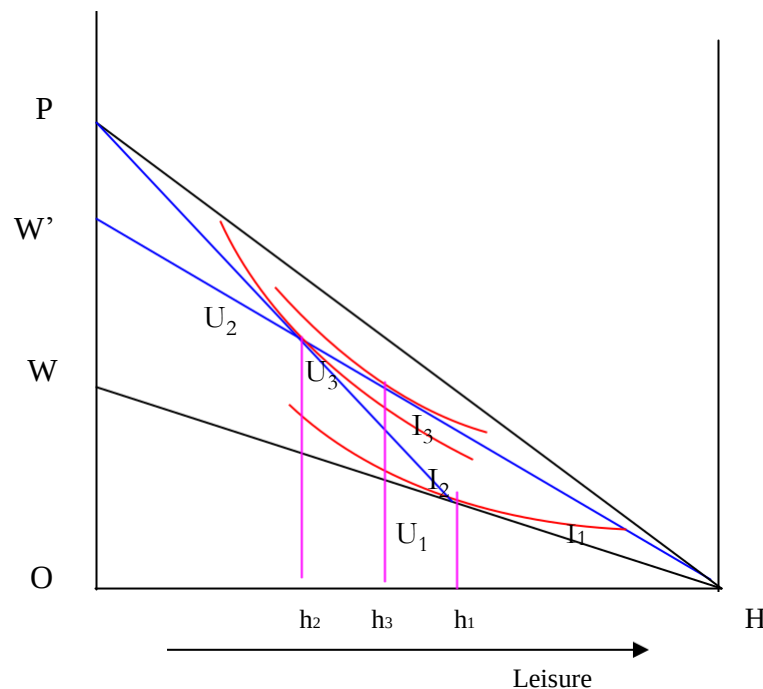


Fig. 2.14. Effect of Premium wage payment on labor supply

Dear student! Let us suppose that the employer offers additional hours of overtime work at premium pay. Consequently, the relevant wage line becomes HU_1P (not HU_1W), and the new equilibrium position is at U_2 on the higher indifference curve I_2 . The introduction of premium pay for overtime work has resulted in an increase in labor supply, $h_2 > h_1$, for the employer and improved welfare $I_2 > I_1$, for the worker.

Suppose instead of the standard work day pay rate and a premium pay for additional hours worked, the worker is given the option of earning a straight time equivalent. Now, since the straight time equivalent pay must yield the same income, $(h_2 U_2)$, to the worker for the same hours worked (h_2) as the wage line HU_1P , the straight time equivalent wage line must pass through U_2 , and is shown by HW' .

However his/her valuation of the opportunity cost of leisure at U_2 (the slope of I_2 at that point) is greater than the market rate (given by the slope of the straight-time equivalent line). The worker feels over employed when working h_2 hours under the straight time scheme. If the worker had his/her way with a straight time pay arrangement, he/she would work only h_3 hours (less than the required h_2) and earn the lower income $h_3 U_3$.

Premium pay for overtime work is a convenient arrangement for the employer since it induces increased labor supply over and above what can be produced by the equivalent straight time pay plan. Why the difference? The use of premium pay will have a relatively small income effect because it applies only to hours worked in excess of Hh_1 , while a straight time equivalent wage will have a much larger income effect because it applies to all hours worked.

In general, premium wage rates for overtime work provide a greater incentive for additional hours of work than a straight-time wage rate yielding an equivalent daily income.

Some limitations of the static theory

Dear student! Can you point out the major limitations of the labor supply model discussed above? Please, write your answer on the space provided below.

Good! Compare your answer with the explanation given below.

It has been objected that simple dichotomy between work and leisure is too crude for all practical purposes. Most individuals have to perform some non market work such as digging the garden, looking after the children, washing the car, cleaning the house, which it would be inappropriate to classify simply as leisure.

The theory makes no distinction between permanent and transitory changes in labor market opportunities. Part of most individuals' leisure time is set aside to enable them to increase their income and hence the flow of goods & service they enjoy in the future. Part of their non market working time is devoted to investing in themselves. This investment in human capital can take the form of going to college or studying at home. But individuals have to choose at which point during their lives they are going to undertake such investment. Similarly part of their non market working time is devoted to raise family. To decide which is the best time, they may take a view about the labor market opportunities that confront them now and in the future,

The theory appears to rest on the proposition that work is a source of disutility and that the only offer of a wage (to compensate for this disutility) will induce individuals to work. But psychologists documented that work is often valued in it self.

- ☹ it determines our self – worth
- ☹ determines our status among our peers
- ☹ Conveys the most important image of ourselves to others.

It is objected that there are institutional limit on workers choice. Individuals, it is argued, do not have the degree of choice over their hours of work that our theory applies.

The effect of a standard work day on labor supply

Dear student! Our discussion thus far has implicitly assumed that workers can individually determine the numbers of hours they work. This is typically not the case. It is common in practice for many countries to set legal limitations for hours of work. Example, in Ethiopia normal hours of work is not greater than 8 hrs a day or 48 hrs a week (Labor Proclamation No 42 / 1993. Art 61).

Dear student! How do such laws affect individual's labor supply decision? Please, write your answer on the space provided below.

Good! Compare your answer with the explanation given below.

The imposition of such laws restricts the income – leisure choice of individuals. Some may find this 8 hr work day a bit long and feel *over employed*, while other individuals in similar circumstances find themselves *under employed*. To verify these possibilities, consider the following conditions. For two person A and B with their corresponding indifference curves, let D be the standard work hours and both of them (A& B) has to do D hrs a day or not at all.

Consider the case of B

B's optimal position is at U_B , where he prefers to work only h_B hours per day. But it is not a relevant choice. The relevant choice is between working the standard work day at D or being non participant at N. In this instance, it is preferable to work the standard work day because it entails a higher indifference curve I_{B2} as opposed to I_{B1} . At point D, Mr. B will feel over employed because at that level the worker values leisure more highly at the margin than does the market. (At D, slope of I_{B2} is greater than the slope of the budget line $\Rightarrow MRS_{LY}$ exceeds the wage rate).

To overcome the feeling of *over employment*, workers engage in one of the following actions:

- | | | |
|------------------------------------|---|---------------------------|
| Absenteeism | } | deteriorating the quality |
| - Reading journals or news at work | | |
| Leaving work before time | | |
| Non punctuality at work | | |

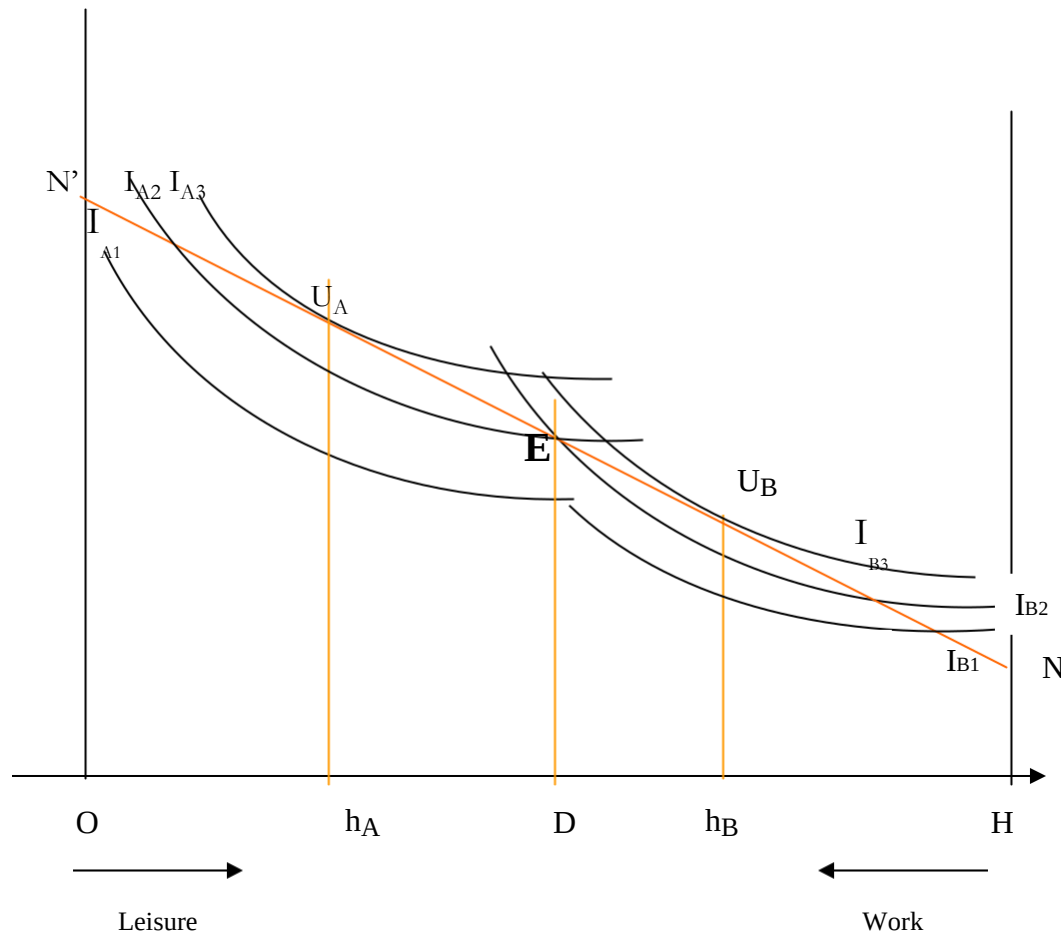


Fig. 2.15. The effect of standard work day on labor supply

For **person A**, on the other hand, his optimal position is at U_A where he prefers to work h_A hrs per day. But if the standard work day rule is applied he would be located at E where he will work only D hrs per day. Being at E put him on the lower indifference curve I_{A2} than I_{A3} (his optimal choice) and at E , his personal valuation of the price of leisure (the slope of the indifference curve) is less than the market prices (the slope of the budget line). Since this person is limited to work only D hours instead of h_A hours, he would feel “under employed”

To overcome the feelings of under employment, workers can take one or more of the following actions:

- moonlighting (taking two or more work)
- extra hours of work (in the same place) =overtime
- work -part time work

2.4 LABOR SUPPLY IN THE LONG RUN

Dear student! We have already seen that the labor supply, among other things, depends on the size of the population of the working age. Now we are concerned with the long run determinants of the size of the country's population (for this determines the bounds from which the population of the working age is drawn). What do you think determines the population size of a given country? Please, write your answer on the space provided below.

Good! Compare your answer with the explanation given below.

The principal determinants of the country's population are two: *first*, demographic factors such as birth and death rates; and *second*, migration. Now we shall be looking in detail at demographic factors and migration, and at the role that economic forces play in shaping these in order to distinguish the long run labor supply curve.

2.4.1 Demographic Changes.

Once we excluded migration, '*entries*' to the population of working age, where this is defined as that beyond the minimum school living age but below retirement age, are indicated by the number of births 16 years earlier. '*Exits*', reflect the death rate among the working population and the number of retirements. Births and deaths are therefore the two key variables setting the upper limit to this aspect of labor supply. Birth rates reflect both the number of women of childbearing age in the population and the fertility rate (the number of births per women).

The economic determinants of population changes

Dear student! From the knowledge you acquired from the course history of economic thought, can you point out the period when economic theory of population begun? Please, write your answer on the space provided below.

Good! Compare your answer with the explanation given below.

Economic analysis of population change dated back to the Malthus' "*Essay on Population*" which was published in 1798. Thomas R. Malthus argued that population was determined by the response of both fertility and mortality to change in income. Although Malthus admitted to one *voluntary check* on the number of births, which was the *age at which people married*, the essential check on population was the *subsistence level* of income. Population, he predicted, would grow quickly if wages grew because the average person would marry earlier and for this reason have more children and deaths would fall. However, the growth of population would always push up against the limit set by the productive capacity of the economy because the rate at which the population could grow (a geometric progression) exceeded the rate at which the population could grow (an arithmetic progression). In this analysis, the subsistence real wage is assumed constant at W/P .

Now suppose that aggregate labor demand is given by L_1^d . This is just adequate to support a working population of L_1^s and their dependents. Any increase in the number of dependants would reduce per capita incomes below subsistence level and result in a rise in the death rates. On the other hand, any increase in the aggregate labor demand to L_2^d would be accompanied by a rise in the real wage which would encourage individuals to marry earlier and have more children.

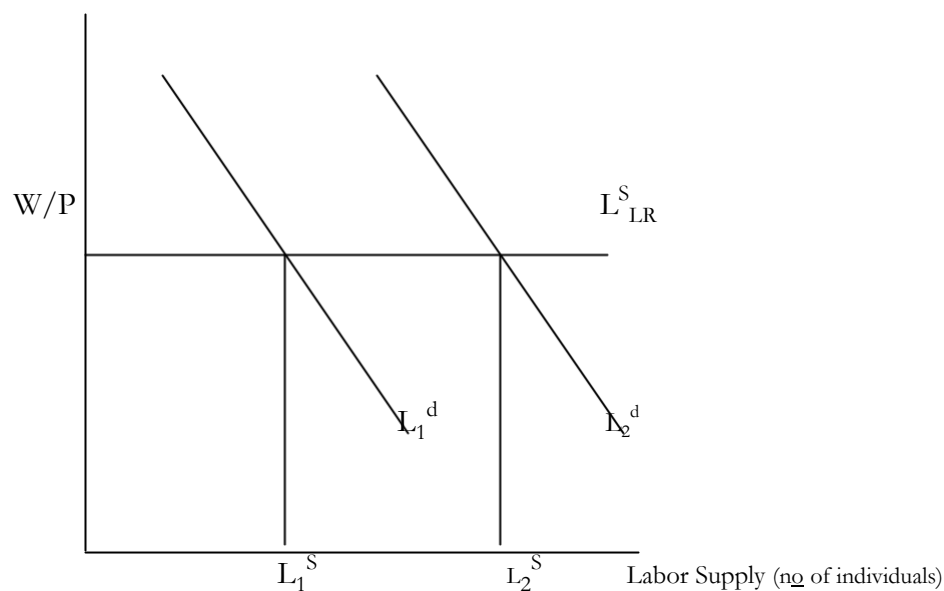


Fig. 2.16. The long run labor supply curve

As the population grows, the labor supply increases and wage rates fall back toward W/P . Thus, in the long run labor supply is perfectly elastic as indicated by labor supply curve L^s_{LR} . One implication of this is that in the long run real wages are entirely supply determined; given the minimum subsistence level they are determined quite independently of demand. *Only if the minimum subsistence level is steadily rising, will the long run labor supply curve be positively sloping.*

It is clear that voluntary checks on population growth have been far more important historically in accounting for population growth than the effects of death rates. The experience of all advanced industrial nations in recent years has been contrary to that anticipated by Malthus. The growth of national income has outstripped that of the population and in consequence real incomes have risen substantially. In all these countries there has been a decline in the rate of population growth despite a reduction in mortality rates, for in all these countries there has been an even larger decline in birth rates. Technological advances in contraception have assisted this decline in birth rates but this decline was evidence even before these technological innovations. Contrary to Malthus' proposition that the birth rate was solely determined by biological capacity, there is substantial evidence of the existence of voluntary checks on the number of births.

The economics of fertility

Dear student! How does economic theory explain household's decision of having children? Please, write your answer on the space provided below.

Good! Compare your answer with the explanation given below.

The modern approach to fertility regards *children as consumption good* and the demand for children is accordingly analyzed within the framework of consumer demand theory. Within this framework children are considered to be *normal goods* and thus the demand for children rises as income rises. One of the predictions that would appear to arise from the model is that the number of children is positively associated with income. (This is under a crucial assumption of fixed time devoted to the production of children).

If the time devoted to the production of children is a variable then the wage rate (particularly the female wage rate) serve as a proxy for the price of time devoted to this activity. Now a rise in wage rates raises the opportunity cost of time spent in producing children and the relative magnitude of income & substitution effects determines whether more or less time is devoted to this activity.

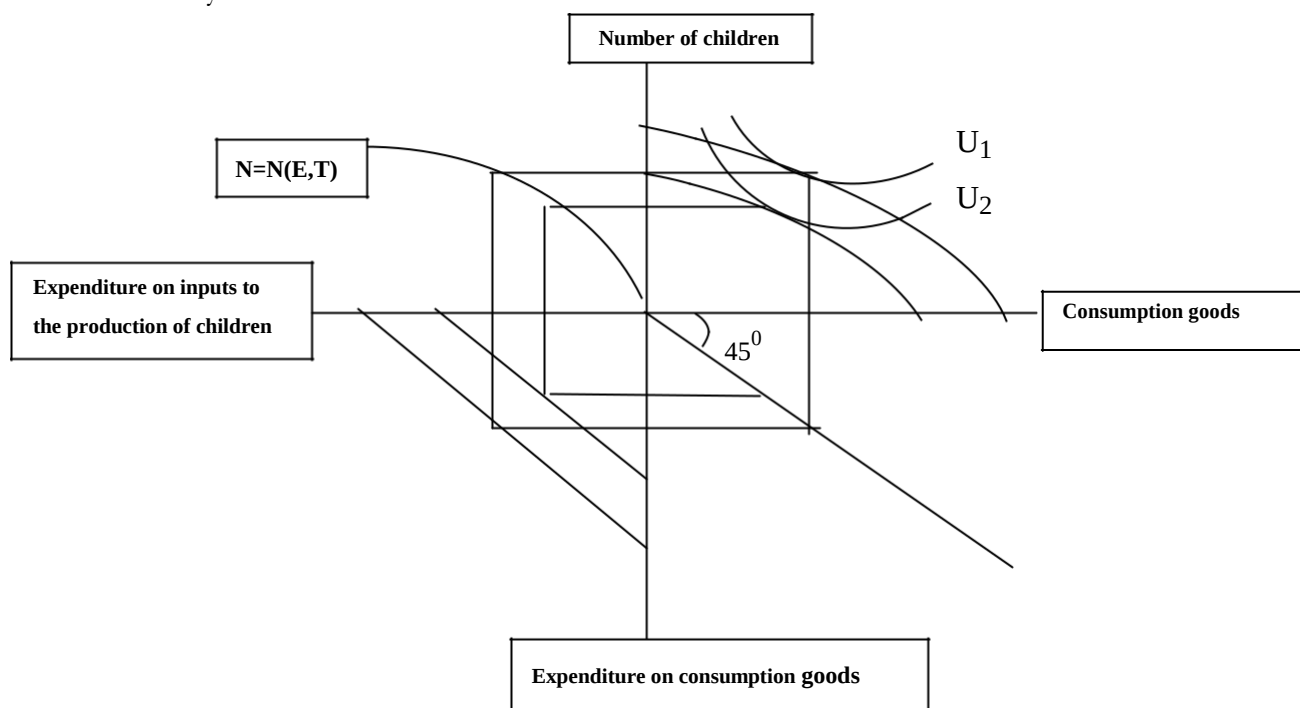


Fig. 2.17. The production possibility curve of children

Dear student! What does the above model imply as to the determinants of households children production? Please, write your answer on the space provided below.

Good! Compare your answer with the explanation given below.

The above model emphasizes that the number of children a household produces is determined by:

The *efficiency of the household*, in combining the inputs of time and commodities to produce children, as reflected in the *production function*

The ***resource at the disposal of the household***, as reflected in *the position of the budget constraint*

The ***relative prices*** of inputs and consumption commodities as reflected in the *slope of the budget constraint*

The ***tastes of the household***, as reflected in the *indifference map*.

These factors determine this aspect of the supply of labor in the long run but there is little clear empirical evidence on these issues and therefore little guide as to the shape of the long run labor supply curve arising from purely demographic considerations.

2.4.2 Migration

Dear student! Labor migration has been extensively studied by economists, sociologists, demographers, and geographers. One important way economists have contributed to the understanding of geographic mobility is through the development and testing of the human capital model of migration.

The determinants of migration

Dear student! Why do people move from one place to the other place? What are the costs and benefits associated with this movement? Please, write your answer on the space provided below.

Good! Compare your answer with the explanation given below.

Migration is analogous to investment. Migration to higher paying jobs is a human capital investment since it entails present sacrifice to obtain higher future earnings. Will migration occur in all situations to obtain higher future earnings? The answer is No, because there are costs associated with the migration investment which must be weighted against the expected gains.

The main costs are

- Transportation expenses
- Foregone income during the move
- Psychic costs of leaving family and friends, and
- The loss of seniority and pension benefits.

Like an investment decision it involves incurring costs now for expected benefits sometime in the future and it requires an appraisal of the costs and benefits of the proposed course of action. It is becoming clear that beside the annual earning differential ($E_2 - E_1$) various factors influence the discounted present value of the total earnings and cost streams and thereby affect the present value of the net benefits and the decision to migrate.

Dear student! What determines individual's decision to migrate? Please, write your answer on the space provided below.

Good! Compare your answer with the explanation given below.

These factors or *determinants of migration* include:

Age: All else being equal, the older a person is, the less likely he/she is to migrate.

This has several reasons:

- Older migrants have fewer years to recoup their investment costs.
- Older people tend to have higher levels of human capital which are specific to their present employer
- Older people have higher migration costs than younger people
- The psychic costs of migration may rise with age.

Family factors:- The potential cost of migration multiplies as family size increases.

Some related facts include:

- Marriage decreases migration
- Migration increases if spouse is not employed or employed with lower wage
- Migration decreases if there are school aged children.

Education: the higher one's educational attainment, all else being equal, the more likely is that one will migrate.

Distance: The probability of migrating varies (inversely) with the distance a person move;
i.e., the greater the distance,
the higher transportation costs
the less information the potential migrants is likely to possess
the more psychic costs

Families headed by unemployed persons are more likely to migrate than others
The rate of unemployment at the origin positively affects out – migration.

2.5 CHAPTER SUMMARY

There are many approaches of estimating labor supply. But the labor force approach is the most widely used one.

According to the labor force approach, labor supply is measured by the product of labor force and activity rate.

The two most powerful factors affecting activity rate of a country are job attachment and business cycle.

Compared to a typical developed country, Ethiopia is characterized by high activity rate especially for the extreme age group

To determine individual's optimum distribution of time between work and leisure, two sets of information are necessary: the individual's work-leisure preference (represented by indifference curve) and the budget constraint (represented by budget line). The point of tangency of these two lines represents the equilibrium or utility maximizing levels of work and leisure.

The effect of wage rate change on labor supply depends on the relative magnitude of substitution effect and income effect.

The labor supply curve of a rational person is backward bending.

The elasticity of labor supply depends on the income and substitution effects generated by a wage rate change.

Reservation wage is the highest wage rate at which an individual chooses not to work or, the lower wage rate at which one would decide to work.

Depending on the position of indifference curve and budget constraint, unearned income may result in reduction of the labor supply to the total withdrawal from the labor market.

The principal determinants of a country's population size are demographic factors and migration.

Modern economic theory considers migration to a higher paying job as a human capital investment.

premium wage rates for overtime work provide a greater incentive for additional hours of work than a straight-time wage rate yielding an equivalent daily income

2.6 SELF TEST EXERCISE

Dear student! Now it is your turn to reflect the important issues presented above. The following questions are designed to evaluate the extent to which you understood the main points discussed in this chapter. You are strongly advised to answer all of them. If you encounter challenges in answering them, you are strongly advised to refer back to the note provided in this chapter.

List and critically evaluate the different approaches that can be used to estimate labor supply of a given country.

Distinguish between the following concepts:

- | | |
|------------------------------------|--|
| a. Employed vs unemployed | e. Actual vs potential labor force |
| b. Self vs wage employment | f. Additional vs discouraged worker hypothesis |
| c. Economically active vs inactive | g. Income effect vs substitution effect |
| d. Primary vs secondary workers | h. Workaholic vs leisure lover |

The concept, measurement and even the estimation of labor supply causes many problems.

Explain the limitations of estimating labor supply via the labor force approach.

What are the possible reasons for high participation rate among Ethiopian youth and the elderly?

Identify the inherent characteristic of the indifference curve and the budget constraint.

What do we mean when we say that both consumption and leisure are “normal goods”.

Explain why the slope of the individual’s budget constraint is equal to $-w$.

How can a labor supply curve be “backward bending”?

“The labor supply curve of all individuals is backward bending” do you agree? Justify your answer.

Draw a diagram to highlight the income and substitution effect of a wage decrease.

“An individual’s reservation wage is given by the slope of her indifference curve through her endowment point”. Explain!

What is the typical empirical finding about men’s labor supply elasticity (with respect to wage)?

Why do economists consider Migration as investment? What determines one’s decision to migrate?

CHAPTER THREE: LABOR DEMAND

3.1. INTRODUCTION

Overview:

Dear student! In the previous chapter you have learnt one aspect of the labor market. It is only half of the whole. The analysis of labor market will be incomplete without the study of the other aspect. In this chapter, you will be exposed to the theory individual and market labor demand.

Chapter Objective:

- Analyze labor productivity,
- Develop demand for labor in different scenario,
- Compute the market demand for labor,
- Distinguish between determinants of demand for labor
- Compute wage elasticity of labor demand,
- Differentiate between determinants of elasticity.

Chapter Content:

- Rationale of labor demand study
- Review of firm's production function
- The market demand for labor
- Wage elasticity of labor demand
- Chapter Summary
- Self Test Exercise

3.2. RATIONALE OF LABOR DEMAND STUDY

Dear student! What do we mean by demand for labor? Why do we study it? Please, write your answer on the space provided below.

Good! Compare your answer with the explanation given below.

It should be noted at the outset that the demand for labor or any other productive resource, is a *derived demand*. This means that the demand for labor depends on (or is derived from) the demand for the product or service it is helping to produce or provide. *Ceteris paribus*, any increase in the demand for goods & service, raises prices. This invites firms to increase supply through expansion of production. They increase production by increasing their purchase of inputs including labor, from their respective markets. *Hence, labor or any other inputs, is demanded for the goods & services it produces and not for its own sake.* However, this fact alone need not in any way diminish the significance of labor demand analysis in labor economics. There are many instances which underscore the pursuit of labor demand study as a worthwhile exercise.

First, labor market may turn out to be inefficient. Hence the labor demand analysis should furnish policy makers with the required adjustments to improve labor market operational efficiency. *Second*, labor demand is a dynamic phenomenon. Hence, the labor demand analysis should emphasize expansion or labor demand growth where economies suffer from a persistent economic depression and high level & growing unemployment trend (like Africa).

The fact that the demand for labor is derived demand means that the strength of the demand for any particular type of labor will depend on (1) how productive that labor is in helping to create some product or service, and (2) the market value of that item. The higher the productivity of labor and the higher the market value of the product, the higher the demand for labor will be. Consequently, the immediate determinant's of the demand for labors are labor's marginal productivity and the value (price) of its output.

For a good reason, the theory of labor demand is founded on the theory of product and the theory of factor costs. The first specifies the technological relationships that determine production without any reference to market constraints. It gives answer to the question “how is labor combined with other inputs to produce the commodity or service in question?” The latter defines the market possibilities and forms a basis to decide how much labor (and other factors) are to be employed and at what price. The following section gives a brief illustration of the relationship between production function and labor demand.

3.3. REVIEW OF A FIRM'S PRODUCTION FUNCTION

Dear student! From your baby economics, do you remember about the production function? What about the isoquant lines? Please, write your answer on the space provided below.

Good! Compare your answer with the explanation given below.

In the short run, there exist a finite set of technological possibilities to produce a given type and level of production. These different possibilities of producing a given level of output are represented by an **isoquant**. *An isoquant is a trace of different factor combinations that yield the same level of output.* The curve representing an isoquant, called an **isoquant curve**, shows the various possible combinations of two inputs, say labor (L) & Capital (K), that are capable of producing a specific quantity of physical output. By definition the output is the same at all points on a single isoquant. *Isoquants are equal output curves.*

There are several kinds of isoquants. Among the relatively popular isoquant curves in the labor economics are the ***L-shaped*** or *Leontief isoquant* which indicate that labor & capital are combined in a fixed ratio or constant proportion) to produce output, and the ***perfect capital – labor substitution isoquant*** which permits complete substitution between the factors.

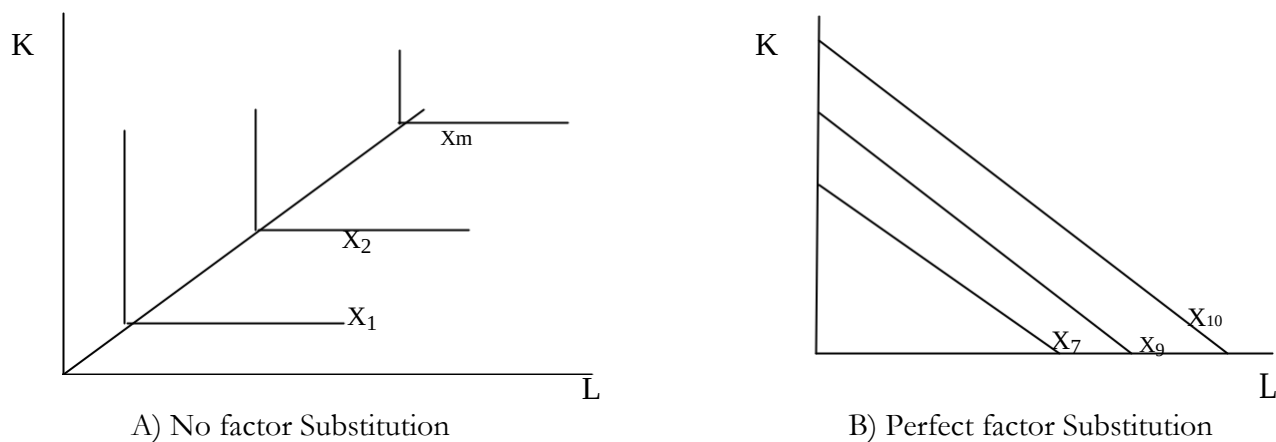


Fig. 3.1. The two extreme forms of Isoquant curves

These are the two extreme forms of isoquants. The type of isoquant frequently referred in labor economics lies in between these two ones, i.e. convex isoquant. This isoquant possess several characteristics: convex to the origin ($\Rightarrow$ diminishing marginal rate of technical substitution between factors), continuous for all output levels, negatively slopped and parallel to each other.

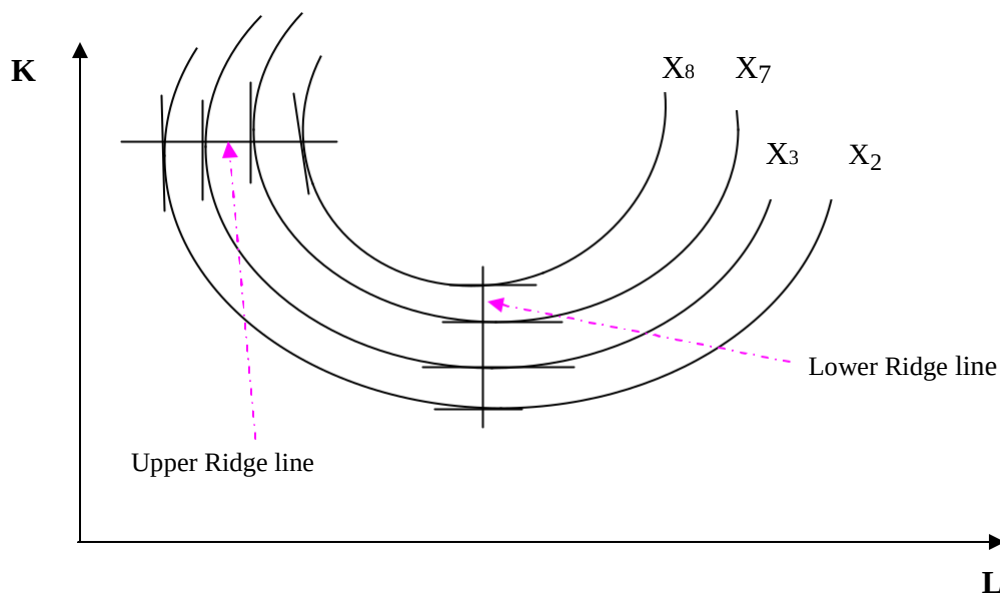


Fig. 3.2. Derivation of a well behaved indifference curve

The relevant or efficient production frontier is enclosed by the ridge lines on the two extremes of the curve – outside of which more of one or of both inputs than technically required are involved in the production of the given level of output. Outside the ridge lines the marginal

productivity of factors are zero or negative (i.e. $\frac{dX}{dL} \leq 0$ and $\frac{dX}{dK} \leq 0$)

The assumption of a continuous function implies perfect divisibility of the factors and that the isoquant is defined for all level of output, hence the isoquant map spans the entire quadrant for $Q \geq 0, L \geq 0$ and $K \geq 0$,

Derivation of labor productivity function

Dear student! Look at the figure below carefully. From the following diagrams, observe that if the amount of capital to be used in production is fixed, say at K_1 , then it is possible to show the levels of output that can be produced by combining it with different quantities of labor inputs.

It is to be noted that the maximum production possible with K_1 amounts of capital is X_m (where a line drawn parallel to L-axis at K_1 is just tangent to the isoquant X_m), which is obtained when L_m amounts of labor are employed. With capital fixed at K_1 , increasing labor beyond L_m is possible but output will be less than X_m . If it is desired to increase output for level of labor employment the amount of capital must be increased beyond K_1 . This derived function of output as a fun of labor, $X = X(L)$ is the total productivity curve (or function) of labor.

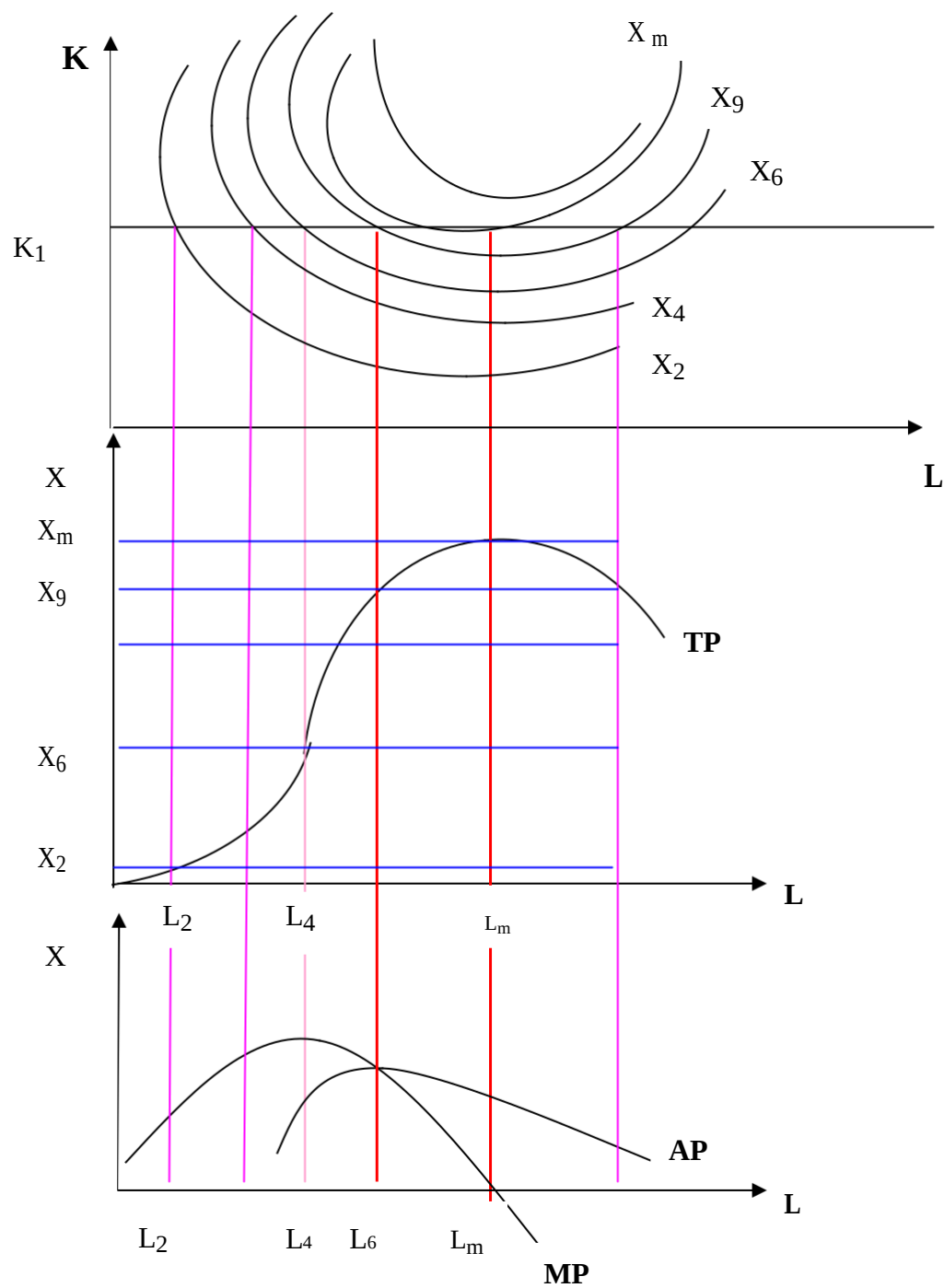


Fig. 3.3. Derivation of the total, average and marginal product curves

Dear student! Can you define marginal and average product of labor? What relationships do they have? Please, write your answer on the space provided below.

Good! Compare your answer with the explanation given below.

A **production function** is the relationship between quantities of resources (inputs) and the corresponding production outcomes (output). In the short run (a period in which at least one resource is fixed), **total product (TP)** shown in (B), is the total output produced by each combination of the variable resources (labor) and the fixed amount of capital.

The **marginal product (MP)** of labor is the change in total product associated with change in TP and can be found by drawing a line tangent to the TP curve at any point and determine the slope of the line.

The **average product (AP)** of labor is the total product divided by the number of labor units. Geometrically, it is measured as the slope of any straight line drawn from the origin to or through any particular point in the TP Curve.

Notice (1) when TP is maximum, MP is zero.

$$\text{Let } X = F(L).$$

The *necessary condition* for maximum total labor productivity (FOC) is that $\frac{\partial X}{\partial L} = 0$

$$\text{or } \frac{\partial}{\partial L} (F(L)) = F'(L) = 0 \Rightarrow \text{Marginal product of labor is zero.}$$

$$\text{Sufficient condition (SOC)} = \frac{\partial^2 X}{\partial L^2} < 0,$$

when AP is maximum, $AP_L = MP_L$

Given $X = F(L)$ and $AP = F(L)/L$

$AP = \frac{F(L)}{L}$; for AP to be maximum, its first derivative must be zero

$$Foc (AP) = \frac{\partial}{\partial L} \frac{F(L)}{L} = \frac{LF'(L) - F(L)}{L^2} = 0 \quad F'(L) = F(L) / L = MP = AP$$

Dear student! What is the rationale of backward bending TP, AP, MP curves? As you may recall it, it is due to the law of diminishing marginal returns to scale. *The law of diminishing marginal returns states that as successive units of variable resource (labor) are added to a fixed resource attributable to each additional unit of the variable resource, the additional production will decline.*

Stages of production

The production function is classified in to three stages namely, stage I, stage II, and stage III. Each of this stage has their own distinctive characteristics. The range of each stage is given below.

Stage I: this stages ranges from the origin to the point where AP is reaches maximum.

Stage II: this stage covers the region between the maximum of AP to the point where MP is zero.

Stage III: this covers the area after the maximum of AP

Dear student! On the production function, where or in which stage do you think a rational firm operates? Please, write your answer on the space provided below.

Good! Compare your answer with the explanation given below.

Traditional production theory is focused on the range of output over which the marginal productivities of the factor are positive although declining. If the MP of factor is zero, or negative quantity, it makes no economic sense to employ that factor. On the other hand, so long as the marginal productivity of the factor is positive and above average productivity, average

productivity is increasing—each additional input is contributing more to the output than the average and the continued employment of the factor is therefore justified. This removes the production range marked “Stage I” outside rational consideration. The range marked “Stage III” is also outside rational economic decision, since it involves employment of factors of production with negative marginal productivity. This leaves the *technically efficient production range as “stage II”*. That is the range where the MP of factors are positive (although declining) and where the AP

curve is above MP curve ($\frac{\partial x}{\partial L} > 0, \frac{\partial}{\partial L}(\frac{\partial X}{\partial L}) = \frac{\partial^2 X}{\partial L^2} < 0$; where $\frac{x}{L} > \frac{\partial x}{\partial L}$).

In terms of the isoquants, the above proposition suggests that the relevant segment of the Isoquant is that enclosed by the ridge lines. *Note that the segment of MP curve in the stage II is the underlying base for short-run demand for labor curve.*

The generalization here is that if a firm chooses to operate, it will want to produce at a level of output where the MP of either labor or capital is declining but greater than zero. This generalization applies only to a competitive firm. For an imperfectly competitive firm such as monopoly, only stage III is necessarily a non-profit maximizing area. In maximizing profit, a monopolist may restrict output, and therefore, employment to some point in stage I.

Example: Given $X = f(L, \bar{K}) = K^2 L^2 (1 - LK)$

a) Drive the level of L associated with maximum output x

$$\text{FOC: } \frac{\partial x}{\partial L} = MP_L = 0 \Rightarrow K^2 (2L - 3L^2 K) = 0$$

$$L = \frac{2}{3K}$$

$$\text{SOC: } \frac{\partial^2 x}{\partial L^2} < 0 \Rightarrow K^2 (2 - 6LK) < 0 \Rightarrow 2K^2 (1 - 3LK) < 0, \text{ for } k > 0 \text{ and } L > 0.$$

Which confirms that $L = 2/3K$ makes the output maximum.

When does MP_L is max?

$$\text{FOC: } \frac{MP_L}{\partial L \partial L^2} = \Rightarrow \frac{\partial^2 X}{\partial L^2} = 0$$

$$\Rightarrow 2K^2 (1 - 3LK) = 0$$

$$2L^2 - 6LK^3 = 0$$

$$2 = 6LK \Rightarrow L = \frac{1}{3K}$$

$$\text{SOC: } \frac{\partial^2 (MP)}{\partial L^2} < 0 \Rightarrow \frac{\partial^3 x}{\partial L^3} < 0 \Rightarrow -6K^3 < 0 \text{ for all } K > 0$$

Hence $L = 1/3k$ maximizes MP_L

When does AP_L attain its maximum?

$$AP_L = \frac{TP}{L} = \frac{K^2 L^2 (1 - LK)}{L} = K^2 L (1 - LK)$$

$$\begin{aligned} \text{FOC: } \frac{\partial(AP_L)}{\partial L} &= 0 \Rightarrow K^2 (1 - 2LK) = 0 \Rightarrow K^2 = 2LK^3 \\ &\Rightarrow 1 = 2LK \\ &\Rightarrow \underline{\underline{L = 1/2K}} \end{aligned}$$

3.4. DERIVATION OF THE DEMAND FOR LABOR

Dear student! As mentioned earlier, the demand for labor is derived from the demand for goods and services. In this section we will see the derivation of labor demand in different scenarios: in the short run and long run, case of perfectly competitive seller and case of monopoly seller.

3.4.1. Short-Run Demand for Labor:

The case of perfectly competitive seller

The efficient range of production is that associated with the positive but declining marginal product of labor. Because with operation of law of diminishing returns, given fixed capital level, the additional output contributed by the additional unit of labor declines. This ensures that the MP_L is a downward sloping curve in L - MP_L plane (as shown below).

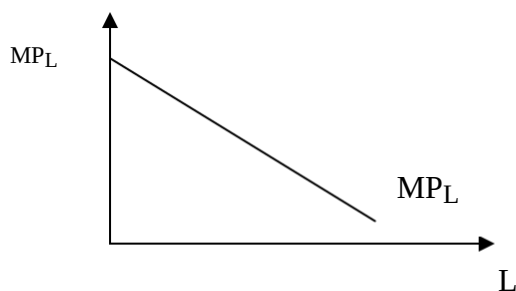


Fig. 3.4. The marginal product curve

A profit maximizing employer should hire workers as long as each successive workers adds more to the firm's total revenue than to its total cost. But the amount which each successive unit of labor adds to total revenue is measured by marginal revenue product (MRP). MRP is defined as the increase (change) in total revenue resulting from the employment of each additional labor unit. The amount which a worker adds to total cost is measured by marginal wage cost (MWC). MWC is defined as the change in total wage cost resulting from the employment of one more labor unit.

Thus, we can say that, the profit maximizing firm should hire units of labor up to the point at which $MRP = MWC$. [Note that the rationale for this rule is the same as that for the marginal revenue equals marginal cost ($MR = MC$) rule which identifies the profit maximizing output in the product market. The difference is that the $MRP = MWC$ rule is in terms of inputs of labor while the $MR = MC$ rule is in terms of output or product]. If at some level of employment $MRP > MWC$, it will be profitable to employ more labor and if $MRP < MWC$, the firm will increase its profit by hiring less labor.

Under the assumptions of perfect competition both in the commodity & product market, one variable input, and equilibrium level, it is true that $MWC = W$ (wage rate). Hence, under such assumptions, $MRP = MWC = W$. The profit maximizing firm which is perfectly competitive employer of labor should employ units of labor up to the point at which $MRP = W$. In the figure below, if the wage rate is w_1 , the optimal labor employment is L_1 , at w_2 , we will have L_2 , and so on.

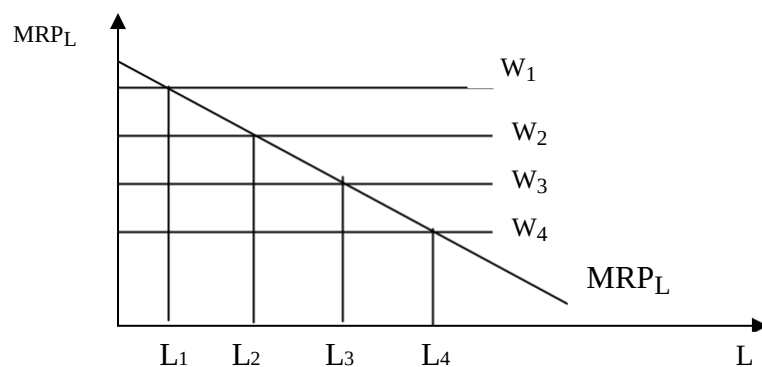


Fig. 3.5. The marginal revenue product curve

In the figure above, if we draw a separate plane for wage and level of employment, the relationship looks somewhat the labor demand curve (i.e. a relationship between wages and labor demand).

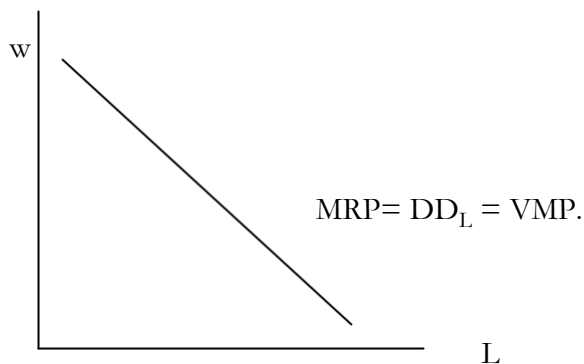
We conclude now that the MRP curve is the firm's short run labor demand curve because each point on it, indicates the quantity of labor which a firm will demand at each possible wage rate that might exist. Any curve which embodies this information on wage rate and quantity of labor demand is, by definition, the firm's labor demand curve. Note also that where there is perfect competition in the product market, a firm's *marginal revenue product (MRP)* or *labor demand curve* is also the *value of marginal product (VMP)* curve. The value of marginal product is the extra output in dollars which accrues to society when an extra unit of labor is employed.

$$\text{VMP} = \text{MPP}_{xx} \quad \text{but } \text{MRP} = \frac{\Delta \text{TR}}{\Delta L}$$

Dear student! What is the logic underlining the equality of VMP & MRP where perfect competition prevails in the product market? Please, write your answer on the space provided below.

Good! Compare your answer with the explanation given below.

Under perfect competition price is constant, and since MR equals P and MR is constant too. In this case, extra revenue to the firm employing an additional labor unit ($= \text{MR} \times \text{MP}$) equals the society value of the extra output ($= P \times \text{MP}$) contributed by that unit of labor.



Note application of the $\text{MRP} = W$ rule reveals that the MRP curve is the firm's short run labor demand curve. Under perfect competition in the product market, $\text{MRP} = \text{VMP}$ and the labor demand curve slopes down ward solely because of diminishing marginal productivity.

Fig. 3.6. The demand curve of perfectly competitive firm

ii. The case of imperfectly competitive seller:

Dear student! What would happen if the seller is competitive in the product market and non competitive in the labor market? Please, write your answer on the space provided below.

Good! Compare your answer with the explanation given below.

The imperfectly competitive seller's product demand curve is down ward sloping rather than perfectly elastic. This means the firm must lower its price to sell the output contributed by each successive worker. Furthermore, when the firm does not engage in price discrimination it must lower the price not only on the last unit produced but also on all other units. To obtain the MR for the imperfectly competitive seller one must subtract the potential revenue lost on the other units from the new revenue gained from the last unit. Because MR is less than the product price, the imperfective competitive seller's MRP ($=MR \times MP$) is less than that of perfectly competitive seller ($=P \times MP$). Recall that the perfectly competitive firm's MR does not decline when it sells the extra output of added workers

Note that the MRP or labor demand curve of the purely competitive seller falls for a single reason - MP diminishes as more unit of labor are employed. But the MRP or labor demand curve of the imperfectly competitive seller declines for two reasons:

MP will decline because of diminishing returns (also true for perfect product market competition) and

MR will decline more rapidly than price as more workers are hired (in perfect completion, MR is constant and equals product price P).

Why? Because the lower price accompanying each increase in output applies not only to the output produced by each additional worker but also to all prior units which otherwise could have been sold at a higher price.

Conclusion: Ceteris paribus, the imperfectly competitive seller's labor demand curve is less elastic than that of the purely competitive seller (this is due to the fact that under imperfect competition VMP is greater than the $MRP = D_L$ curve. VMP schedule lies to the right of the firm's $D_L = MRP$ curve. $\square MRP < VMP$).

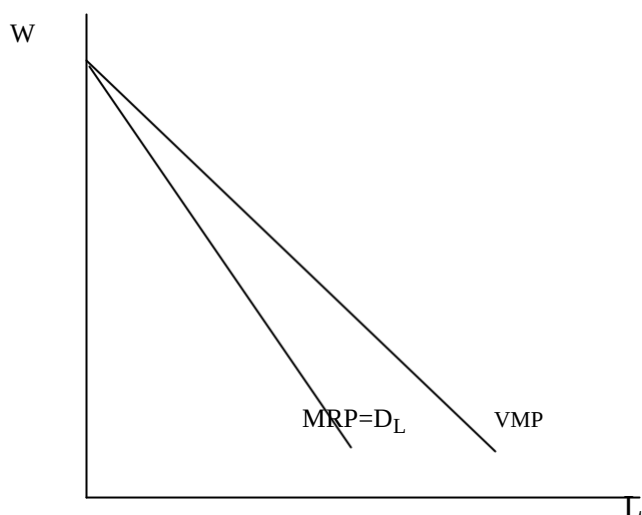


Fig. 3.7. The demand curve of a monopolist

the MRP for the imperfect competitor is less than the VMP at all levels of employment beyond the first unit.

the labor demand curve for an imperfectly competitive seller will not be as strong as for perfectly competitive seller because the former must lower its product price on all units of output as more output is produced ($MR < P$).

3.4.2. The Long Run Demand for Labor

Dear student! Recall that in the long run, all inputs are variable. Once again we assume that L and K are the only two inputs and that labor is homogeneous. $TP_{LR} = f(L, K)$. (Distinguish this from $TP_{SR} = f(L, \bar{K})$ where in the latter case one input K is fixed and hence it is the short run TP function)

Dear student! Can you distinguish between short-run and long run demand of labor? Please, write your answer on the space provided below.

Good! Compare your answer with the explanation given below.

The long-run demand for labor is a schedule or curve indicating the amount of labor which firms will employ at each possible wage rate when both labor and capital are variable. The long run labor demand curve declines because a wage change produces, a *short-run output effects* and a *long-run substitution effect*, which together alter the firm's optimal level of employment.

Output effect: As it relates the labor demand, the output effect (also called the scale effect) is the change in employment solely from the effect of the wage change on the employer's cost of production. This effect is present in the short run and all else being equal, a decline in the wage

rate will reduce the marginal cost (from MC_1 to MC_2) and increase the profit maximizing level of output (from Q_1 to Q_2). To produce the extra output, the firm will wish to employ more labor.

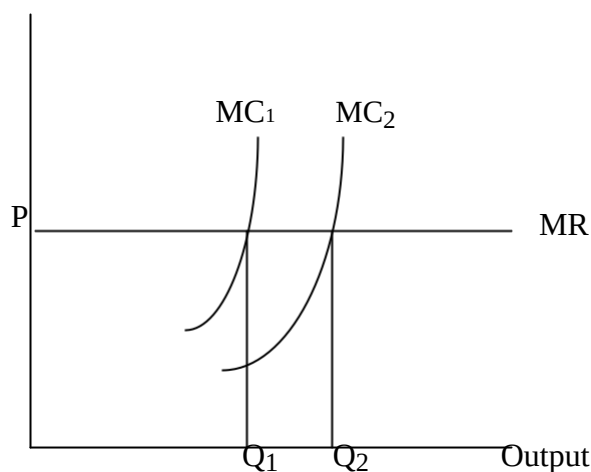


Fig. 3.8. The output effect of change in wage rate

Substitution effect: As it relates to long run labor demand, the substitution effect is change in employment resulting solely from a change in the relative price of labor, output being held constant. In the short run, substitution in production between labor and capital cannot occur because capital is fixed. However, in the long run, the firm can respond to a wage reduction by substituting the relatively less expensive labor in production process for some type of capital.

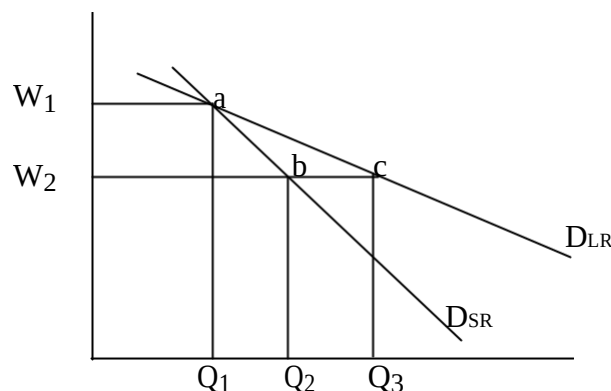


Fig. 3. 9. The substitution effect of the change in the wage rate

Combined effect: A wage reduction from W_1 to W_2 increases the equilibrium short-run quantity of labor from Q_1 to Q_2 (output effect). In the long run, however, the firm also substitutes labor for capital resulting in a substitution effect of Q_2 Q_3 . The long run labor demand curve therefore results from both effects, and is found by connecting points such as a and c.

Note that, changing the price of either inputs while holding the price of the other resources and the level of output constant produces a new isocost curve that has a new tangency position on the given isoquant curve. This generated a substitution effect that results in the use of less of the resource which rose in price and more of the resource that do not experience a price change. An increase in the price of a resource also increases the cost per unit of the product. This creates an output effect tending to reduce the employment of both labor and capital. A downward sloping long run labor demand curve can be derived by plotting the wage rate quantity combinations associated with changing the price of labor. *In other words, when the price of labor rises, the substitution effect causes the firm to use more capital and less labor while the output effect reduces the use of both.* The labor demand curve, then, is determined by plotting the quantity of labor demanded before and after the increase in the wage rate.

The conclusion of the above analysis is that the long run response to a wage change will be greater than the short run response. i.e. in the long run the demand for labor is more elastic than the short run demand of labor. Several factors tend to make a firm's long run labor demand curve more elastic than its short run curve. Three such factors in particular deserve mention.

Product demand: since the product demand is more elastic in the long run than in the short run, the demand for labor is more elastic the longer the period of time. *Ceteris paribus*, the greater the consumer response to a production price change, the greater the firm employment response to wage rate change.

Labor – capital interactions: Just as the MRP of labor is the firm short run demand for labor, the MRP of capital is the firm's short run demand for capital (labor being constant). Given the price of capital, we would, therefore, expect more capital to be employed which in turn will increase the marginal product and demand for labor. Thus the long run employment response resulting from the wage decrease will be greater than the short-run response.

Technology: in the long run technology changes in response to major permanent movements in relative factor prices. When the price of L rises, investors direct their effort toward discovering new technology which reduces the need of L. Hence, the long run response to the wage rate change exceeds that of the short run.

3.5. THE MARKET DEMAND FOR LABOR

Dear student! What is market demand? Please, write your answer on the space provided below.

Good! Compare your answer with the explanation given below.

Market demand can be defined as the total amount of labor unit demanded by an economy in a given period of time at a given time. The market demand curve for labor is less elastic than the simple horizontal summation of the labor demand curves of the individual employers. A lower wage induces all firms to hire more labor and produce more output, causing the supply of the product to increase. The resulting decline in product price shifts the firm's labor demand curves to left.

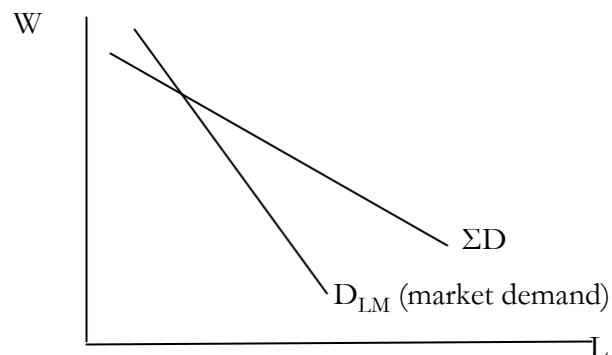


Fig. 3.10. The market demand for labor

A more advanced derivation of the firm's long-run downward-sloping labor demand curve is based on (1) isoquant and (2) isocost curves. Recall that an isoquant curve shows the various possible combinations of two inputs that are capable of producing a specific quantity of physical output; and an **Isocost** curve shows all the various combinations of capital and labor which can be purchased by particular outlay, given the price of K & L. Note that the absolute value of the slope of these equal expenditure line is the ratio of the price of labor to the price of capital. The location of the isocost depends on (1) the total expenditure, (2) the relative price of L & K. note that *isoquants are equal output curves while isocosts are equal expenditure curves*. The least cost combination of resources occurs at the tangency point of the isoquant curves and isocost curves

The mathematical derivation of the demand for labor

Given a two input and one output production function (isoquant map), $X = f(L, K)$, and a cost function $C = P_L L + P_K K$, the optimization problem for the determination of a labor demand can be stated in two equivalent ways;

$$\max: X = f(L, K), \text{ subject to cost constraint } C = P_L L + P_K K$$

$$\min: C = P_L L + P_K K \text{ subject to } X = f(L, K).$$

Note that the tangency solution using route (a) determines the demand for labor given the level of output X and the price of the factors, P_L & P_K . Although the derivation is often tedious, the latter approach, route (b) is particularly suitable to solve the generalization problems of least cost input choice of the factors given P_L , P_K , and X .

$$\text{Min } G = (P_L L + P_K K) - \lambda [X - f(L, K)] \text{-----} 1$$

$$\frac{\partial G}{\partial L} = P_L - \lambda \frac{\partial F}{\partial L} \text{-----} 2$$

$$\frac{\partial G}{\partial K} = P_K - \lambda \frac{\partial F}{\partial K} = 0 \text{-----} 3$$

$$\frac{\partial G}{\partial \lambda} = X - f(L, K) = 0 \text{-----} 4$$

From (2) and (3),

$$-\frac{dL}{dK} = \frac{\partial F / \partial K}{\partial F / \partial L} = \frac{MP_K}{MP_L} = MRTS_{K,L} = \frac{P_K}{P_L} \text{-----} 5$$

$$\text{and } \lambda = P_L \frac{\partial L}{\partial F} = P_K \frac{\partial K}{\partial F} = \frac{C}{X} \text{-----} 6$$

i.e., λ is the marginal cost of producing an additional unit of output, which is the same as the unit price of a factor multiplied by the amount of additional units of the factor required to increase output by one unit. Equation (5) defines the least cost choice of the factor of production as obtaining when the negative of the slope of the isoquant which is equal to the ratio of marginal productivity of factors is equal to the negative of the slope of the isocost which is equal to the ratio of the factor prices.

Determinants of demand for labor

Dear student! What determines the strength of labor demand in the short-run? Please, write your answer on the space provided below.

Good! Compare your answer with the explanation given below.

The major determinants of labor demand are:

Product demand: a change in the demand for the product that a particular type of labor is producing, all else being equal, will shift the labor demand curve in the same direction

Productivity: assuming that it does not cause a fully offsetting change in product price, a change in the marginal product of labor (MP) will shift the labor demand curve in the same direction.

Number of employers: assuming no change in employment by another firms, a change in the number of firms employing a particular type of labor will change the demand for labor in the same direction.

Prices of other resources:

If labor and capital are *gross substitutes*, the decline in the price of capital will result in a decrease in the demand for labor. *Gross substitutes* are inputs such that when the price of one changes the demand of the other changes in the same direction.

If labor and capital are *gross complements*, a decline in price of capital will increases the demand for labor *Gross complements* are inputs such that when the price of one changes, the demand for the other changes in the opposite direction.

3.6. THE WAGE ELASTICITY OF LABOR DEMAND

Dear student! I hope you understand what elasticity is. But can you explain wage elasticity of demand? Please, write your answer on the space provided below.

Good! Compare your answer with the explanation given below.

The usual assumption that says employers require less labor when the wage rate is relatively high and vice versa establishes the demand for labor as an inverse function of the wage rate. Moreover, we have concluded that the long run demand curve is more elastic than the short run curve and that the market demand for labor is less elastic than the curve derived by a simple summation of labor demand curve of individual firms. But do we measure the sensitivity of employment to a change in the wage rate? Or how do we measure the elasticity of labor demand?

The sensitivity of labor demand to changes in the wage rate is measured by the wage elasticity coefficient. It is defined as the percentage change in the demand for labor divided by the percentage change in the wage rate.

$$e_{dL} = \frac{\text{Percentage Change in Quantity of Labor Demanded}}{\text{Percentage Change in the Wage Rate}}$$

$$e_{dL} = \frac{dL}{dP_L} \frac{P_L}{L} = \frac{dL}{dP_L} \frac{P_L}{L}$$

Since the demand curve is downward sloping, the elasticity coefficient is negative quantity and its absolute value is in the range of *zero and infinity*. i.e., $0 < |e_{dL}| < \infty$.

Recall that when, $|e_{dL}| > 1$, demand is elastic;

$|e_{dL}| < 1$, demand is inelastic;

$|e_{dL}| = 1$, demand is unitary elastic.

Dear student! What does the above notation mean? Please, write your answer on the space provided below.

Good! Compare your answer with the explanation given below.

If a change in the wage rate results in no change of employment, the elasticity of labor demand is zero; and if such value obtains at all points of the demand curve, the labor demand curve is vertical to the L-axis. In such cases, the demand for labor is not responsive to changes in the wage rate and income policies are ineffective. At the other extreme, where the elasticity of labor demand is infinity, the demand curve for labor is parallel to the L-axis (or vertical to the wage or P_L -axis). In such cases, a slight increase in the wage rate results in employers having no demand at all for any quantity of labor. So long as the labor demand curve is down ward sloping, it tends to have any value in the ranges of $0 < |e_{dL}| < \infty$ depending on the location of the point on the demand curve where elasticity is measured.

Note that the percentage calculations present a “*reversibility*” problem. Example: a wage rate increase from \$5 to \$10 is a 100 percent increase while a wage decrease from \$10 to \$5 is only a 50 percent decline. Economists, therefore, use the average of the two wages and the average of the quantities as the basis when computing wage elasticity coefficients. The equation which incorporates the averaging technique when computing wage elasticity is known as a *mid points formula* and is shown as equation:

$$e_{dL} = \frac{\text{Change in Quantity}}{\text{Sum of Quantities} / 2} \div \frac{\text{Change in Wage}}{\text{Sum of Wages} / 2}$$

Note that for all labor demand curve defined by an equilateral or rectangular hyperbola, the wage elasticity of labor demand is a constant, i.e., the elasticity remains the same at all points on the demand curve.

Let $L = \alpha P_L^\eta$ be the labor demand function

$$e_{dL} = \frac{dL}{dP_L} \frac{P_L}{L} = \eta \alpha P_L^{\eta-1} \frac{P_L}{\alpha P_L^\eta} = \eta$$

Thus, in the above case, the wage elasticity of demand for labor is a constant η , i.e., it is always no matter at which point on the curve elasticity is measured. Since the wage bill (LP_1) is constant under such condition it may be referred to as a *constant labor cost curve* or a *constant wage bill curve*. Note that wage bill is the product of wage rate and total number of employers.

$$\text{Wage Bill} = W \times L$$

The relationship between elasticity and wage bill

Dear student! Recall that price elasticity of demand for a product can be determined by observing what happens to total revenue when product price changes. Similarly the total wage bill rules are used to assess the wage elasticity of demand.

When the labor demand is elastic, a change in the wage rate causes the total wage bill to move in the opposite direction.

When labor demand is inelastic, a change in the wage rate causes the total wage bill to move in the same direction.

When the labor demand is unit elastic, a change in the wage rate leaves the total wage bill unchanged

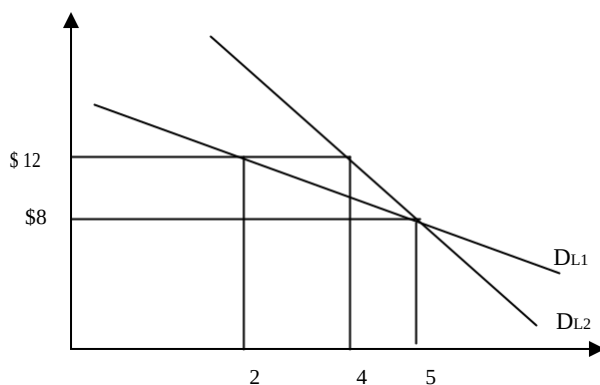


Fig. 3.11. Effect of demand elasticity on wage bill

Illustration:

- When $w = \$8$, the total wage bill is \$40 for both
- When $w = \$12$,
 - with DL_1 , WB decreases by \$24 ($\$8 \times 3$)
 - WB increase by \$8 ($\$4 \times 2$)
 - Net \$16 declines**
- But with DL_2 , WB decreases by \$8 ($\$8 \times 1$)
- WB increase by \$16 ($\$4 \times 4$)
- Net \$8 increase**

Determinants of elasticity

Dear student! What determines the elasticity of the market demand for labor? Please, write your answer on the space provided below.

Good! Compare your answer with the explanation given below.

The theoretical generalizations for what determines the elasticity of the market demand for labor are as follows.

Elasticity of the product demand: because the demand for labor is a derived demand, the elasticity of demand for a labor's output will influence the elasticity of demand for labor. Other things being equal, the greater the price elasticity of product demand, the greater the elasticity of labor demand. This generalization has two noteworthy implications.

First, *ceteris paribus*, the greater the monopoly power an individual firm possesses in the product market the less the elasticity its demand for labor.

Second, the reason that wage elasticity tends to be greater in the long run is because the price elasticity of the product demand is greater in the long run.

Ratio of labor cost to total cost: in general other things being the same, the larger the proportion of the total production cost accounted for by labor, the greater will be the elasticity of demand for labor

Substitutability of another input: other things being equal, the greater the substitutability of another input for labor, the greater will be the elasticity of demand for labor.

Supply elasticity of other inputs: *Ceteris paribus*, the greater the elasticity of the supply of other inputs, the greater the elasticity of demand for labor.

3.7. CHAPTER SUMMARY

Labor or any other inputs is demanded for the goods & services it produces and not for its own sake. Consequently, the immediate determinants of the demand for labors are labor's marginal productivity and the value (price) of its output.

A profit – maximizing employer should hire workers as long as each successive workers adds more to the firm's total revenue than to its total cost

The imperfectly competitive seller's product demand curve is down ward sloping rather than perfectly elastic.

The long run labor demand curve declines because a wage change produces, a short-run output effects and a long-run substitution effect, which together alter the firm's optimal level of employment.

The long run response to a wage change will be greater than the short run response; i.e. in the long run the demand for labor is more elastic than the short run demand of labor.

When the price of labor rises, the substitution effect causes the firm to use more capital and less labor while the output effect reduces the use of both.

The market demand curve for labor is less elastic than the simple horizontal summation of the labor demand curves of the individual employers.

The sensitivity of labor demand to changes in the wage rate is measured by the wage elasticity coefficient. It is defined as the percentage change in the demand for labor divided by the percentage change in the wage rate.

When the labor demand is elastic, a change in the wage rate causes the total wage bill to move in the opposite direction and vice versa.

3.8. SELF TEST EXERCISE

Dear student! Now it is your turn to reflect the important issues presented above. The following questions are designed to evaluate the extent to which you understood the main points discussed in this chapter. You are strongly advised to answer all of them. If you encounter challenges in answering them, you are strongly advised to refer back to the note provided in this chapter.

What is the significance of labor demand analysis?

‘Demand for labor is a derived demand.’ Explain.

Distinguish between isoquant and isocost

Explain the law of diminishing marginal return.

Show that at the maximum of total product function, marginal product is zero

‘A firm can operate in a region where the marginal productivity is greater than zero.’ Do you agree? Justify your answer.

Distinguish between marginal revenue product and value of marginal product.

What is the rationale for decline of MRP in

Perfectly competitive seller

Imperfectly competitive seller

The imperfectly competitive seller’s labor demand curve is less elastic than that of purely competitive seller. Why?

Distinguish between output effect and substitution effect of change in wage rate. Which one of them is a long term phenomenon?

‘The market demand curve for labor is the same as the simple horizontal summation of the labor demand curve of the individual employers’ Do you agree? Justify your answer.

Distinguish between gross substitutes and gross complements.

Give some practical examples of market that have elastic and inelastic labor demand with respect to wage rate change

Show that when the labor demand is unit elastic, a change in wage rate leaves the total wage bill unchanged.

List at least three determinants of market demand elasticity.

CHAPTER FOUR: THE LABOR MARKETS & WAGE DETERMINATIONS

4.1 INTRODUCTION

Overview:

Dear student! In the precious chapters we have conducted a detailed but separate analysis of both the supply and the demand side of the labor markets. But like a single blade of a sezor can not cut hair, a separate analysis of demand and supply cannot solve the puzzles of labor market. Therefore it is a must to consider the demand and supply forces simultaneously. In this chapter we will bring the two sides together and analyze the market for labor as a whole.

Chapter Objective:

- Identify the taxonomy of labor market,
- Compute the equilibrium wage and employment,
- Explain firm's hiring decision,
- Evaluate efficiency of a given labor market,
- Understand the rationale, advantages & disadvantages of minimum wage legislation,
- Distinguish between basic wage forms and theories,
- Recognize the labor market irregularities.

Chapter Content:

- The labor market ○
- Wage determination ○
- Minimum wage
 - Basic wage forms
 - Review of wage theories
 - Labor market segmentation theory

Labor market discrimination

- Chapter Summary
- Self Test Exercise

4.2 THE LABOR MARKET

Dear student! What is labor market? Please, write your answer on the space provided below.

Good! Compare your answer with the explanation given below.

4.2.1 Definition

A labor market concerns the activity of hiring and supplying certain labor to perform certain jobs, and the process of determining how much shall be paid to whom in performing what tasks. In addition, the way in which wage moves and the mobility of workers between different jobs and employers falls within the definition. Note that to use the term ‘market’ is not to imply that labor is exactly the same as any other commodities; rather, the labor market is to be seen as a ‘place’ in economic theory where labor demand and supply interact.²

4.2.2 Types of Labor Market

Dear student! Labor market is not homogeneous. There is a slight difference between labor markets. The following are only few of the categories of labor market

Local vs regional labor market

The geographic subdivision of labor markets is largely a consequence of the pecuniary and psychological costs of extensive travel to work. These costs act to subdivide spatially a labor force that is already stratified occupationally; they tend to restrict the labor market to that which is accessible from a given residence. This holds true for lower level occupational groups at least.

Pearce, David W. (1992) (Edr). Macmillan Dictionary of Modern Economics, fourth edition, the Macmillan Press Ltd, London

When categorizing a labor market in to local or regional, we shall need to take account of:

The travel to work costs

The employment opportunity

The composition of the labor force, and

The availability of information on wage and job vacancies which exist within each geographical area.

Accordingly, the definition of local labor market is established on the assumption that its key characteristic is that the bulk of the area's population habitually seek employment in their surrounding and that local employers recruit most of their labor from that area. Thus, a local market is defined to be a spatially delineated area which, simultaneously, fulfills the following requirements:

An insignificant proportion of daily travels to work journeys are made across the boundary.

Employment opportunities within the market do not discriminate significantly, in terms of the pecuniary or psychic daily travel costs, between suppliers of labor from different places within the boundary

Firms obtain the major proportion of the labor supply within their own boundary.

Each supplier of labor has (almost) complete information concerning the wage and employment opportunities within the boundary

Regional labor market may be defined as a collection or aggregation of local labor markets. Both the local and regional labor markets are, therefore, defined with respect to the frictions' that inhibit labor mobility. From the comparison of local and regional labor market one may conclude that

The psychic and pecuniary costs of migration within any region are significantly less than those associated with migration between regions.

Information on wage and employment opportunities within a region, while far from perfect is still significantly less imperfect than is information between regions. It should follow from the above that the level of intra regional migration is significantly higher than is the level of inter regional migration

Internal vs external labor markets³

Internal labor markets are those where workers are hired in to lower level jobs and higher levels are filled from within. Wages are determined internally and may be quite free of market pressure.

External labor markets imply that workers move somewhat fluidly between firms and wages are determined by some aggregate process where firms do not have significant discretion over wage setting.

4.3 MARKET WAGE DETERMINATION

Dear student! From the previous two chapters, you may have noticed that wage is the most important determinant of labor supply and labor demand. It becomes the most widely referred variable in the analysis of both demand and supply of labor service. But what is wage by itself? Does it have any difference from salary? Please, write your answer on the space provided below.

Good! Compare your answer with the explanation given below.

Definition: *Wage* is a payment received by an employee in exchange for labor. Or a wage may be defined as the amount of money paid for some specified quantity of labor. When expressed with respect to time (usually per hour) it is typically called the *wage rate*. It may be in goods or services but it is customarily in money. Note that early forms of wages include salt (from which the word salary is derived).

The term salary in broad sense refers to what is received in any way for labor, but wages usually refer to payments to workers who are paid by the hour, in contrast to a salary, which implies more fixed and permanent form of income (Example payment by the month rather than by the

Lazear, Edward P. and Paul Oyer (2003). Internal and External Labor Markets: A personal Economics approach; Working paper No. 10192, NBER Working Papers series

hour)⁴. In modern English, the word salary tends to be used when referring to employment in which the employee is not paid by the hour.

Depending on the structure and tradition of different economies, wage rates are either primary market-driven (as in USA) or influenced by other factors such as tradition, social structures, and seniority (as in Japan)⁵. For the sake of simplicity, let us see the determinants of wage in a perfectly competitive and monopoly market.

4.3.1. Wage Determination in a Perfectly Competitive Market.

Dear student! What is the characteristic of perfectly competitive market? And what determines wage in such environment? Please, write your answer on the space provided below.

Good! Compare your answer with the explanation given below.

A perfectly competitive labor market has the following characteristics that contrast it with other labor markets.

A large number of firms competing with one another to hire a specific type of labor to fill identical jobs.

Numerous qualified people who have identical skills and who independently supply their labor services.

Wage taking behaviors; *that is neither workers nor firms exert control over the market wage, and*

Perfect and costless mobility of labor and information.

Hence, in a competitive labor market many employers compete for labor and job seekers for work with the result that individual employers or workers don't exert influence on the wage rate and tend to be "price takers." The competitive market for a specific type of labor can best be analyzed by separating it into two parts: *labor demand* which reflects the behavior of employers, and *labor supply* deriving from the decision of the workers.

In economic theory wages reckoned in money are called *nominal wages*, as distinguished from *real wages*, i.e. the amount of goods and services that the money will buy. Real wages depend on the price level, as well as on the nominal or money wages.

(See <http://www.answers.com/wage>)

Labor demand & supply:

Dear student! Recall from the previous chapters that the market demand for particular type of labor is found by summing over a range of wage rates the “price adjusted” amounts of labor that employers desire to hire at each of the various wage rates. Also remember that individual labor supply curves are normally backward bending. Even though specific people may reduce their hours of work as the market wage rises, labor supply curves of specific labor markets generally are positively sloped over realistic wage ranges.

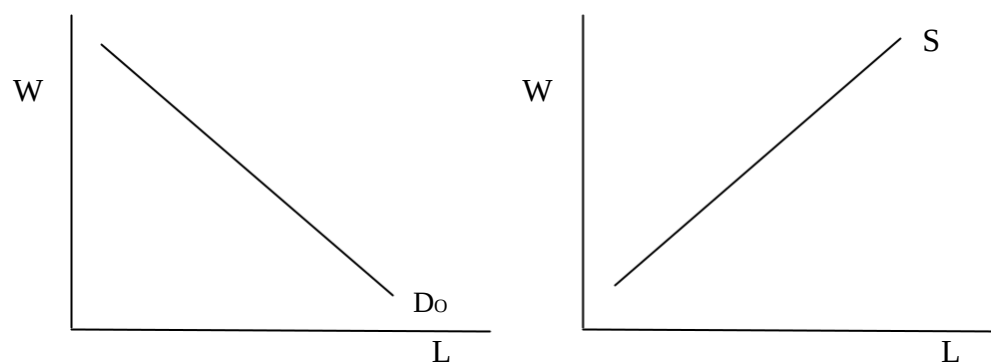


Fig. 4.1. The labor demand and supply curves

Determinants:

The supply and demand curves in the above figure are drawn holding all factors other than the wage rate for this variety of labor constant. But a number of other factors- or determinants of labor supply and demand- can change and cause either right ward or left ward shift in the curve.

Dear student! What are these factors that can shift the demand or supply curve? Please, write your answer on the space provided below.

Good! Compare your answer with the explanation given below.

On the demand side, these determinants include: product demand, productivity of labor, prices of other resources, and number of employers. *On the supply side*, these determinants include: other wage rates, non wage income, preference for work versus leisure, non wage aspects of the job and number of qualified suppliers.

Note that the distinction between “changes in demand” versus “changes in quantity demand” and “changes in supply” versus “changes in quantity supplied” apply to the labor market as well as the product market. Changes in the determinants of labor demand and supply shifts the entire curves; i.e. the quantity of labor demanded or supplied changes. But in the short run, changes in the wage rate normally do not cause shift of the curves themselves.

Equilibrium:

Dear student! How can we tell the equilibrium wage and employment? Please, write your answer on the space provided below.

Good! Compare your answer with the explanation given below.

In the standard competitive model of the labor market the equilibrium wage and associated level of employment are determined by the intersection of the labor supply and demand schedules. Their intersection produces a market clearing wage at which level *there is no frustrated buyers or sellers of labor* with the result that the quantity of labor willingly supplied at that wage exactly equals the quantity of labor willingly demanded.

Therefore, assuming the market supply and demand curves for labor are normally shaped, the equilibrium wage rate (or the market clearing wage) is determined by their intersection. The following figure combines the market labor demand and supply curves for specific type of labor and shows the equilibrium wage W_0 and the equilibrium quantity of labor L^* . Note that at the equilibrium, all persons seeking work at the market clearing wage are employed.

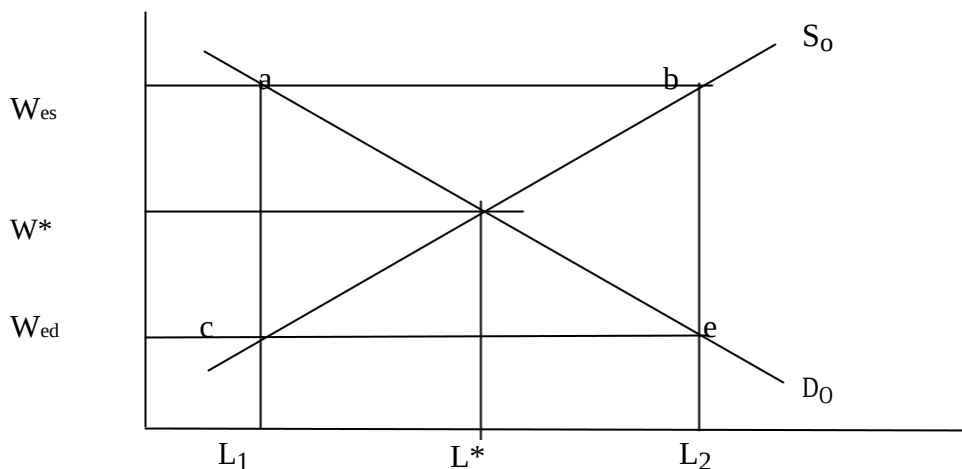


Fig. 4.2. The equilibrium wage and employment levels

If the wage rate were W_{es} ($W_{es} > W^*$), an excess supply of labor ($b-a$) would occur and this ensuring competition among workers would tend to force wage down to W^* . Quite the opposite situation prevails if the wage rate is below the equilibrium level. If the wage rate were W_{ed} , an excess demand or shortage ($e-c$) of workers would develop and competition among employers would tend to force wages up; i.e. push the wage level up to W^* . Wage W^* and employment level L^* is the only wage-employment combinations at which the market clears. At W^* , the number of hours offered by labor suppliers just matches the number of hours that firms desire to employ.

The hiring decision by an individual firm

How will a firm operating in a perfectly competitive labor and product market decide on the quantity of labor to employ? The answer can be found in the figure above. A close examination of the relationship in the figure above reveals another way of looking at the hiring decision of an individual firm. For a closer reference, the figure will be redrawn as follows.

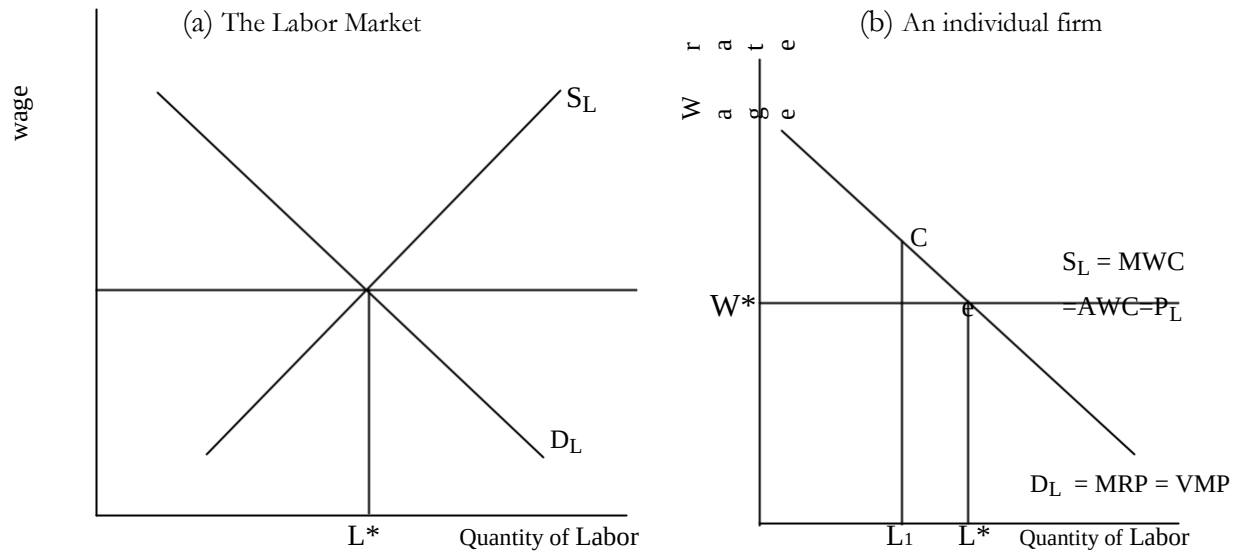


Fig. 4.3. Individual firm's optimum level of employment

Recall that a particular employer (in a perfectly competitive market) is just one of many firms in the labor market. Consequently its decision on how many workers to employ will not affect the market wage. Instead, this firm is a “wage taker” in the same sense that a perfectly competitive seller is a “price taker” in the product market. The single employer in (b) has no incentive to pay more than the equilibrium wage W^* because at the W^* wage, it can attract as many labor units as it wants. On the other hand, if it offers a wage below W^* it will attract no units of labor. All workers who possess this skill have marginal opportunity cost of at least W^* ; they can get a minimum of W^* in alternative employment. Consequently, the horizontal wage line W^* in (b) is the firm's labor supply curve (S_L). As you will observe it the firm's labor supply curve (S_L) is perfectly elastic.

Curve S_L in graph (b) also indicates this firm's average wage cost and marginal wage cost. Average wage cost (AWC) is the total wage cost divided by the number of units of labor employed. Marginal wage cost (MWC), on the other hand is the absolute change in total wage cost resulting from the employment of an additional unit of labor.

The supply curve is the firm's average cost curve, which in this case is also equal to its marginal cost.

$$AC = \frac{TC}{L} = \frac{WL}{L} = W$$

$$MC = \frac{\partial TC}{\partial L} = \frac{\partial(WL)}{\partial L} = W \frac{\partial L}{\partial L} = W$$

Dear student! From chapter three you may recall that in the short run a firm's demand for labor curve is its marginal revenue product, (MRP) curve. It represents the additional revenue the firm gets from the sale of an additional unit of output produced by that labor. At the point of the intersection of the two curves, point e, the marginal revenue and the marginal cost of the firm are equalized indicating the fulfillment of conditions for profit maximization by the firm.

Thus, this firm can compare the additional revenues (MRP) obtained by hiring one more unit of labor with the added cost (MWC) or in this case, the wage rate ($W = MWC$). If $MRP > W$, it will employ the particular hour of labor. On the other hand, if $MRP < W$ it will not. *To generalize, the profit maximizing employer will obtain its optimal level of employment where $MRP = MWC$. We label this equality the $MRP = MWC$ rule.*

Note, the supply curve of labor for any employer (or a firm) is perfectly elastic at the equilibrium wage rate. As shown in the following figure, the labor demand function faced by the firm is given by D_L and the labor supply curve by S_L , which is perfectly elastic at the going wage rate W^* . The two curves intersect at the equilibrium level of wages W^* and employment L_f . If there are total of n such firms in the market, the equilibrium market wage rate is W^* and the market

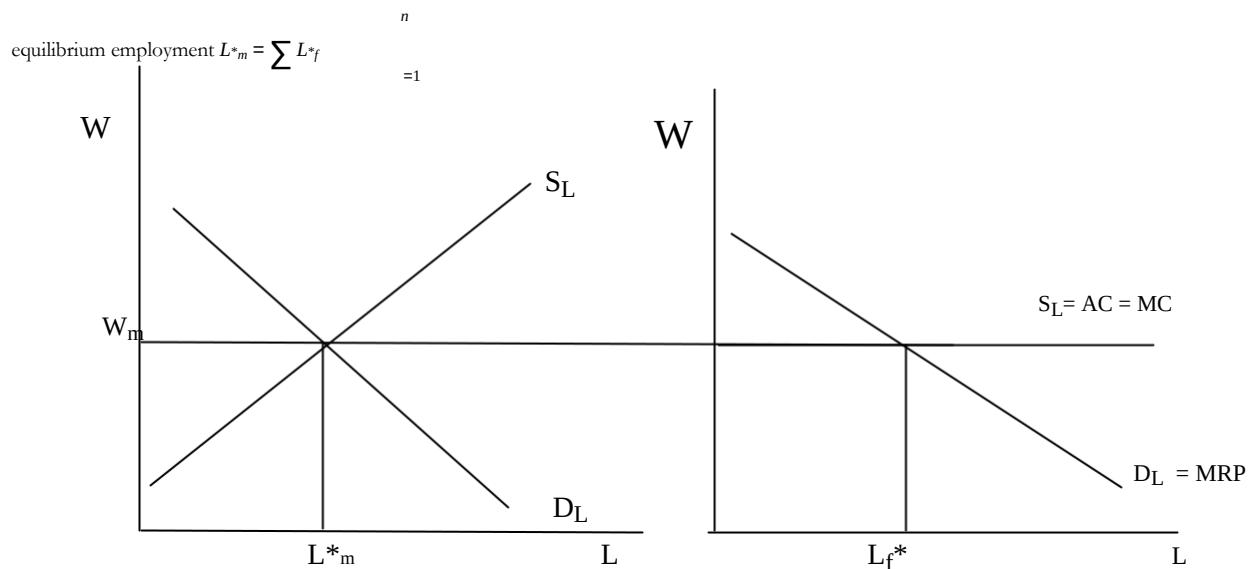


Fig. 4. 4. Derivation of market's equilibrium level of employment from firm's level of employment

Labor market efficiency

Dear student! We stressed at the outset of chapter one that labor is a scarce resource and it therefore behooves society to use it efficiently. But how do we define an efficient allocation of labor? Is labor efficiently allocated in the perfect competition labor market just discussed? Please, write your answer on the space provided below.

Good! Compare your answer with the explanation given below.

Let's first bring the notion of allocative efficiency in to focus. An efficient allocation of labor is realized when workers are being directed to their higher valued uses. Labor is being allocated efficiently when society obtains the largest amount of domestic output from the given amount of labor available. *Stated technically, available labor is efficiently allocated when its value of marginal product (VMP)⁶ is the same in all alternative employments.*

To illustrate this, suppose that type A labor is capable of producing both product X and product Y. Suppose the available amount of type A labor is currently allocated so that the value of marginal product of labor in producing X is \$ 12 and its value of marginal product in producing Y is \$ 8; i.e. $VMP_{AX} (= \$ 12) > VMP_{AY} (= \$ 8)$. This not an efficient allocation of type A labor because in this allocation the said labor is not making the maximum contribution to domestic output.

It is clear that by shifting a worker from production of Y to production of X, the domestic output can be increased by \$4 ($= \$12 - \$8$). This reallocation will cause a movement down the VMP curve for X and up the VMP curve for Y; i.e. VMP_{AX} will fall and VMP_{AY} will rise⁷. The indicated reallocation from Y to X should continue until the VMP of type A labor is the same for both products or $VMP_{AX} = VMP_{AY}$. When this equality is achieved, there is no further reallocation of labor which will cause a net increase in the domestic output.

VMP is the dollar value to society of its marginal product

When more and more input is used in a production of a given commodity, say X, the MP of that resource decreases. As a result the VMP of that input decreases.

The condition for allocative efficiency for any given type of labor can be generalized to n products by the following equation.

$$VMP_{AX} = VMP_{AY} = \dots = VMP_{AN} = W_A$$

Where; A is the given type of Labor,

X, Y, ..., N is all possible products that the labor might produce, W_A = wage or price of Labor type A.

Observe that in the above generalized equation, VMPs of labor are not only equal to one another, but also equal to the price of labor W . Why so? The reason is that it is taken in to consideration that type A labor will be made available in this labor market if the price of labor is sufficiently high to cover the opportunity cost of those supplying their labor services. (Type A labor may be used in non- type A work such as household production or pure leisure). Thus the generalized equation tells us that human resources are efficiently allocated when the value of the last units of labor in various labor market uses (producing goods $X_1, Y_1, \dots, N$) are equal and these values in turn are equal to the opportunity cost of labor W_A (the marginal value of alternative work, non labor market production, and leisure).

Alternatively, an under allocation of a particular type of labor to labor market production occurs when its VMP in any employment exceeds W_L . An over allocation occurs when its VMP in any labor market employment is less than W_L . Having defined allocative efficiency, let's consider our second question, Do perfect competitive labor markets result in an efficient allocation of labor? Consider the following figure that shows the equilibrium positions of representative firms from several competitive industries; i.e. industries producing X, Y, and N with type A labor.

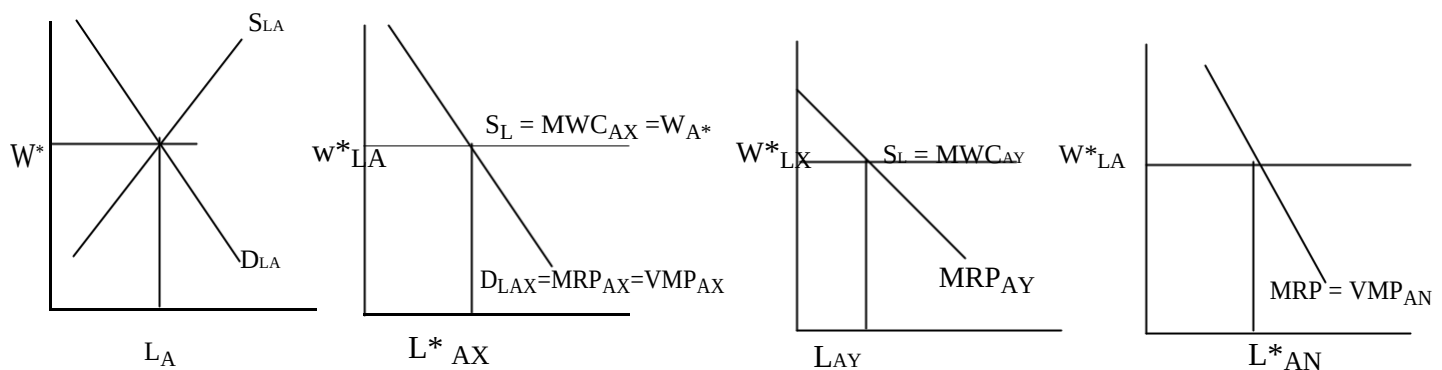


Fig. 4.5. Demonstration of labor market efficiency

Since W_{LA}^* is the same at all firms and since all firm's hiring decision is at the equality of W_{LA} and MRP_A , then we have the following

$$W_{LA} = MRP_{AX}, W_{LA} = MRP_{AY}, W_{LA} = MRP_{AN}$$

$$VMP_{AX} = VMP_{AY} = VMP_{AN} = W_{LA}$$

Note that the equilibrium positions are each firms desire to maximize profit by equating the MRPs of A with the MWC of (MRP = MWC). But perfect competition in hiring of labor means that W_A equals the MWC of A. Hence, we will have $MRP = W_A$. Similarly perfect competition in the sale of its products means that the MRP of A equals its VMP for all three products; i.e. $VMP_{XA} = VMP_{YA} = VMP_{YN}$. Thus each firm maximizes profit where $MWC = MRP$. But because $W_A = MWC$ and $MRP = VMP$ for all competitive firms using type A labor, we find that $VMP_{AX} = VMP_{AY} = VMP_{AN} = W_L$

In short, competitive labor markets do result in an efficient allocation of labor. That is an example of Adam Smith's famous concept of the "*invisible hand*". In competitive labor and product markets, pursuit of private self interest (profit maximization) furthers society's interest (an efficient allocation of scarce resources). It is as if there is an unseen coordinator moving resources to where they are most beneficial to society. To sum up, the equilibrium employment level of competitive labor market also suggests efficiency in the allocation of resources. $MR = MC (=AC) = W_L$. With this understanding of allocative efficiency and its realization when perfect competition prevails, let us now seek to determine whether non competitive labor markets are consistent with an efficient allocation of labor.

4.3.2. Wage Determination in Monopoly in the Product Market.

Dear student! Recall from chapter three that if a firm is a monopolist in the sale of its product, it will face a down ward sloping product demand curve. This means that increase in its output will require price reductions, and because the lower price will apply to all the firm's output, its marginal revenue (MR) will be less than its price. Here we assume that the labor market is perfectly competitive but that one particular firm hiring this type of labor is monopolist in the sale of its products. Restated, this type of labor is used by thousands of firms, not just only by this monopolist, and thus there is competition in the labor market.

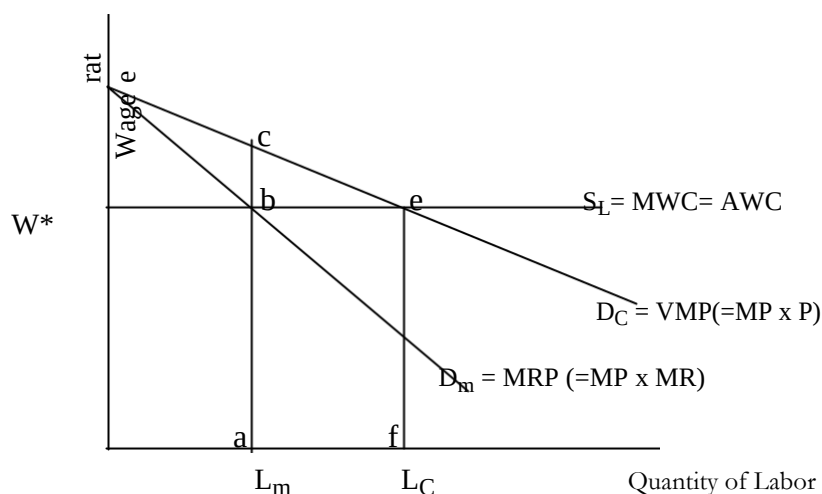


Fig. 4. 3. The labor demand curve of a monopolist

The above figure indicates that this monopolist is a “wage-taker” and, therefore, faces a perfectly elastic labor supply curves shown as S_L . This supply curve coincides with the firm's marginal wage cost (MWC) and its average wage cost (AWC), just as it did in the previous model. Labor demand curve D_C is the MRP curve that would have existed had there been competition than Monopoly; i.e.,

- 🚦 No decline in MR as the firm increased its employment and output
- 🚦 MRP would be equal to VMP → The firm's revenue gain from hiring one more worker would equal society's gain in output.

Labor demand curve D_m is the monopolist's MRP curve.

- 🚦 MRP does not equal VMP → The value of the extra output of each worker to the monopolist is less than the value to society. The reason again: the monopolist's sale of an additional unit of output does not add the full amount of the product's price to its marginal revenue. Thus, $MRP (= MR \times MP)$ – the value to the firm – is less than $VMP (= P \times MP)$ – the value to the society.

Several noteworthy outcomes of monopoly in the product market are evident from the previous figure

First, the monopolist's labor demand curve D_m is less elastic than the competitive curve- D_C .
Second, the monopolist behaves in the same way as the competitor by determining its profit maximizing level of employment where $MRP = MWC$. Nevertheless, this equality

produces a lower level of employment than would occur under competitive product market conditions.

Thirdly, the wage paid by the monopolist is the same as that paid by competitive firms. Without unions, both are “wage takers”

Fourth, Labor resources are misallocated. How?

Recall that in a perfectly competitive labor market the price of labor (w) reflects the marginal opportunity cost to society of using a resource in a particular employment. Also remember that VMP of labor measures the added contribution to output of a worker in a specific employment. Resource is efficiently allocated at the equality of these two values. But we can see from the graph that at the equilibrium employment level of the monopolist (L_m), $VMP > W^*$. This implies that too few labor resources are being allocated to this employment and therefore too money are allocated somewhere else. Assuming costless labor mobility, if L_m L_c (or *be*) workers were reallocated from alternative activities to work in this industry the net value of society’s output would rise by area *bce*. These workers would contribute output valued at *acef* in this employment—the value of total product added—while *abef* is the opportunity cost to society of using them here.

4.4 MINIMUM WAGE

Dear student! What is minimum wage and how did it begin? Please, write your answer on the space provided below.

Good! Compare your answer with the explanation given below.

Definition: According to the world book encyclopedia minimum wage is defined as lowest wage legally permitted in an industry or in a government or other organization. The Wikipedia dictionary of words defined the **minimum wage** as the minimum rate a worker can legally be paid (usually per hour) as opposed to wages that are determined by the forces of supply and demand in a free market. In most cases, the minimum wage acts as a price floor.

The minimum has been set by labor unions through collective bargaining, by arbitration, by board action, and, finally, by legislation. Each country sets its own minimum wage laws and regulations, and many countries have minimum wage.

History

The first moves to legislate wages did not set minimum wages, rather the laws created arbitration boards and councils to resolve labor conflicts before the strikes. Introduced in New Zealand (in 1894) through compulsory arbitration, it has become part of the social legislation of almost all countries.

In 1894, New Zealand established such arbitration boards with the Industrial Conciliation and Arbitration Act.

In 1896, the state of Victoria, Australia established similar boards.

In 1899, the Trade Boards Act was enacted in the United Kingdom, establishing four such boards.

In 1912, the state of Massachusetts, United States, set minimum wages for women and children.

Now days in almost all countries, minimum wage laws were a common demand of labor unions.

The objectives of minimum wages:

The goal in establishing minimum wages has been to assure wage earners a standard of living above the lowest permitted by health and decency. Minimum wage serves a variety of objectives. The 1928 ILO Minimum Wage Fixing Machinery Convention took the following as an objective to minimum wage legislation.

To prevent *undue exploitation* or *sweating* of minority disorganized workers. Historically, immigrants, refugees, colonized natives, etc are known to have lived and worked under the tutelage of exploiting employers. In modern times and in many developing economies similar appalling conditions prevail where the victims are the youth, females, immigrants, refugees etc. in such cases minimum wage legislation may be used to raise the level of wages and improve the working conditions of disadvantaged minority to that of the general level (or the majority).

As a *component of income policy*, to serve a broader economic and social policy objectives. A sound development of a national policy requires the harmonization of wages with other

instrument of policy to ensure that plan targets are achieved. Whether minimum wage can play such a role in economic policy depends, among other things, on the relative share of wages in national income, the size of minimum wage bill, and the economy's capacity to pay.

As a policy instrument, *a government uses to eliminate unfair competition*. For example, many employers in Apartheid South Africa were under paying their workers to get the competitive edge in international marketing of their products. The post-Apartheid government of South Africa was using the minimum wage fixing machinery to improve the pay and the working conditions of under paid laborers and establish the competitiveness of South Africa industry on more acceptable and less exploitative basis.

Merits and demerits of minimum wage laws

Dear student! Is minimum wage law useful? What advantage and disadvantages does minimum wage law have? Please, write your answer on the space provided below.

Good! Compare your answer with the explanation given below.

If the law is successfully enforced, and if they are high enough in real terms (or relative to the average wage), minimum wage laws are alleged to have various benefits and costs.

Minimum wages may have the positive effect of:

Reducing low-paid work, which may be unfair and exploitative.

Reducing the dependency of the low-paid on welfare-state benefits, which may in turn reduce taxes or allow increases of other government outlays.

Stimulating economic growth by discouraging labor-intensive industries, thereby encouraging more investment in capital and training.

Encouraging many of those who would normally take low-wage jobs to stay in (or return to) school and thus to accumulate human capital.

On the other hand, minimum wages may have the negative effect of:

Limiting employment of low-wage earners, increasing employment at sub-minimum levels and generally increasing unemployment.

Raising employment barriers for people with little or no work experience or formal education: if a worker's labor is not worth the minimum, he may not find employment at all.

Curbing economic growth by increasing the cost of labor.

Curbing economic growth by lowering the supply of labor.

Increasing the price of goods and services, since employers pass on employment costs in the form of higher prices. (Opponents of minimum wage often see a negative income tax, e.g., as a way to support the lower-waged jobs, with the money coming from those who pay taxes, not those who pay for the products including the unemployed)

Decreasing incentive for some low-skilled workers to gain skills.

Where implemented locally, making labor more expensive than in other areas, which may discourage inward investment and encourage local businesses to relocate their operations elsewhere.

The effect of minimum wage legislation

The fixing of minimum wage rates below market clearing level is also a little concern, because it would have no effect on employment. At the low level of wages, labor demand exceeds labor supply and competition for the purchase of labor among producers would push up wages to its market-clearing level.

The effects of high minimum wage level under conditions of complete (or full) coverage (or uniform economy wide application of minimum wage legislation) are shown below.

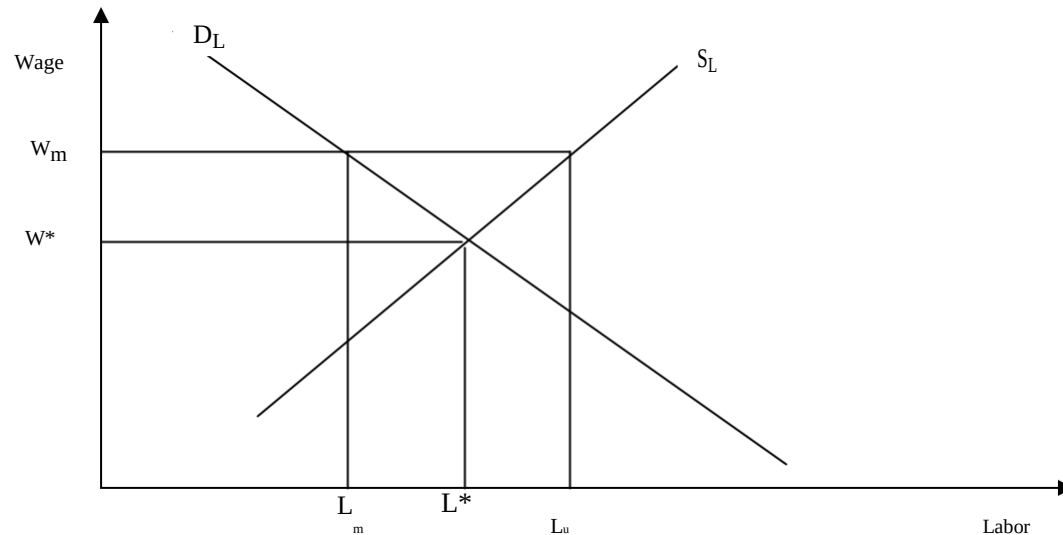


Fig. 4.7. Equilibrium wage and employment levels of competitive firm

As can be seen from the above graph, the equilibrium wage and employment level of a competitive market are W^* and L^* respectively. If the minimum wage is fixed at W_m where $W_m > W^*$, the level of employment in the economy is reduced to L_m . The unemployment created by the imposition of the minimum wage at W_m is $L_u - L_m$. The effect of fixing a minimum wage higher than the market clearing wage rate and under conditions of complete coverage would thus be to increase the unemployment level of the economy.

However, whether unemployment follows minimum wage legislation depends on a number of considerations. For example, the level of unemployment could be more than that caused by minimum legislation if employers made an upward adjustment of the wage structure following that legislation. It may also be the case that the assumption of “other things being equal”, a necessary assumption that underlies the negative wage employment correlation, may be violated. Suppose the demand curve shifted to the right as the minimum wage is imposed (say, as a result of exogenously determined increase in investment). Depending on the rate of increase of the minimum wage and shift of the demand curve, the resultant employment could be more than L_m or even greater than the level of employment at the market clearing wage L^* (which prevailed before the introduction of minimum wage legislation).

Limitations of minimum wage legislations in LDCs

In developing countries minimum wage are often set above market clearing wage levels. These high wages adversely affect the developing economy in a number of ways. High wages cause unemployment, a misallocation of scarce factors of production in the economy (labor is paid above the shadow wages), the substitution of labor for capital in production, etc. An argument in favor of high wages may be made for a high wage economy if the effective demand (purchasing power) can be increased significantly by raising the general level of wages. But this need not be of short run concern for many developing economies producing for export and are not constrained by deficiencies in effective (domestic) demand.

Furthermore, there are many limitations of minimum wage as an instrument of public policies in developing economies.

First, the scope of minimum wage coverage is difficult to define. A uniform economy-wise application of minimum wage policy requires

- Capacity to pay

- Existence of proper data base

- Machinery to make a correct assessment of the requirement and consequences of minimum wage

- Institutions and organizational capacity to establish (fix) minimum wage, monitor development, make frequent wage adjustment and implement policy effectively.

But, these requirements are not easily enjoyable at developing countries. Because of these leakages, many LDCs introduce partial coverage minimum wage. This is especially the case in mono-cultures, economies dominated by one or a few primary export products. Particular examples are

- Public sector in Ethiopia

- Copper mining industries in Zambia

- Coffee and tea industry in Kenya

- Live cattle export in Somalia

- Oil sector in Libya

- Mining industry in Namibia.

Second, relatively wide gaps in interpersonal and regional income and consumption differences, and wide differences in language, culture, income and life style among the population and even the required data is often acquired from sporadic surveys etc. This makes the task of minimum wage fixing machinery very difficult.

Third, it is not only the lack of minimum wage policy that cause poverty in LDCs but also low or non existing of other incomes, high birth rate, low and fluctuating farm product prices, poor and underdeveloped economic and social infrastructures, etc.

Forth, Low wage employment ratio: in LDCs the ratio of wage employee is very low. This is because in developing countries wage employment is only a small fraction of total employment in the economy. In Ethiopia, for instance, 90% of the employment is in the form of family employment.

Concluding remarks:

Minimum wage alone may not provide a satisfactory instrument for broad economic and social policy objectives. Their effectiveness is limited in part by the small share of wages in national income and the relative efficacy of other policy instruments including price policy, fiscal policy, interest rate policy, etc.

Minimum wage policy are only a small share of the wage bill in an economy and should be harmonized for effectiveness with other components of income policies.

The introduction of minimum wage policy should not have a political base but economic realities of the time.

Minimum wage fixing above the equilibrium levels may trigger cost push inflation, reduce the rate of return on investment and slow or reverse the economic and employment growth.

4.5 BASIC WAGE FORMS

Dear student! How wage is set? And who do that? Please, write your answer on the space provided below.

Good! Compare your answer with the explanation given below.

In modern times wage fixing is the task of wage planner or wage designer. These professionals formulate wage plan on the basis of job evaluation and set objectives. The wage formula is expected to enable management to attain its economic and social goals.

economic goals: aimed at specific profit or output target

Social goals: aimed at good industrial relations.

Workers satisfaction with the pay and working condition

Reducing interpersonal wage differentials

Motivating workers to higher performance

Maintaining consistency between labor costs and profit levels

Harmonization with labor legislation

Reducing absenteeism from work

Attainment of “industrial peace”, etc.

Dear student! These considerations or wage goals are not necessarily mutually exclusive nor does the list exhaust all the considerations that enter wage planning. In case of conflicting objectives, trade-offs are involved and the final outcome represents compromises made. The relative success of wage formula is determined by the clarity of its objectives and by degree of success in attaining those objectives.

The problem of wage setting is made somewhat manageable by focusing on some general goals. In this connection many wage design problems point in one or two main directions

“Degree of difficulty associated with the job”

All works are not equally easy or difficult. So the wage formula has to compensate workers for those variations.

The workers “level of performance”

The system of pay need to reflect equity in the sense that workers should be compensated according to their performance. The problem associated with this objective is that of performance measurement.

Performance can be measured in terms of

Quantity or volume of output

Quality or efficiency of their output

Work improvement or simplification (or innovation).

Note that performance indicators are easier to develop for identical or similar jobs than jobs with highly dissimilar characteristics.

Dear student! How do firms pay wage/salary? Please, write your answer on the space provided below.

Good! Compare your answer with the explanation given below.

There are two basic pay systems. These are time rate and piece rates.

A. Time rate:

Under the pure time rate a fixed amount of wage are paid per unit time (hr, week, month, etc) irrespective of performance (quality and quantity of work). In this system the pay is calculated exclusively on a time bases- only on the basis of time spent at work. But the employer does not pay for the time spent at work but for the contribution the workers makes to the firm’s performance target (output, profit, cost reduction, etc targets). The employer’s expectations are that the worker meets the accepted performance standards although he/she is paid on the basis of pay time.

Dear student when do the time rate pay is more applicable/advantageous? Well, the time rate is best yardstick for measuring performance when

Quality of work is difficult to measure

The work requires an application of an even amount time, equal work progress per unit of time, and workers secure equal strength and provide continuous performance for a long duration.

The work require great care in execution

- Incentive toward speed endanger quality
- Continuity of work is often interrupted.

Dear student! What are the advantages of the time rate pay? Well, the main advantages of time rate pay are its simplicity and predictability (also its stable payment). Its main disadvantage is the risk of absence of pay and performance linkages.

B. Piece Rate:

Piece rate is a payment system under which workers are paid on the basis of performance and preset values. Stated differently it is the payment by result (PBR). The application of the system requires two stages procedure;

First, the task performed by an individual is recorded and evaluated on the bases of preset criteria and evaluation rules (called *Merit Rating*).

Second, the individual is paid on the bases of that merit rating.

Thus, unlike time rates (where there is often predictability of home-take pay), what the individual worker is paid under the piece rate system is determined only after work completion and performance evaluation.

Dear student when do the piece rate pay is more applicable/advantageous? The piece rate system is suitable for jobs where labor productivity is easy to measure. For instance,

the manual laborer contracted to dig a ditch may be paid on the bases of volume of holes made on the ground;

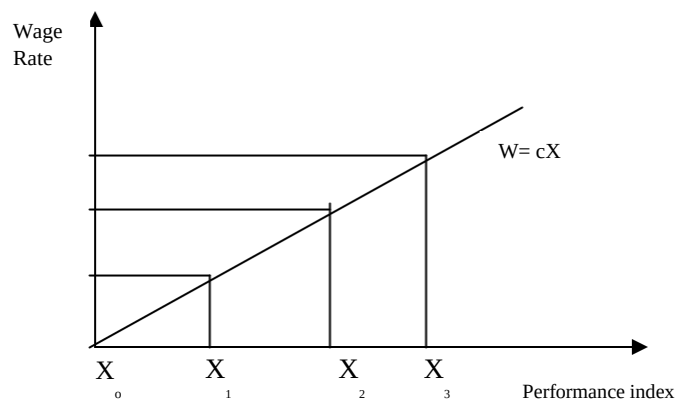
the mason may be paid on the bases of the area of wall constructed;

the typist may be paid on the bases of standard pages typed; etc.

In all these cases it is assumed that individual's performance can be measured and that agreements can be reached with the employer to determine the pay formula that links the level of pay to performance. Algebraically, the applicable formula for PBR earnings may be approximated by a power, an exponential, or a logarithm function. Let us briefly review the properties of these various formulations of the piece rate system. The general form of the power function may be written as

$$W = f(X) = cX^{\alpha} \quad \text{where, } w \text{ is wage rate; } X \text{ is output; } c \text{ \& } \alpha \text{ are constants.}$$

If $\alpha=1$, the rate of pay per unit of output is a constant equal to c . i.e. irrespective of the total output produced, the employee receives a constant sum of c per unit of output. This PBR, also called straight piece rate, implies the worker's productivity is unaffected by the volume of total production. In other words, what the worker produces in the first hour of work is exactly equal to the output in the last hour of work. We normally expect the productivity per unit of time to fall as the total time worked increases.



To motivate the worker toward a higher level of performance, the pay incentives would need to increase faster than output for higher level of production. This can be achieved at least in the following two ways.

By replacing the linear pay formula by a step function or differential piece rate (or Taylor system).

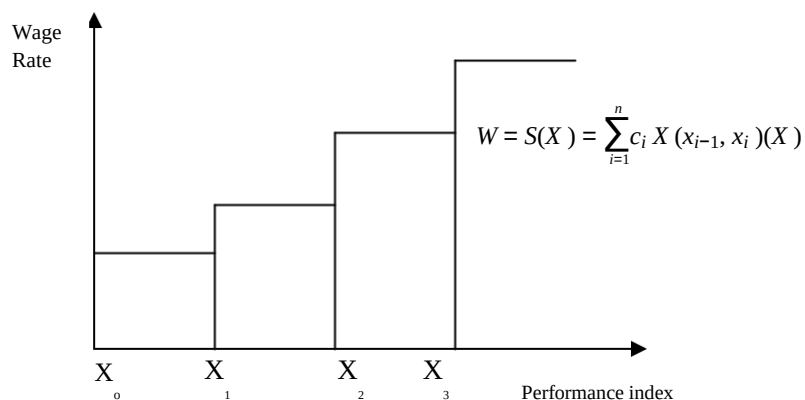
For production levels $X=(x_0, x_1, \dots, x_n)$ the step function may be written as

$$S(X) = \sum_{i=1}^n c_i X(x_{i-1}, x_i)(X)$$

For x_0-x_1 , the rate of payment is c_1 ; where $X_2 > X_1 > X_0$

For x_1 - x_2 , the rate of payment is c_2 ; etc.

$$c_2 > c_1.$$



By introducing a pay formula which has a characteristics of yielding progressively increasing pay incentives. In the power function this is the case where $\alpha > 1$.

Note that the function is increasing at increasing rate. The implication is that the rate of pay per unit of output produced becomes increasing at function of performance. The effect of such a scheme, however, is that it induces to over work and results in a possible deterioration of quality of output. This probability increases with increase of c & α . To overcome such problems regressive pay system can be introduced. In such cases, earnings are an increasing function of performance but increasing at decreasing rate. The formula is easily provided by the inverse of the power and exponential functions.

Example: $F(X) = cx^{\frac{1}{\alpha}}$ $c > 0, x > 0, \alpha > 0$

Concluding remarks:

If we make a strong assumption that the output per unit of time is constant, time and piece rates will become equivalent. In reality it is expected that the output per unit of time decreases as the hours worked increase. Hence,

employers prefer piece rate because it guarantees them a specific output per unit of time.
the workers need the time rate because it guarantees them a constant payment per unit of time although the productivity falls per time.

Empirical study from Germany revealed that piece wage earners showed higher rate performance than a time wage earner under the same difficulty of work.

Multi-Factor Pay System

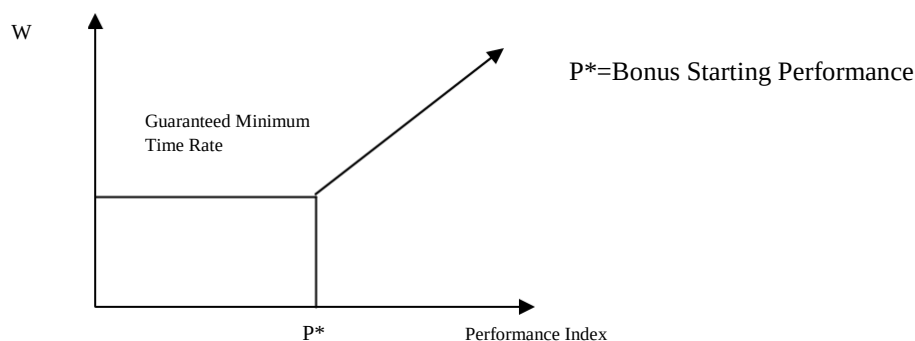
The pure forms of pay systems have limited applications in practice. Actual pay formulas often combine variations of the pure forms-i.e. they tend to combine some of the characteristics of time and piece rates. One class of complex pay systems are what are known as *premium-bonus* and *task-bonus*. They all provide incentives for different levels of performance and do so by combining important features of the time and piece rate formulations.

The premium-bonus formula set guaranteed minimum time rate. The start off is based on the average or the standard production per unit of time. i.e. we need to estimate the average performance per unit of time. The guaranteed minimum time rate is thus established which constitutes the earnings of average worker.

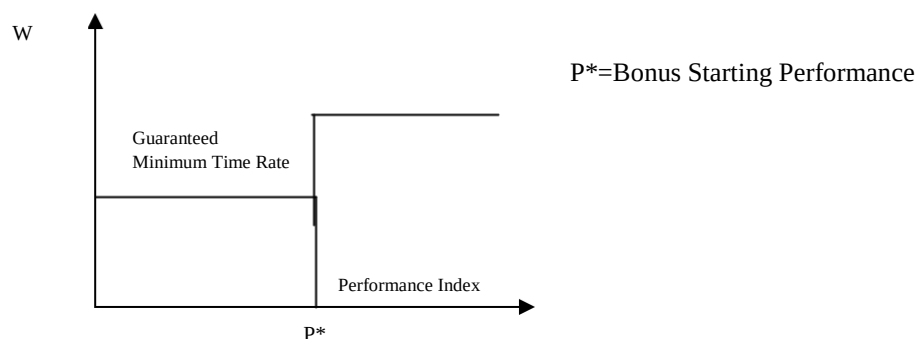
Incentives for higher (than the minimum) performance are then provided by the bonus scheme.

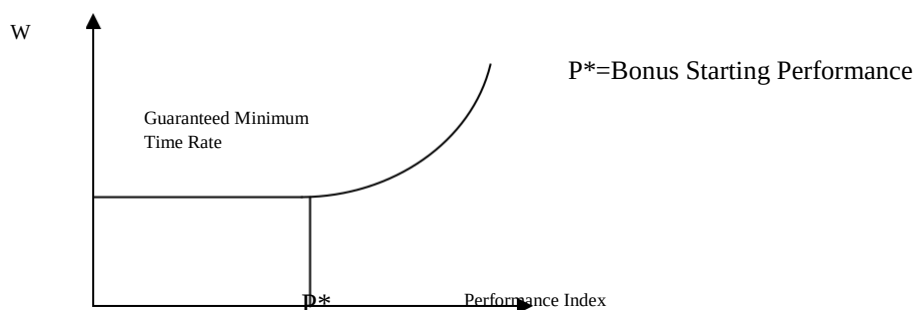
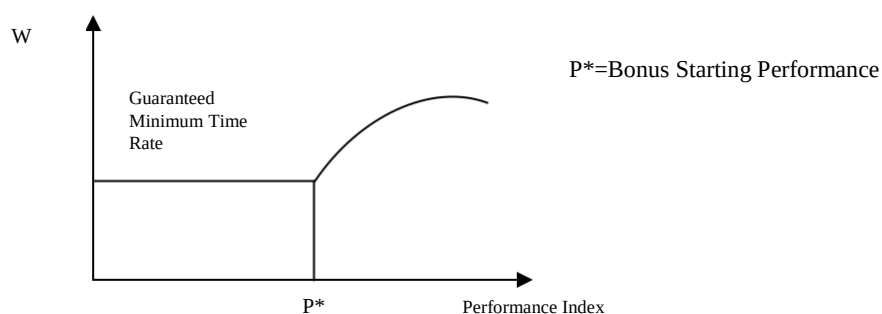
The bonus scheme may be based on:

straight piece rate



step function



progressive form**regressive form**

The choice of bonus system is based on the intended elasticity of pay with respect to changes in performance.

The pay performance relations are influenced by the guaranteed minimum time rate and bonus starting performance.

If the guaranteed minimum time rate is set low, the pay system leaves room within which to build an adequate incentive formula. If the minimum guaranteed time rate is only 20% of expected total home-take pay, 80% of that pay is affected by the bonus. The effectiveness of the bonus scheme varies directly with the share of the bonus in total pay and inversely with the guaranteed minimum pay.

If the bonus system is started too early, then there is a wide scope for the application of the incentive or bonus scheme.

On the other hand, workers' response to the bonus stimuli is less if the expected performance (expected increase of output) is low, as a result of its introduction too late in the game.

4.6 REVIEW OF WAGE THEORIES

Dear student! What is the underling theory of wage? Please, write your answer on the space provided below.

Good! Compare your answer with the explanation given below.

A) *Productivity wage theory*

The marginal-productivity theory maintains that employers will only pay a wage that is, at most, equal to the amount of extra value added to the total product by one additional worker.

Critics of productivity wage theory

Institutional factors: institutional factors such as government legislations play an important role in explaining wage rate than the productivity theory. In Ethiopia, for instance, wage is determined by the CPA laws. The wage rate is tied to educational qualification. In job classification process, academic qualification is the most important factor

Measurement problems: associated with output. We constructed the average production function under the assumption of other things being constant.

$$\frac{X}{L} = f(L, T, M, p, \dots)$$

Since the output is a total contribution, the determination of individual contribution is problematic.

Furthermore, in the production function stated above, the labor input is assumed a homogeneous entity. However, this does not constitute the reality. There are many explanations. Example, lucrative firms-the pay that individuals have is measured by profit rather than productivity of labor. This profitability depends on the supply and demand of the firm's product. The salary that the individual people get is not so much related to the productivity of the individuals or the contributions the made to the output.

Bargaining theory of wage: Trade union play important role in the determination of wage.

The bargaining theory modifies the marginal-productivity theory by taking into consideration other factors (e.g., laws and social and political changes) that might affect the determination of wage levels and by acknowledging that certain basic assumptions (equal bargaining power of employer and employee, free competition between the two, and mobility of labor) that characterize the marginal-productivity theory do not hold in our present economic system.

Wage forms: some wage pay formulas (such as time rates) deviate from the reality. In such pay systems irrespective of the time, you are paid a constant rate. But the fact is that when you start working, your productivity is high. When the day went on you are tired and productivity declines.

B) Iron law of wage

This is the hypothesis that, regardless of the possibility of upward movements in wages in the short run, wages would invariably return to the subsistence level in the long run.

This so-called "iron law" declares that wage rates are determined by the cost of the means of subsistence required for the bare maintenance of the labor force. The wage earner cannot get more than is physiologically needed to preserve his capacity to work and to enable him to raise the number of children required to replace him when he dies. If wages rise above this level, the wage earners will rear more progeny and the competition of these additional seekers for employment will reduce wage rates again to what this doctrine considers the *natural* level. If, on the other hand, wages drop below this alleged natural level, the workers will not be able to feed the number of offspring needed to fill the ranks of the labor force. There will then develop a shortage of laborers and competition among the employers will bring wage rates back to the natural level.

From the point of view of this alleged "iron law" the fate of the wage earners under capitalism appears hopeless. They can never lift themselves above the level of bare subsistence. No reforms, no governmental minimum wage enactments, no activities of labor unions can prove effectual against this iron law. Under capitalism, the proletarians are doomed to remain forever on the verge of starvation. All the advantages derived from the improvement of technological methods of production are pocketed exclusively by the capitalists. This is what the Marxian category of exploitation means. By right, Marx implies, all the products ought to benefit those

who are producing them, the manual workers. The mere existence of the bourgeoisie is parasitic. While the proletarians suffer, the bourgeois exploit, feast and revel.

Dear student! Do you remember Malthus's law of population? What about the wage fund doctrine? Good! The iron law of wage is a combination of the *wages fund doctrine* and *Malthus' law of population*.

The former states that the wage fund for the current period comprises the entire output of the previous period less that which is removed by the entrepreneurs for their consumption. The magnitude determines the total amount available for wages in the current period. The wage fund can expand with technological advance, at which point the Malthusian argument enters: any increase in the wage rate will encourage a growth of population and ultimately an increase in the labor force. Consequently the wage rate falls to its subsistence level-death constraining further falls in wages. The relevance of the above argument is today restricted to primitive agricultural economies.

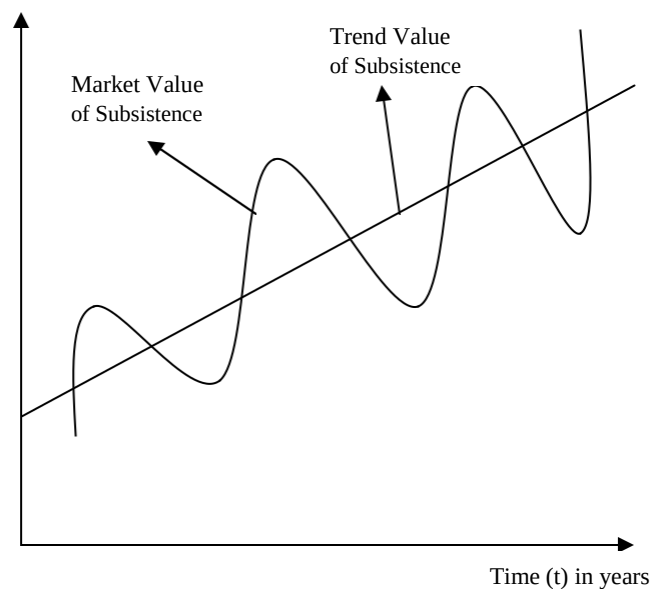
Marxian wage theory-cost of production theory

Dear student! I hope you remember Marx's theory of labor value. As you may guess, Marxian wage theory is based on the theory of labor value. Marx advanced what we may call a cost of production theory of wages-which is more or less equivalent to the *iron law of wage*.

To Marx, the "labor power," which is the sum of the physical and mental capacity to create something of value and which the worker possesses, is divorced from the laborer. It is this labor power that the worker offers for sale in the labor market in exchange for the "subsistence wage." The employer or the capitalist, pays the worker "its" cost of production (the cost of producing the labor power), and uses the purchased labor power to produce goods and services which have use and exchange values. The cost of production which the capitalist pays the worker is the subsistence wage-hence the cost of production theory of the wage rate. However, the value of the product which that labor power creates for the capitalist is far greater than the subsistence wage he pays; and it is in this manner that Marx introduces the exploitative nature of the capitalist system.

Marx's wage theory was used by critiques of the capitalist system to demonstrate the exploitive characteristics of the system. Accordingly, a short run oscillation around the trend value of the

subsistence wage is of no consequence. The short run or *market value* of the subsistence wage may (and often) deviate from its long-run, *normal* or trend value. Marxian theory was focused on the explanations for the trend value of minimum wage. Here and there in his writings Marx describes this subsistence wage as a “variable magnitude” (whose value changes depending on the level of development of the economy, consumption culture of the working class, capacity to pay wages, etc), and wage differentials are acknowledged as reflecting the cost of reproducing different skills of labor. However, the main thrust of his theory in *Das Kapital* and *value*, price and profit is to demonstrate the low level and “constancy” of the subsistence wage. He dismisses wage differentials as “excessively” small and writes on the negative wage effects of the “constantly increasing organic composition of capital.” Technological improvement, which this phrase suggests, simply forces family subsistence downwards and increases the rate of unemployment in the system.



Marx does not claim the originality in the discovery of the subsistence wage theory. The subsistence wage theory in fact gets its full expression in the so called “wage fund doctrine”, which may be described as the collective wisdom on the subject from the writings of the classical school. According to this doctrine, the wage bill is fixed in the short run. Its share in the national income can only change by changing the shares of profits, rents and interest incomes. However, since the share of wages is very high (often 80% of the national income), it is impossible to increase significantly the level of wage rate by running down the shares of non wage incomes in the short run. The constancy of the wage shares in national incomes and its

dependency on the latter implies that wage policy (or more generally, income policy) is ineffective in the short run.

Marxian critiques accuse the classical economists for being apologists of the capitalist system by disarming the working class through their “preaching” that the working class cannot improve its conditions of living in the short term. There will also be no improvement in working conditions for the working class in the long run because of the application of the Malthusian population theory. Any improvement in the means of subsistence causes even greater rate of increase in the size of the population with the result that conditions continue to be maintained at the deteriorating levels.

For Fervent students:⁸**A) Marx's Explanation of Capitalist exploitation**

In the case of “simple exchange” the monetization of exchange value takes place; i.e. products are exchanged using the medium of money. Money here serves only one purpose: that of a medium of exchange. In what Marx Called the “circulation of commodities” the exchange of “labor equivalents” takes place, with money as an intermediating factor.

$$C_1 \rightarrow M_1 \rightarrow C_2 \rightarrow M_2 \text{ such that } C_1 = C_2, \text{ or, } M_1 = M_2$$

Where C_1 and C_2 are the real values of exchanged commodities, and M_1 and M_2 are their respective prices expressed in monetary terms. In other words, the exchange values of any two commodities depend on the amount of their labor content. In the above case, the amount of labor embedded in C_1 is the same as that used in the production of C_2 , hence the equivalence of their exchange in monetary terms. This exchange of “labor equivalents” holds true in all transactions in the product market. But, according to Marx, only in the case of simple exchange collapses.

$$C_1 = M_1 \neq C_2 = M_2$$

$$C_2 > C_1 \text{ or, } M_2 > M_1$$

Where C_1 is the subsistence wage, M_1 is its monetary value, C_2 is the commodity which labor created and M_2 is the commodity value in monetary terms. Briefly, the value of the commodity which labor power created ($C_2 = M_2$) is far greater than the cost of that labor power (which is the subsistence wage, $C_1 = M_1$).

Marx measured the degree of exploitation resulting from this unequal exchange by the *rate of surplus value* (Rs). This rate is simply the ratio of surplus value (or the net value of output) to the value of the variable capital (or the “price” of subsistence). In other words, Rs is the proportion of the capitalist’s net income that he pays out in wages. Note, value or price determined by the following equation,

$$P = C_k + V + S$$

Where P is the value of the commodity produced, C_k and V are, respectively, the constant and variable capital used in production, and S is the surplus value. The rate of surplus is simply,

⁸This section is extracted from lecture note of Teshome Mulat (prof), Addis Ababa University.

$$R_s = \frac{S}{V}$$

Often expressed as a percentage, the above ratio measures the degree of capitalist exploitation. The higher the ratio the larger is the portion of the value created by labor power which the capitalist expropriated, and vice versa. An alternative measure of the degree of exploitation that Marx suggested is *rate of profit*. The rate of profit is computed by taking in to account the constant capital C_k in the measurement (of the degree of exploitation),

$$\Pi_r = \frac{S}{C + V}$$

Where Π_r is the rate of profit (again usually expressed as a percentage). Since $C > 0$, $V > 0$ and $S > 0$, $\Pi_r < R_s$

B) Marx's Stages of Social Development

Marx identified some four (five) stages through which the relations of production and society had passed (social development which go parallel to economic development)

Stage I-Primitive Communist Labor: in this stage the hunters and gatherers constitute the society. They are called communist because the sharing is based on the Marxian doctrine-from each according to ability to each according to his needs. This is the highest stage you can reach

Stage II-The Stage of Formal Slavery: this is associated with agrarian slavery. In this stage there is no concept of wage nor did the subsistence wage arise. No difference between labor and labor power.

Stage III-Wage Slavery: is to blink with the coming of capitalism and it is this that Marx studied.

Stage IV-Socialist Labor: correspond to socialist state

Stage V- Communist Labor: correspond to communist state. The motto here was "from each according to ability, to each according to needs." The essential thing about this is it is the subsistence wage.

4.7 LABOR MARKET SEGMENTATION THEORY⁹

Dear student! Labor markets of all sectors have a single definite job: hiring and supplying of labor service and determination of wage to all types of jobs performed. But this does not mean that labor markets of an economy are perfectly homogeneous; there are some differences among sectors regarding wage determination. Many empirical studies have operationalized the concept of segments with particular reference to the wage determination mechanism. Most of the studies find that there is a difference between the wage determination mechanisms in the primary and secondary sectors. Descriptive literature argue that labor market segmentation theory provides a good description of the income distribution and is therefore of heuristic importance. The reasons for segmentation may be important for understanding the form of the income distribution, but segmentation as such does not imply any market failure.

Two crucial elements of segmented labor market theory was identified

First, the labor market can be usefully thought of as being made up of several distinct segments with different rules for wage determination and employment policies.

Second, access to jobs in at least some sectors at some times is limited in the sense that more people want jobs than there are jobs offered. Thus there may be queuing for these jobs either in the form of unemployment or job queues among employed workers or both.

All the early writers on labor market segmentation theory identified limited mobility among sectors as an important aspect of the theory. More significantly, they argued that there is a hierarchy of sectors with access to the highest paying being the most difficult. *Generally, the essential elements of labor market segmentation theory are the existence of segments with different wage setting mechanisms and queues for high wage jobs.*

Dickens, William T. and Kevin Lang (1992) *Labor market Segmentation Theory: reconsidering the Evidence*; Working paper No. 4087, NBER Working Papers series.

4.8 LABOR MARKET DISCRIMINATION¹⁰

Dear student! What does labor market discrimination mean? Please, write your answer on the space provided below.

Good! Compare your answer with the explanation given below.

Discrimination in the labor market means treating workers unequally even when they have the same productive characteristics (human capital). Since it is hard to precisely measure the latter it is not surprising that it is hard to pin down the former. But there is a long history of rules and laws (plus patterns of inequality) that have revealed explicit discrimination in the past. An interesting method that is often used today to get at discrimination is an "audit" study, which is a variation on a "hidden camera" method. Two workers who are similar in every respect except their gender or race apply for a job, in a context in which the employer does not realize that he or she is being "tested."

Discrimination on the basis of race and gender is against the law of many countries but many other forms of discrimination are not. Problem is that it is very hard to prove intent to discriminate--need for a "smoking gun"--indeed; much discrimination may be unconscious, rather than explicit.

Conventional economic theory suggests that discrimination is inefficient--all a perfectly rational employer should care about is the workers' marginal value product. So, an employer who DOES NOT discriminate should have an advantage....because discrimination by others reduces the market wage of the group discriminated against and makes them a really good deal for those who are not encumbered by "irrational" attitudes.

Prof. Nancy Folbre, Spring 2003. Lecture Notes: Econ. 103 @ <http://www.answers.com>

Assuming that there are enough non-discriminators to make a difference, their decisions should gradually bid up the price of the discriminated against group (shifting the demand for them to the right) thus eliminating the discriminatory differential....Unfortunately, there's not much evidence that this works in the real world.

The biggest sex-discrimination suit in U.S. history, covering 500,000 women, has just been filed against Wal-Mart (see *Business Week*, March 3, 2003).

An interesting recent example of race discrimination is found in an "experiment" conducted by two researchers submitted multiple resumes from phantom job seekers in response to help-wanted ads. They randomly assigned the first names on the resumes, choosing from one set that is particularly common among blacks and another that is particularly common among whites. (Example, Kristen vs. Tamika, Brad vs. Tyrone). Applicants with white-sounding names were 50% more likely to be called for interviews than were those with black-sounding names. (See *New York Times*, December 12, 2002, Alan Krueger, "Economic Scene; Sticks and stones can break bones, but the wrong name can make a job hard to find.")

Another interesting thing about gender inequality-choices in the labor market- affects outcomes in the dating or marriage "market." Men generally benefit both places from choosing well-paying jobs; women are often penalized in the dating/marriage market for choosing jobs that are considered "unfeminine" (and many well-paying jobs fall in this category, especially in the less-educated category).

4.9 CHAPTER SUMMARY

A labor market is concerned the activity of hiring and supplying certain labor to perform certain jobs, and the process of determining how much shall be paid to whom in performing what tasks

Both the local and regional labor markets are defined with respect to the frictions' that inhibit labor mobility

The profit maximizing employer will obtain its optimal level of employment where $MRP = MWC$. We label this equality the $MRP = MWC$ rule.

Available labor is efficiently allocated when its value of marginal product is the same in all alternative employments. Alternatively, an under allocation of a particular type of labor to labor market production occurs when its VMP in any employment exceeds W_L .

The monopolist's labor demand curve D_m is less elastic than the competitive firm's demand curve.

Establishing minimum wages has been to assure wage earners a standard of living above the lowest permitted by health and decency

The effect of fixing a minimum wage higher than the market clearing wage rate and under conditions of complete coverage would thus be to increase the unemployment level of the economy.

Wage design problems point in one or two main directions: Degree of difficulty associated with the job and the workers level of performance

The marginal-productivity theory maintains that employers will only pay a wage that is, at most, equal to the amount of extra value added to the total product by one additional worker.

Iron Law of wage states that, regardless of the possibility of upward movements in wages in the short run, wages would invariably return to the subsistence level in the long run.

Essential elements of labor market segmentation theory are the existence of segments with different wage setting mechanisms and queues for high wage jobs.

4.10 SELF TEST EXERCISE

Dear student! Now it is your turn to reflect the important issues presented above. The following questions are designed to evaluate the extent to which you understood the main points discussed in this chapter. You are strongly advised to answer all of them. If you encounter challenges in answering them, you are strongly advised to refer back to the note provided in this chapter.

What is the base for classifying labor market as local or regional?

Distinguish between

Local and regional labor market

Internal and external labor market

Wage and salary

Clearly explain the necessary conditions for labor market efficiency.

'In determining the profit and maximum level of employment, the monopolist behave in the same way as the competitor.' Do you agree? Justify your answer.

Distinguish between wage taker and wage maker.

Is a monopolist (that is a competitor in the product market) a misallocator of labor resources? Why?

Explain the objective of minimum wage legislation set by ILO.

List the advantages and disadvantages of minimum wage legislation.

What are the challenges of introducing minimum wage legislation in LDCs?

What effect does the minimum wage legislation has if it is set below the market clearing value?

What are the main points that a wage designer should take in to account while formulating wage plan? Explain each of them.

Distinguish between time rate and piece rate payment system.

When does the time rate be best pay system?

Critically evaluate the productivity wage theory.

Explain the labor market segmentation theory.

CHAPTER FIVE: QUALITATIVE ASPECT OF THE LABOR SUPPLY (THE NON-HOMOGENEOUS LABOR)

5.1. INTRODUCTION

Overview:

Dear student! The analysis in the last three chapters forms the base of the neoclassical or orthodox theory of labor market. An important characteristic of our previous analysis is its assumption that the labor force is made up of individuals who are undifferentiated in terms of their skills; i.e. workers are all alike in their economic characteristic and perfectly substitutes for each other in production. But of course, labor force is highly diverse and a theory of labor market that ignores this diversity is incomplete as it cannot explain the reason of varying labor market outcomes among employees. In this chapter, we relax the implicit assumption of homogeneity in labor force and introduce the theory of human capital formation.

Chapter Objective:

- be familiar with the concept of human capital formation,
- understand the human capital model,
- appraise the worthiness of such investment,
- evaluate the human capital theory.

Chapter Content:

- The Human Capital Theory
- The Model
- Criticisms of Human Capital Theory
- Chapter Summary
- Self Test Exercise

5.2. THE HUMAN CAPITAL THEORY

Dear student! Why do you come to study in this university? Why don't you just relax nor do other thing in your spare time? Do you think that investment can be made on human being? Why/how? Please, write your answer on the space provided below.

Good! Compare your answer with the explanation given below.

Although the idea is old, it is actually in the early 1960's that much of the debates on investment on human capital took place. The central idea in this debate is that investment can and are being made in human beings, and that differences in the rates of these investments account for much of the wage differentials observed in practice. The important point is that expenditures on education and training can be fruitfully treated as investment in human capital. The concept of human capital investment may also go beyond education, migration, and job search. It may include an investment activity that employs labor productivity such as expenditure on health, preschool child care, recreation facilities, etc.

The human capital theory explains that the motive for human capital formation is provided by earning differentials. According to this model, individual workers invest in themselves with the aim of improving their labor productivity and hence increase their future earnings. The education-productivity-wage relation used is defined recursively: *labor productivity is assumed a positive function of "education" (or years of schooling) and labor productivity determines the wage rate.* Thus, individuals undergo additional schooling or on the job training in order to benefit from the relatively high future yields of the investment.

5.3. THE MODEL

Dear student! Can we evaluate/analyze the investment on human capital like any other physical investment? Is there any cost or benefit associated with this investment? Please, write your answer on the space provided below.

Good! Compare your answer with the explanation given below.

Recall that the explanations for human capital investment are many:

Economic- increased future income

Political- national defense and creative powers

Psychic –satisfaction from knowledge, etc

Since our concern is with individual decision for human capital investment, the focus will be on the economic explanation for the investment. From purely economic stand point, a rational decision to whether to go to school will involve a comparison of the associated costs and benefits.

☞ The monetary costs incurred in the purchase of education are of two general types:

Direct or out of pocket cost. Example: expenditure for tuition, special fees and books and supplies (room and food expenditure are not included)

Indirect or opportunity cost. Example: earning you give up by joining that labor market when schooling.

☞ The economic benefits of investing in education are an enlarged future flow of earnings.

Techniques of human capital investment appraisal

The evaluation of the worthwhileness of the investment in human capital requires the comparison of costs incurred by and benefits generated from the investment. Sometimes costs/benefits are incurred/generated over a long period of time. In such cases we should properly take in to account the time value of money.

Dear student! Do you know the concept of time value of money? Please, write your answer on the space provided below.

Good! Compare your answer with the explanation given below.

Time Preference, in short, is the idea that people are impatient and subjectively prefer goods in the present over the same good in the future. Accordingly, to have a meaningful comparison, we better discount the future earnings or expenditures and obtain the net present values.

The mathematical expression of the future value of a dollar is

$$V_n = V_p (1+i)^n \text{ where, } V_p = \text{present or current value}$$

$V_n = \text{future value (value at } n \text{ years)}$
 $i = \text{interest rate}$

The discounted formula or present (or today's) value of expenditures (or revenues) is given by

$$V_p = \frac{V_n}{(1+i)^n}$$

Now let's come back to our issue of evaluating human capital investment. For such investment decision, various types of evaluation techniques can be used:

Benefit-Cost Ratio (BCR): a ratio of discounted future benefits of an investment to its discounted costs can be used to compare the economic yield of investment.

$$BCR = \frac{\sum_{i=1}^n \frac{B_i}{(1+i)^i}}{\sum_{i=1}^n \frac{C_i}{(1+i)^i}}$$

Decision Rule: the individual should make the investment if its benefit cost ratio is greater than one.

$$BCR > 1$$

Net present Value (NPV): it is very clear that costs and benefits associated with investing in education accrue at different points in time. But because of the idea of time preference, dollars earned or expended have different value in the future than today.

If both costs and benefits are incurred over a number of years, we can extend the discounting formula as follows

$$V_p = E_0 + \frac{E_1}{(1+i)^1} + \frac{E_2}{(1+i)^2} + \dots + \frac{E_n}{(1+i)^n}$$

$$V_p = \sum_{n=1}^N \frac{E_n}{(1+i)^n}$$

Where V_p represents the net present value

E represents stream of incremental earnings (R-C)

E_0 = net income received immediately (usually fixed costs)

Decision Rule: the individual should make the investment if its net present value is greater than zero. $\Rightarrow NPV > 0$

If NPV is positive, it means that the discounted value of benefits exceeds that of the cost (the benefit exceeds cost) and hence the decision to invest is economically rational.

Internal Rate of Return (IRR): the internal rate of return is the rate of discount at which the net present value of human capital investment will be zero. In other words it is the rate that equates the discounted present value of benefits and costs.

$$V_p - \sum_{t=1}^n \frac{R - C}{(1+r)^t} = 0 \text{ or } E_0 + \frac{E}{(1+r)^1} + \frac{E}{(1+r)^2} + \dots + \frac{E}{(1+r)^n} = \sum_{n=1}^N \frac{E}{(1+r)^n} = 0$$

Here, instead of solving for V_p , we solve for r given the values of E 's and assuming V_p is zero. A moment's reflection makes clear that r indicates the maximum rate of interest which one could pay on borrowed funds to finance a human capital investment and still break even (because he could not get a return above r).

Notice the difference between social (r_s) and private (r_p) rate of return. In general social costs of education include all costs incurred including government subsidies while the private calculation would include only the costs incurred by the private individual. On the benefit side, the usual practice is to define private benefits as gross incomes less direct taxes and to approximate social benefits by gross income.

Decision Rule: the human capital investment decision rule or criteria appropriate to this approach involves a comparison of the internal rate of return, r (r_s or r_p) with the average yield rate of capital market which can be provided by the average interest rate(i) applicable at the banking sector.

If $r > i$, the human capital model is profitable and should be undertaken.

If $r < i$, the yield from the investment does not even cover the loan bearing rate. i.e., the investment is unprofitable and should not be undertaken.

In this case, given i , it will be profitable to invest in all human opportunities up to the point where $i = r$.

The demand of human capital

Dear student! What is the demand for human capital investment? And how do we drive it? Please, write your answer on the space provided below.

Good! Compare your answer with the explanation given below.

The locus of all points where $r = i$ represents the decision rule for human capital investment and is the same as the r -schedule. The r -schedule can be interpreted as the demand for human capital investment (or education) curve.

The r -schedule or the demand for human capital investment curve is a decreasing function. As the years of schooling increases the yields from additional schooling decreases. This is partly due to the valid assumption that investment in human capital is subject to the law of diminishing returns. This is a limit to the human capacity to learn, and the frontier of knowledge in any

branch expands only slowly. This means diminishing “educational output” or incremental earnings tend to decline.

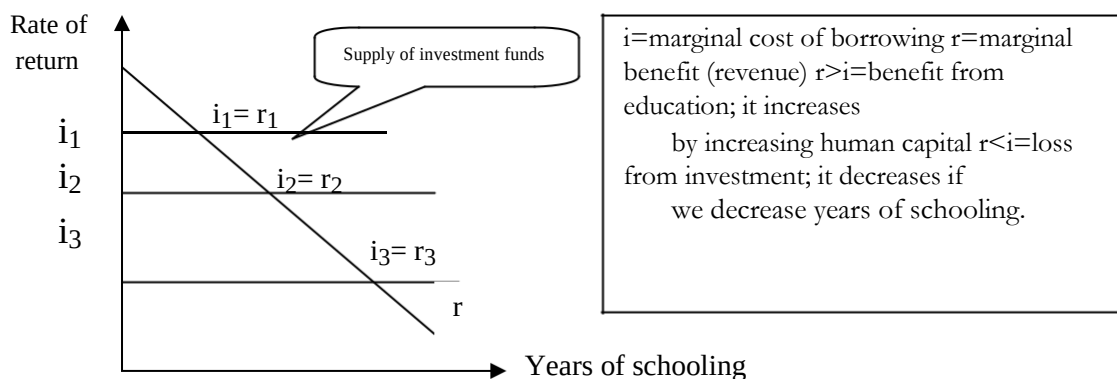


Fig. 5.1. The demand for human capital investment (the r -schedule)

Another explanation for down ward slopping r -schedule is that as years of schooling increase, benefits tend to fall but costs rise. Furthermore, the opportunity cost of one time rises as one increase investment in human capital formation.

Limitations of the rate of return on education

Dear student! How do you see the analysis of return on education? What are the drawbacks of the theory? Please, write your answer on the space provided below.

Good! Compare your answer with the explanation given below.

1. Problem in measuring correctly and comprehensively the benefits and costs of the education or training program for which yield estimates are being made.

On the cost side, although direct costs and forgone earnings could be measured, there is also another form of human capital formation that is not measured by the above two costs such as psychic loss, which includes the disadvantage of education. Some people may find education boring, difficult and nerve-racking, and the cause of sense of deprivation, loss of friends when going to other place.

On the benefit side there are many “non market returns” such as satisfaction, the pursuit of knowledge and the improvement in the capacity to enjoy leisure. These are sometimes called psychic returns to education, or positive externalities.

Hence the rate of return calculations from education is concerned only with economic, monetary or pecuniary yields of the investment. It is often replaced even by a narrowly defined proxy of “earning differentials” that is inapplicable where earning differentials are not based on productivity or educational differences among workers. The use of earning differentials as a measure of the net benefits from education rests on human capital theory, which makes improvement in labor productivity as the sole justification for human capital investment, and establishes the education-productivity-wage relations recursively.

The possibility of an *upward biases* if wage differentials due to ability are confused as resulting from extra “education” and a *downward biases* if the full income benefits of education are significantly more than approximated by wage differentials.

Rate of return calculation does not adjust for the probability of serious unemployment problems. It would be adjusted downward by the appropriate index.

The assumed education-earning relationship which was driven by the human capital theory and base for the rate of return calculation is complex especially in developing countries. Some argued that employers are more interested in the affective than cognitive skills while others argued education is used as screen in device than for productivity.

It is based on the extensive use of cross sectional data. Rate of return calculations may have predictive merits, *ceteris paribus*, if income and cost structures remained stable in the future or the plan period (which is hardly possible to occur). It is reasonable to assume that the longer the plan period, the less useful are the rate of return calculation as guide to educational policy because of the higher probability of instability.

Note that the calculated single value results are poor guides to public policy and call for caution in their interpretation. What are the policy implications, for example, of a lower social rate of return in a university than in a secondary education?

Generalizations and implications

Length of income stream: other things being equal, the larger the stream of post investment incremental earnings, the more likely the net present value of an investment in

human capital will be positive. The longer the earnings stream, the higher the internal rate of return. (Notice, their discontinuous labor force participation inhibits employers from investing in their on-the-job training)

Costs: other things being equal, the lower the cost of human capital investment, the larger the number of people who will find that investment to be profitable.

Earnings differential: other things being equal, the higher the college-high school earning differentials, the larger the number of people who will invest in a college education. *The college wage premium* is the ratio of the earnings of college graduates to the earning of high school graduates.

Dear student! Why different people invest in different amounts of human capital and realize substantially different earnings? Please, write your answer on the space provided below.

Good! Compare your answer with the explanation given below.

The main reasons why different people invest in different amounts of human capital are

- differences in ability
- differing degrees of uncertainty concerning the capacity to transform skills and knowledge in to enhanced earnings due to discrimination;
- differing accesses to borrowed funds for human capital investment (this is due to capital market imperfections).

Note that the first two factors work through the demand side of human capital market where as the third works through the supply side. Imperfections in the capital market may bias investment toward physical capital than human capital.

Forms of trainings

There are two basic forms of trainings.

General training refers to the creation of skill or characteristics which are equally usable in all firms and industries.

Specific training refers to a training which can be used only in the particular firm which provides that training.

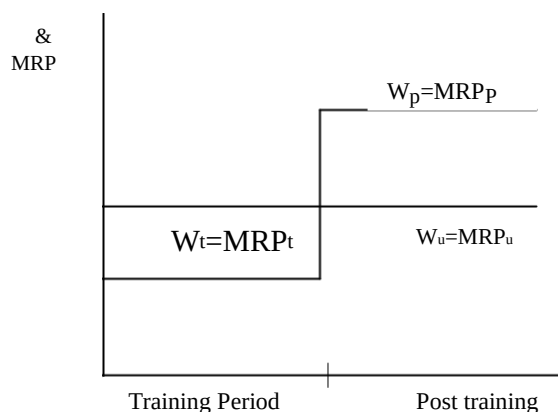
Note that while general training enhances the productivity of workers to all firms, specific training increases the worker productivity only in the firm providing that training.

Dear student! Who is going to pay for general and specific training? Please, write your answer on the space provided below.

Good! Compare your answer with the explanation given below.

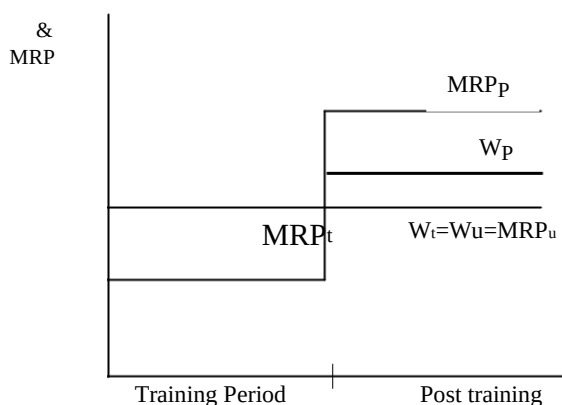
First, the worker will pay for general training through the lower wages during the training period.

Second, the firm must bear the cost of specific training.



A. General training

Since the post training marginal revenue product is relevant to all firms, firms compete to bid up the wage rate. Hence, the firm has no option than paying wage equal to MRP_p . But the workers pay for general training by accepting a wage below that of untrained workers during the training period. Note the subscripts t , u , & p refer to on training, untrained, and post training respectively.



B. Specific training

The post training MRP applies only to this firm. Since the specific training is not transferable to other firms, the worker refuses to pay for such training and will not accept a lower wage during the training period. Hence wage rate remains at W_u during training. The implication is that the employer pays the cost of training by paying more than the MRP_t . However, the employer does not increase wage after training significantly above W_u .

$$\Rightarrow MRP_p > W_p$$

Fig. 5.2. Wage and MRP of a worker attending specific and general training

5.4. CRITICISMS OF HUMAN CAPITAL THEORY

Dear student! How do you see the analysis of return on education? What are the drawbacks of the theory? Please, write your answer on the space provided below.

Good! Compare your answer with the explanation given below.

The following are some of the most important limitations of human capital theory:

Empirical studies, while computing the rate of return on education, fails to recognize that part of expenditure on education are consumption rather than investment.

Empirical studies understate the rate of return on a collage education by not taking in to account that the jobs of college graduates are more pleasant and entail superior fringe benefits than the job of high school graduate.

To the extent that the incremental earnings of college graduate are due to their greater ability and not to schooling *per se*, the rate of return on education will be overstated.

If a portion of the incremental earnings of college graduates is attributable to screening, the social rate of return on a college education will be overstated.

5.5. CHAPTER SUMMARY

According to the human capital theory, individuals invest in human capital in order to benefit from the relatively high future yields of the investment. But in reality it may go beyond economic return to include Political and Psychic returns

Expenditures on education/training, migration, job search, health, preschool child care, recreation facilities can be fruitfully treated as investment in human capital.

The worthwhileness of human capital investment can be evaluated using benefit cost ratio, net present value or the internal rate of return techniques.

The demand for human capital investment curve is a decreasing function. This is due to the law of diminishing returns and the fact that as years of schooling increase, benefits tend to fall but costs rise.

The computation of rate of return for education has serious challenges and limitation. Thus the calculated single value results are poor guides to public policy and call for caution in their interpretation.

People invest in different amounts to human capital mainly due to differences in ability, differing degrees of uncertainty concerning the capacity to transform skills and knowledge in to enhanced earnings due to discrimination, and differing accesses to borrowed funds.

Although investment in human capital is worthwhile, imperfections in the capital market may bias investment toward physical capital than human capital.

While general training enhances the productivity of workers to all firms, specific training increases the worker productivity only in the firm providing that training.

During the training period, the workers pay for general training by accepting a wage below that of untrained workers and employer pays the cost of specific training by paying more than the MRP.

5.6. SELF TEST EXERCISE

Dear student! Now it is your turn to reflect the important issues presented above. The following questions are designed to evaluate the extent to which you understood the main points discussed in this chapter. You are strongly advised to answer all of them. If you encounter challenges in answering them, you are strongly advised to refer back to the note provided in this chapter.

What is the rationale for human capital investment?

Explain the activities that are considered as human capital investment.

How do we evaluate the worthwhileness of human capital investment?

Discuss the limitations of rate of return on education.

What is the rationale for firms to pay for specific trainings?

Critically evaluate the human capital theory.

CHAPTER SIX: INSTITUTIONS & THE LABOR MARKET

6.1. INTRODUCTION

Overview:

Dear student! An important characteristic of our previous analysis is its assumption that the labor force is made up of individuals who can decide on their labor supply freely and independently; i.e., labor was assumed to be supplied under competitive condition. However, in many occasions such an assumption is inappropriate. The most studied exceptions are the interventions of unions and the government. In this chapter, we relax the aforementioned assumption and introduce the impact of unions and government on the supply, demand and price of the labor service.

Chapter Objective:

understand the origin, and objective of labor union,
assess the impact of unions and government on labor market,
compare & contrast the impact of unions and government on labor market.

Chapter Content:

Labor Union: Meaning, Origin and Objectives

- o Labor Unions and Labor Market

Labor supply under unions; Unions and wage determination; Collective bargaining; Are unions maximizers?

The Government and Labor Market

Employment and wage; non payroll spending; publicly provided goods and services; income tax; labor law.

Chapter Summary

- o Self Test Exercise

6.2. LABOR UNIONS: MEANING, ORIGIN & OBJECTIVES

6.2.1. Definition

According to American Heritage Dictionary, Labor Union is an organization of wage earners formed for the purpose of serving the members' interests with respect to wages and working conditions.¹¹ Stated differently, labor union is *an association of workers for the purpose of improving their economic status and working conditions through collective bargaining with employers.*

Historically, there have been two chief types of unions: *the horizontal*, or craft, union, in which all the members are skilled in a certain craft (example, the Ethiopian Economic Association); and *the vertical*, or industrial, union, composed of workers in the same industry or industries regardless of their particular skills (example, Ethiopian Teachers Association). *A company union is an employer-controlled union having no affiliation with other labor organizations.*

6.2.2. The Origin of Labor Unions

Dear student! Why unions? What are the factors that give rise to creation of labor union? Please, write your answer on the space provided below.

Good! Compare your answer with the explanation given below.

Unions are essentially the offspring of industrialization; i.e., labor movement originated primarily because of technological, social, political, and economic changes accompanying industrialization. Most theorists argued that the labor movements originated because industrialization produced a wage-earning class with special problems which could be more effectively redressed through organized activities. Most pre-industrial workers were self sufficient, self-employed artisans, crafts people, or farmers who worked in their own homes and on their own land. The workers were simultaneously employers and employee. Industrialization, however, undermines this system of self employment and made many workers dependent on factory owners for

Encyclopedia, Colombia University Press, <http://www.Answers.com/laborunion>

employment and income. Industrialization also separated the function of management and labor.

Although employers may not have purposely mistreated labor, competitive pressures in the product market often forced them to pay meager wages, to let their employees work “long and hard,” to provide minimal on-the job amenities, and to terminate workers when lagging product demand made them redundant. Hence, industrialization forced workers in to a position of dependency where their earnings, working conditions and security were largely beyond their control as individuals. To represent, protect, and enhance their interests, workers formed unions to bargain collectively with employers.

In short, unions are a byproduct of industrialization through which workers’ earnings, working conditions, and security become dependent on decisions of business owners. Unions arose to represent, protect, and enhance the interest of workers. Furthermore, statistics form USA shows that unionization varies greatly by industry, occupation, gender race, age and location.

Although unions are one of the major institutional constraints on labor supply that exist in a modern economy, the union is by no means the only or perhaps any longer the most important qualification to competition in this area. The conditions under which labor is supplied are frequently affected by rules and conventions, social norms, and these too can mitigate against competitive behavior. Furthermore under some circumstances where individuals possess a unique skill or talent (Example leading sportsman artists, and musicians etc), the forces of competition are muted if not almost entirely shut.

6.2.3. Labor Movement in LDS: Contrasts with Developed Countries

Dear student! Do labor unions exhibit similar characteristic across the world? What is the basic difference of labor unions of developed and developing countries? Please, write your answer on the space provided below.

Good! Compare your answer with the explanation given below.

Since labor movements tend to reflect the environments that produce them, it is not surprising that the trade unions in industrializing countries are likely to be different from those of more developed nations. In order to bring these contrasts in to broader relief, we shall examine three important characteristics of labor movement-*independence of labor unions from political parties and government; significance of collective bargaining; and union structure.*

Independence: the labor union of developed countries consider themselves to be “free” in the sense that they are independent of governments, political parties, and religious groups. Moreover, there is a strong tradition in the more industrialized countries that unions are free to strike and carry on other concerted activities to improve the welfare of their membership without governmental interference. In the LDCs, on the other hand, labor unions are less inclined to insist on independence from political parties and governments, and this independence is not likely to be permitted by political leaders, even if union representatives would like to have it.

Among the major reason for strong relationship between government and unions are: dominance of government by one major party (of which labor unions are a significant part of it), governments strategy to control union (through subsidy, political appointment of leaders, legislation, imprisonment, etc.), strategic position of the urban working class for the attainment of national objectives. Thus, we may conclude that the governments of LDCs, will rarely permit unions to be ‘independent’ or ‘free’ but the unions often represent the interests of the workers within a dominant party.

Collective bargaining: in industrialized countries of Europe and USA, labor movement relies mainly on collective bargaining as a means of achieving its objective. In LDCs, however, unions have strong relations with governments and as a result free collective bargaining will rarely be an important function of unions.

Some of the reasons for limited role of collective bargaining in LDCs are: the ideology which subordinates collective bargaining to such national aspirations as rapid economic development, the prevalence of labor surplus (which make it difficult for workers to strike or boycott employers successfully), the migratory character of LDCs labor force, shortage of leaders with collective background experience, and low educational background of union leaders.

Union structure: since labor movements in LDCs are mainly political organizations, they are likely to be organized into geographical subdivisions and along general lines, with workers from many industries and occupations in one union. Unions of developed countries, by contrast, are more likely to reflect the organization of their employers and their market.

Dear student! Are labor unions of developed and developing countries quite different? Or do they show some similarities? Please, write your answer on the space provided below.

Good! Compare your answer with the explanation given below.

The experience of the labor movements of developed and developing countries are not always so different as we have made them appear, because at some stage of economic development the countries are likely to have had similar experiences. Moreover, in DCs and LDCs collective bargaining has been weakened when wages, hours, or working conditions have been regulated by governments. In addition, in every society, the labor movement's freedom is restricted by certain national objectives such as wage-price stability, economic development, and protection against the sub-versions of dominant political or economic institutions.

There is also a certain amount of copying of forms between developed and underdeveloped countries which produces superficial similarities. In particular, emerging countries are likely to adapt the institutions of developed countries, especially the conventions of ILO in order to appear "progressive." Upon closer examination, however, it is often found that the progressive forms are really meaningless because of the subordination of unions to political interests of the state or failure to enforce the laws.

6.3. UNIONS & LABOR MARKET

6.3.1. Labor Supply Under Trade Unions

Dear student! What is the impact of labor union on the labor market? Please, write your answer on the space provided below.

Good! Compare your answer with the explanation given below.

Trade unions principal impact on labor markets is to change the nature of and the conditions, under which labor is supplied. The labor supply curve tells us how much labor is supplied in different wage rates. For the individual, this is discovered by identifying the individuals' preferences and the changing opportunities that confront him or her in the labor market. Similarly to describe a labor supply curve for a trade union, we need to identify the preference of the union and the constraints that confront it.

In detailing the preferences of the trade union there are at least two distinct steps to the analysis. A trade union constitutes a collection of individuals who construct and implement a common policy. We therefore need to consider both the nature of the preferences of the individuals who compose the union and the degree to which these preferences are reflected in the preferences, or policies of the unions. If the union is democratic its policies will reflect the wishes of its membership. One prominent view of union government proposed that the increasing bureaucratization of representative institutions that unions donor respond to the preference of their membership but reflect the interest of a small group of individuals who control the union. The mechanism, by which union members induce their representatives to behave in a manner which realizes the member's objectives, is considered by the economic theory of agents. Typically the trade union leader (the agent) has to choose a cause of action, from among a number of alternative possibilities, and the action chosen affects both the agents and the members (the principals) welfare. Problems may arise in this type of relationship, because the agents have an information advantage and their actions cannot be fully observed by the

members. The issue, therefore, is how to construct an incentive structure to insure that the leaders behaves in the manner desired by the members.

6.3.2. Unions and Wage Determination

Dear student! How do unions affect the market wage rate? Please, write your answer on the space provided below.

Good! Compare your answer with the explanation given below.

In perfectly competitive labor market, workers independently supplied their labor services and, therefore, competed for available jobs. But in many labor markets, workers have organized in to unions to sell their labor services collectively. These unions can increase the wage rate paid to those members who have jobs by:

- increasing the demand for labor
- restricting the supply of labor and
- bargaining for an above equilibrium wage.

Increasing the demand for labor

To the limited extent that a union is able to increase the demand for labor (D_0 to D_1) it can raise both the market wage rate (W_0 to W_1) and the quantity of labor hired (L_0 to L_1). *The more elastic the supply of labor, the smaller the increase of the wage rate relative to the rise in employment.*

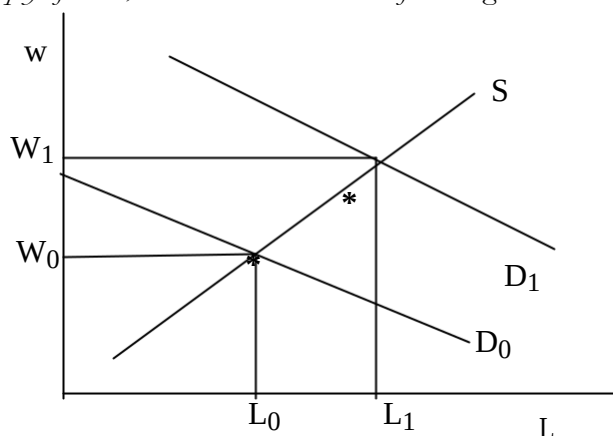


Fig. 6.1.: Effect of change in labor demand on employment and wage rate

A union can increase labor demand through actions which alter one or more of the determinants of labor demand. Specifically, it can try to (i) increase the product demand, (ii) enhance labor productivity, (iii) influence the price of related resources, and (iv) increase the number of buyers of its specific labor services. Let's analyze these actions.

increasing product demand:- unions do not have direct control over the demand for the product they help produce, but they can influence it through (A) product advertising (B) political lobbying through actively supporting proposed legislation which would increase government purchase of the products they make.

Example: - Construction unions lobbying for new highway projects

teachers organizations pushing for legislation to increase government spending on education

Political support for laws which increase the price of goods that are close substitutes for those made by union members.

Lobby for legislation that bolsters private-sector demand for union made products.

Lobbying successfully for legislation which reduces the price of goods or services that are complements to the services they render.

enhancing productivity:- Basically the strength of labor demand in a specific occupation depends partly on productivity (MP). Firms control most of the factors which determine worker productivity. But two possible ways unions might be able to influence output per worker hour are:

Participation in joint labor-management committees on productivity. This is also called *quality circles*.

Codetermination which consists of direct worker participation in the decision making processes of the firms. This is also called *worker democracy*.

The purpose of both approaches is to improve internal communication within the firm and increase productivity through more emphasis on team work and profit incentives. To the extent that either approach raises the marginal product of labor, the demand for labor will increase, improving the union's prospect for negotiating a wage increase. Note that the rightward shift in the labor demand curve does not produce the efficiency loss. The higher level of employment

results from the increased productivity of labor, not from an artificial distortion of the allocation of society's resources.

influencing the price of related inputs: where labor and some other resource are gross substitutes (substitution effect > output effect), unions can bolster (strengthen) the demand for labor by rising the relative price of other resources. Example unions can increase the demand for labor through support of government action which reduces the price of resources (k) which are complement in production with labor.

increasing the number of employers: unions can increase the demand for their labor by lobbying for government programs which encourage new employers to establish operations in labor area. Example Telecommunication workers support the legislation that allows private participation in the sector.

Restricting the supply of labor

Unions can also boost wages by reducing the supply of labor. We know that a union can obtain a higher wage rate if it can shift the labor supply curve left ward. However, the union must accept decrease in employment in achieving this wage rise.

Unions can restrict labor supply by taking actions or supporting government policies which alter one or more of the determinants of labor supply. Among these factors, reducing the number of qualified suppliers and influencing non wage income are of some significance.

Reducing the number of qualified suppliers of labor: one way that unions in general can limit the supply of qualified workers in a specific labor market is to restrict the overall stock of qualified workers in the nation. This particularly explains why organized workers have strongly supported (a) limited immigration (b) child labor laws (C) Compulsory retirement, and (d) shorter workweeks.

Unions can also restrict labor supply for particular labor by limiting entry in to the occupation itself (by controlling access to training). This type of unionism is sometimes referred to as *exclusive unionism* – the supply restrictions derive from actions which exclude potential workers from participating in the trade or profession. Of perhaps greater importance, unions and

professional groups have been able to limit entry to certain jobs through occupational licensure, which is the enactment of laws by government to force practitioners of a trade to meet certain requirements. These requirements may specify the level of educational attainment or amount of work experience needed and may also include the passing of an examination to obtain a license. State licensing boards have wide discretion in establishing the tests and standards needed to qualify for a license. In fact there is evidence suggesting that some boards adjust the pass rate as a way to control the rate of entry in to the licensed occupation. Hence, occupation licensure restricts labor supply and increase the wage rate. A final means by which unions may limit labor supply to an occupation is through discrimination by race or gender.

influencing non wage income:- unions and professional organizations may also improve their wages by affecting the non wage income determinant of labor supply. Among the several reasons that labor unions generally support increased unemployment compensation, workers compensation, and social security retirement benefits is the fact that these sources of non wage income reduce labor force participation, and therefore raise the before tax wages to those employed.

Bargaining for an above-equilibrium wage

In addition to restricting the supply of labor to an occupation (Shifting the labor supply curve leftward), some unions are successful at enlisting as union members a large number of workers in an industry or occupation.

Unions will only exert an influence on wage and employment outcomes if they have sufficient power to realize their objectives. The source of union power is control over labor supply or the ability to convince employers that they exercise effective control over labor supply. In this circumstance firms can only buy labor on terms acceptable to the union. One measure of control union's exercise over labor supply is *union density*, the proportion of the eligible labor force who are union members.

Through recruitment of union members, an industrial union can gain control over a firms labor supply. During negotiations, the union therefore can credibly threaten to withhold labor (to strike) unless the employer increases its wage offer . Because these unions attempt to attract or

include all potential industry workers in to the union, this form of unionism is called *inclusive unionism*.

The impact of control over labor supply by a union can be shown graphically as follows.

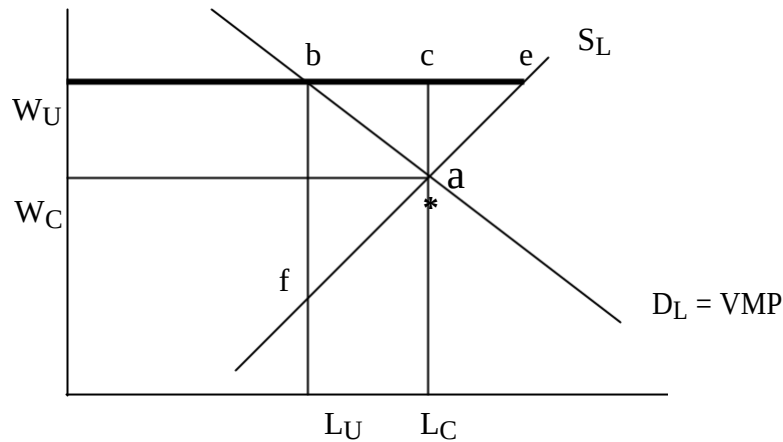


Fig. 6. 2.: Effect of setting above-equilibrium wage rate on employment level.

Suppose that employers in this labor market act independently and that in the absence of the union the competitive equilibrium wage rate level of employment are W_C and L_C . Now suppose that a union forms and successfully bargains for the higher above-equilibrium wage rate W_U . This in effect makes the labor supply curve perfectly elastic over the W_Ue range. If employers higher any number of workers within this range, they must pay the union scale W_u or the union will withdraw all labor via a strike. However, if the employers desire more than workers, say because of a major expansion of labor demand during the life of the union contract, they will need to pay wages above the unions scale to attract workers a way from alternative jobs paying more than W_u .

Employers, on the other hand, respond to the union-imposed wage rate W_u by discharging **cb** worker ($L_C - L_U$). Furthermore the higher wage rate attracts **ce** additional job seekers to the occupation. Thus, excess labor supply **be** exists at the union imposed wage. *The greater elasticity of demand, the wider the range **cb** is.* The more elastic the pre union labor supply, the greater the gap **ce**. This model enables us to understand several observed labor market phenomena and union actions.

First, it explains why some unionized labor markets are characterized by chronic “waiting lists” for jobs.

Second, it clarifies why labor organizations place great emphasis on gaining union security provisions in labor contracts. The union’s bargaining power relies to a great extent on the credibility of its threat to call for a strike and on its ability to withhold the firm’s entire labor supply once a work stoppage occurs.

Third, the distance **bc** in the above figure sheds light on why unions are interested in securing contract provisions which reduce the elasticity of labor demand. The lower the elasticity, the smaller the number of displaced workers from any given wage increase.

Fourth, given a homogenous worker, a union imposed above-equilibrium wage creates a misallocation of labor resources. Notice that the value to the marginal product **b** exceeds the marginal opportunity cost of labor **f** at wage w_u and quantity labor employed L_u . If $L_u - L_c$ workers were transferred from competitive labor markets to this one, society would experience a net gain in the value of its output equal to area **fba**.

6.3.3. Collective Bargaining.

Dear student! What is bargaining? What determines the bargaining power of unions and/or firms? Please, write your answer on the space provided below.

Good! Compare your answer with the explanation given below.

Economic transactions range from the exceedingly simple to the highly complex. Buying a loaf of bread at a supermarket is a clearly uncomplicated transaction. The transaction is on a simple “take-it-or-leave-it” basis. A supermarket manager will not negotiate the price of a loaf of bread, as there is no great damage inflicted on either potential buyer or seller if the buyer decides not to buy the bread.

In contrast, the negotiation of a collective bargaining agreement is undoubtedly one of the most complex transactions occurring in our economy. This complexity derives from a number of unique characteristics of the collective bargaining transactions such as the inseparability of labor

supply from the worker- which extends the bargaining agenda, and the long- term relationship between labor and management. Thus labor and management are highly dependent on each other and these changes from a “take-it-or-leave-it” situation to one of negotiation. If labor and management do not reach agreement and a strike therefore results, significant cost will be imposed on both parties.

More positively, *collective bargaining involves a symbiotic relationship between the two parties*; i.e., a relationship that simultaneously involves elements of both cooperation and competition. On one hand, both parties gain by cooperating and reaching agreement. By a greening, the two parties combine their resources in production and share the revenues derived there from. Hence there is a strong mutual interest in reaching agreement. On the other hand, the two parties are in a competitive position because the terms of trade under which agreement is reached determine how the revenues esteeming from their cooperative efforts in production process will be shared between the two parties.

A model of the bargaining process

This process is a means for resolving the opposing interests of the union and the employed. One of the number models of collective bargaining is the one developed by Chamberlain. This model focuses on the determinants of bargaining power and the ways in these determinants lead to the settlement in the majority of collective bargaining.

Chamberlain defines bargaining power as the ability to secure your opponents agreement to your terms. Thus, union’s bargaining power can be defined as management’s willingness to agree to the union’s terms or demands. But, what determines the willingness (or unwillingness) of management to agree to the union terms? This depends, according to Chamberlains, on how costly disagreeing will be relative to cost of agreeing; i.e.,

$$\text{Union's Bargaining Power (UBP)} = \frac{\text{Management's perceived cost of disagreeing with the union's terms (MCD)}}{\text{Management's perceived cost of agreeing with the union's terms (MCA)}}$$

If management estimates that it is more costly to agree than to disagree (i.e. if the unions bargaining power is less than 1), managements will choose to disagree and reject the unions terms. If, however, management judges that it is more costly to disagree than to agree (i.e. wherever the denominator is less than numerator, and therefore the union bargaining power is greater than 1), management will choose to agree.

Dear student! What constitutes the cost of agreeing and the cost of disagreeing? Please, write your answer on the space provided below.

Good! Compare your answer with the explanation given below.

It depends on the bargaining issue (or issue under negotiation). If the wage rate is the only bargainable issue, then *management's cost of disagreeing* is the probable or estimated loss of profits during the strike which may follow its rejection of the union stated wage demand. This perceived cost is probabilistic and the management's estimate of the cost of disagreeing depends on its estimate of both

the probability that a strike will occur if the wage demand is rejected , and

The probable length of the strike should it occur.

Management's cost of agreeing—that is the perceived cost of accepting the unions wage demand—is the estimated reduction in the flow of profits resulting from the payment of a higher than intended wage rate .

Managements bargaining power can be similarly defined

$$\text{Management's Bargaining Power (MBP)} = \frac{\text{Unions's perceived cost of disagreeing with the management's terms (UCD)}}{\text{Union's perceived cost of agreeing with management's term (UCA)}}$$

Note that the union's decision to accept or reject management's term can be defined similarly to those of management. The *unions cost of disagreeing* is the probable lost of wage income during a strike. This estimate depends on the probability that a strike will occur and on the estimated

length of the strike. The *union's cost of agreeing* is a reduced flow of wage income. Given that the union seeks a higher wage rate than management is now willing to offer, the decision to accept the lower wage offered by management entails foregoing the larger flow of wage income to which the union and its constituents aspire.

Several significant observations can be derived directly from Chamberlains' concept of bargaining power.

Requirement for Agreement: the necessary condition for a settlement is that one party must be willing to agree to the terms put forward by the other party. But if one of the parties (say management) perceives that the cost of agreeing will exceed the cost of disagreeing, the other party's term (say union's wage demand) will be unacceptable by the former party. At this point several things may happen. The union may alter (lower) its wage demand, management may put an alternative (higher) wage offer on the table for considerations by the union, or a stalemate (strike) may result.

Relative Bargaining power: Chamberlains model clearly suggest that a party's bargaining power will be much less when it is asking for say a \$1.00 per hour wage increase than when it is asking for only \$0.20 more per hour. Why so? Because it is very costly to for management to agree to a \$1.00 wag increase while it costs relatively little to agree to \$0.20 wage boost. The important generalization is that the greater the union's wage demand, the greater the management's resistance to it and therefore the less the union's bargaining power.

6.3.4. Are Unions Maximizes?

Dear student! What are unions trying to achieve? Are they really maximizers? Please, write your answer on the space provided below.

Good! Compare your answer with the explanation given below.

There is a general agreement that one of the main functions of trade union has been to protect labor from the consequences of competitive market. Most economists view individuals and institutions as attempting to maximize some magnitude or another. Thus for example, in

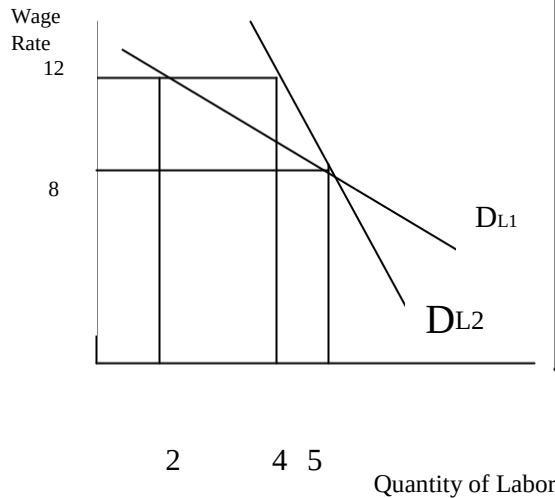
models of consumer behavior, the goal is to maximize utility or satisfaction. Similarly, business firms seek to maximize profits. Thus it is not surprising that economists have attempted to apply the maximizing concept to unions (in explaining their wage policy). But simple maximizing objectives do not adequately describe union behavior.

The effect of their attempt to maximize one factor or the other should be examined thoroughly. Here are some factors that unions need to maximize.

Wage rate: unions want more & more wage rate. But attempts by a union to maximize the wage rate per worker make no sense. Assuming a union is able to impose its wage demand unilaterally on a totally submissive employer. The logical outcome would be the employment of one worker at an extremely high wage rate. To maximize the wage rate would be to minimize employment. Unions are concerned with their institutional survival and growth. And their members are concerned with having jobs. Given the reality of downward-sloping labor demand curve, a policy of aggressively pushing up wage rates will cause unemployment among union members. We can conclude that union wage demands eventually will be constrained by unemployment effects.

Although economists take the notion of a tradeoff between wages and employment for granted, the relationship is not always evident to union workers and their leaders. For example, workers observe that fluctuations in a firm's sales and therefore in employment seem to be linked to the general state of the economy and have little to do with the level of wage rates in their particular firm. Workers may interpret the decline in employment resulting from the substitution of capital for labor as the consequence of an "unfortunate" management decision rather than a response to a higher wage. Workers may feel that wage rates are a factor over which they can collectively exert some degree of control. Employment on the other hand, depends on the decision of others and the general state of the economy.

Wage Bill: Given concern with employment, another possible goal might be to maximize the wage bill the wage rate multiplied by the number of employed workers. But this objective runs into difficulties where the demand for labor is elastic. Recall the relationship between elasticity of the labor demand wage rate change & wage bill changes.



When the labor demand is elastic, a change in the wage rate causes the total wage bill to move in opposite direction. This is the case along the \$ 8 to \$ 12 segment of D_{L1} . Where the total wage bill falls from \$ 40 ($\$8 \times 5$) to \$24 ($=\$12 \times 2$) when the wage rate rises from \$8 to \$12. In the case of labor demand D_{L2} , however, this same wage increase causes the total wage bill to rise from \$ 40 to \$ 48 ($=\$12 \times 4$). This second situation supports the generalization that when demand is inelastic, the wage rate and the total wage bill change in the same direction.

Fig.6.3. Effect of change of wage rate on wage bill under varying elasticity of labor demand

The relationship implies that for elastic labor demand an attempt to increase wage rate to increase the wage bill would have an adverse effect. In the following figure, the labor demand curve is constructed so that the demand is elastic at all wage rates above \$4.5 and inelastic at all wage rates below \$ 4.5.

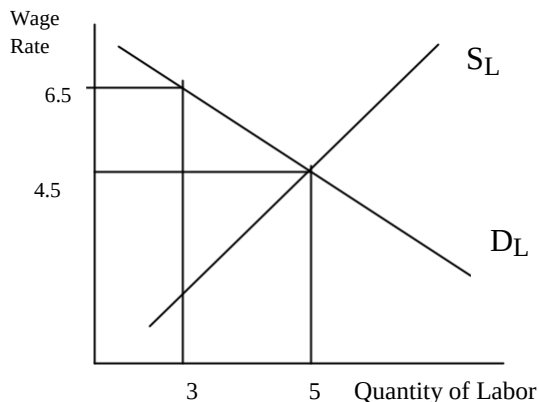


Fig.6.4. Effect of change of wage rate on wage bill under elastic labor demand

Now if the union currently enjoys a wage rate above \$4.5, say \$6.5, it will be obligated to request a wage reduction to maximize wage bill. Why so? By lowering the wage rate from \$6.5 to \$4.5, the union's wage bill will increase from \$19.5 ($=\$6.5 \times 3$) to \$22.5 ($=\$4.5 \times 5$). In this instance, the unions would be irrelevant in so far as wage determination is concerned because the market will yield the combination of wage rate and employment which could maximize the wage bill. Why should workers pay union dues when the market yields the desired result? "The goal of maximizing wages per member is deficient because it implies that unions have no concern for members who become it implies that unions have no concern form members who become

unemployed and no interest in remaining in existence as organizations. The goal of maximizing the wage bill has the opposite difficulty. It implies that unions can be interested in increasing membership to the point of living the original members no better off than they would have been without a union.”

Employment and membership: Because unions are concerned with institutional survival and growth and because union leaders derive prestige and power from presiding over large organization, perhaps union seek to maximize the employment of their (duty-paying) members. But it is known that at any wage rate above equilibrium, employers will choose to employ fewer than the equilibrium number of workers. At any below equilibrium wage rate, fewer than the equilibrium numbers of workers will want to be employed in this market. Again, why do one have a union if the market will achieve his/her goal in the union’s absence?

The problems associated with simple maximizing models of union goals forces some economists to treat unions more appropriately as essentially political rather than economic institutions. Thus, union wage employment policies are envisioned as entailing a series of political compromises as union leaders respond to pressures from their constituents, from employers, from government and from rival unions. Furthermore, a union’s wage employment policy must consider not only the economic wellbeing of its members but also the survival and growth of the union as an institution and the ability of union leadership to remain in office. This political model avoids simple maximizing goals to argue that in reality union wage demands are usually formulated in terms of “equitable comparisons;” i.e. in terms of what comparable group of workers are being paid. Thus, for example, unions in the Finchaa Sugar Factory may base their wage demands on what Wonji-Shoa Sugar Factory workers are being paid.

6.4. GOVERNMENT AND THE LABOR MARKET

Dear student! In the proceeding section, we discussed the role of unions in influencing wage rates and employment levels in the labor market. We now turn our attention to another major institution-government-and the various ways it affects wages and employment throughout the economy. In almost all nations (be developed or not), government participation in the labor market is very substantial. For convenience we analyze, government effects/roles in the labor

market via creation of employment, non payroll spending, provision of public goods and services, income tax, and labor law.

6.4.1. *Employment and Wages*

Government is a major or even the sole employer of specific types of workers in many labor markets. Example, it hires military personnel antitrust prosecutors, postal workers, air traffic controllers, park rangers, school teachers, fire fighters, etc. The demand for these employees is derived from society's demand for the public goods and services which these workers help produce. When government employs workers it "exhausts" or "absorbs" economic resources as these workers are no longer available to produce other goods & services. More precisely, government employment makes a direct claim on the nation's productive capabilities. In the case of voluntary employment to these sectors it means that society values the public sector output or services more highly than the alternative uses for these resources.

6.4.2. *Non Payroll Spending*

Although government employment is a major factor in the overall labor market, its non payroll spending is substantial and also influences wages and employment. This spending takes two forms: (1) purchase of private sector goods & services (2) transfer payment & subsidies,

Government spending (due to the purchase of such items as word processors, medical supplies, furniture, paper clips, etc) creates a derived demand for specific kinds of private sector workers. Such changes in demand will affect equilibrium wage rates & employment levels

Transfer payments, such as social security benefits, to the retired, unemployment compensation, welfare payment and veteran's benefit, are merely a transfer of income from government to individuals and families. The recipients perform no current productive activities in return.

Subsidy is a transfer payment to a firm, institutions or household which consumes or produces some specific product or service. Example public education, medical service for TB patients, etc. Note that government payroll expenditures and non payroll spending for private sector goods and services have one common feature. Both are exhaustive or resource absorbing expenditures in that they account for the employment of labor and other

economic resources. In contrast, transfer payments and subsidies are non exhaustive because, as such, they don't directly absorb resources or account for production.

Effect of transfer payment & subsidy on labor demand & supply

Demand effect: although transfers and subsidies don't directly exhaust or absorb labor or other resources, they do alter the structure of the total demand in the economy (by increasing the demand for products and services which the recipients purchase) and therefore affect the derived demands for a specific type of labor (i.e. increase the derived demand for workers who produce, deliver or sell these goods and services. Other things being equal, this increase in product demand boost product prices, which then increases the demand for labor in the affected industries. Subsidies provided to private and not for profit organizations also increase the demand for specific types of workers.

Supply effect: Transfer payments and subsidies affect short and long run labor supply. Recall from chapter 2 that transfers (or unearned incomes) generates an income effect which tends to reduce the optimal number of work hours offered by the recipient.

Transfers and subsidies also influence long run labor supply decision. Some increase long run labor supply and others decrease it. For instance, the existence of cash as in – kind transfers may reduce incentives to invest in human capital and the long run labor supply. However, those transfers & subsidies which reduce the private cost of investing in human capital produce just the opposite effect. It reduces the private cost of investing in college education, which increases the personal rate of return on this form of human capital. Hence, long run labor supply in various skilled & professional labor markets increase. Note also that better educated people stay in the labor force longer than people who have less education, we therefore conclude that government transfers and subsidies may either positively or negatively affect supply in specific labor markets.

6.4.3. Publicly Provided Goods and Services.

Publicly provided goods & services range from pure public goods (such as national defense) to those that can be sold in private sector (such as collage education). The provision of these goods will affect the labor market via its effect on demand and supply of labor service. Let us examine this effect separately.

Effect on labor demand: other things being equal, the provision of public good will increase the derived demand for workers who help produce the private good. Example, a construction of major dam on rivers, which will be used for electric generation, flood control, irrigation, recreational opportunities. This project increases the demand of farm work, the demand of fishing boats, motors & water skis (used for recreation) and hence boost the demand of labor producing these products; cheap electric power attract manufacturing firms to the area there by increasing the demand of labor.

Conversely, the provision of public good which is a substitute in production or consumption to specific private good will reduce the derived demand for workers who help produce the private good. For instance, the construction of the dam controls flooding and hence reduces the demand for flood insurance agents and claims adjusters.

Effect on labor supply: Recall from chapter two of this course that the basic model of income- leisure choice contains a preference map composed of indifference curves and a wage rate, or budget line. If public goods are available, the model can be modified by including the public goods in the potential conjugation list. Hence, the vertical axis defines real income as the total amount of goods & services obtainable from any specific level of work. If p_u of public good is available to Mr X, regardless of how much he works, the real income available to him will be Y_{pu} plus the level of private goods which his work income will allow him to obtain.

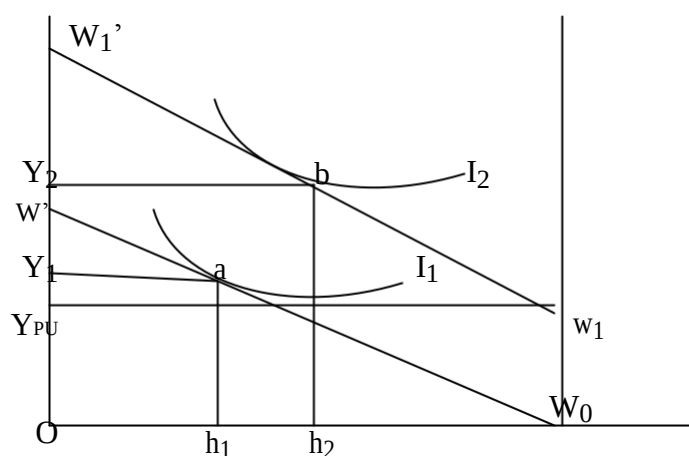


Fig. 6. 5. Effect of publicly provided goods on labor supply

In the absence of public good, the individual's budget line was W_0W' . But the presence of the public good will shift the budget line parallelly up ward. This implies that the individual consume OY_{pu} ($= WW_1$) even if he did not supply any labor to the market; i.e. even if he spends his available time entirely to leisure, he is secure of having OY_{pu} levels of income. The vertical distance between the two lines measures the value of the public goods available to the individual. It is obvious that a parallel shift of a budget line will reduce the hours of labor to be supplied by the individual; i.e. the existence of public good creates an income effect which allows the individual to "buy" more leisure.

It can be generalized that the existence of publicly provided goods and services may reduce individual and overall labor supply in the economy. The more closely the public goods are substitute for private goods, the greater the reduction in labor supply. Example, Free food provided by the public sector may reduce their incentive to earn income to buy food. On the other hand, the more complementary the public goods are to leisure, the greater the decline in labor supply. Example, a public golf course conceivably could reduce labor supply by encouraging more leisure. Finally, the more complementary the public goods are to work, the less the reduction in labor supply.

6.4.4. *Income Tax*

The government can affect the labor market through its income tax laws. Income tax law may have several impacts and the following are only few of them.

On wage and employment: Given the elasticity of labor demand, the effects of personal income tax on wage and employment depend principally on the elasticity of labor supply. If the aggregate labor supply curve in the economy is perfectly inelastic, then the personal income tax—measured by the vertical distance between D and D_t (in the following figure) will not affect the market wage but will reduce the after tax wage by the amount of the tax per hour. However, if the labor supply curve displays some elasticity as in (b), the tax reduces the quantity of labor hours supplied and raises the before-tax market wage—in this case from W^*_1 to W^*_2 .

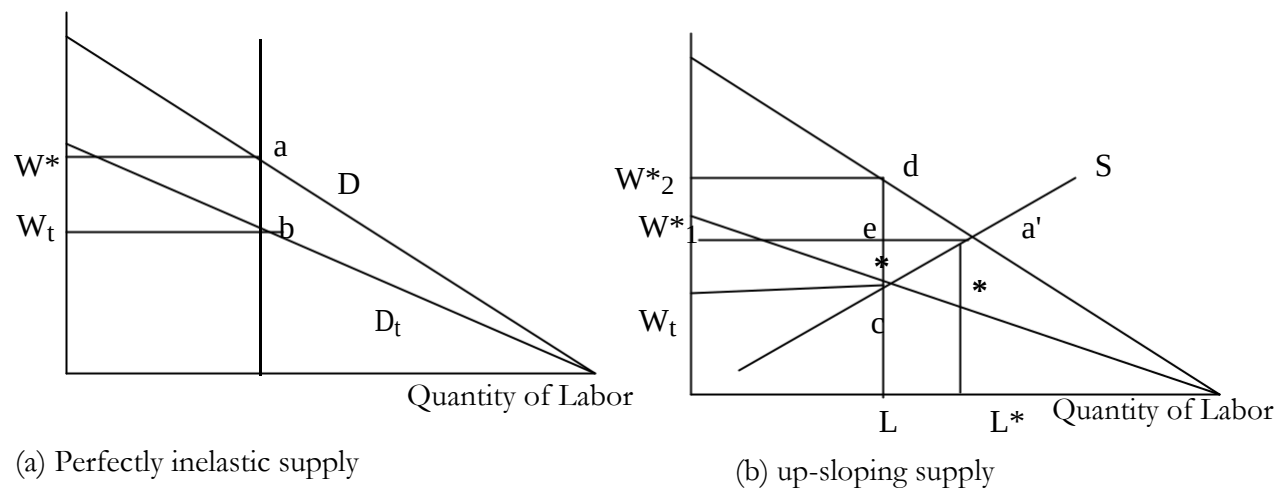


Fig. 6. 5. Effect of income tax on wage and employment

Given labor demand, the greater the elasticity of labor supply, the greater the increase in the wage rate and the greater the reduction in employment resulting from the tax. Note that in the case of perfectly inelastic labor supply, the income tax will not affect the collective quantity of labor supplied. Therefore, workers bear the entire burden of the tax. How? If there is no change in L_S , employers will not change the market wage rate (W^*) but due to tax, workers receive only W_t .

On the other hand, positively sloped labor supply curve implies that workers collectively will respond to wage income tax change by adjusting the amount of labor supplied. How? As we can see from the intersection of D_t and S , workers will reduce the amount of labor supplied from L^* to L (which creates a shortage of supply); i.e., at W^* , demand exceeds supply which drives the wage to W^*_2 , for the market to clear at **d** or L employment level. Consequently, those still working following the tax will receive a before tax wage rate of W^*_2 rather than W^*_1 . It can be observed that in this case, workers get higher wage than in the case of perfectly inelastic labor supply. One can easily compare the outcome by looking the difference between their wage receipts in the case of perfectly inelastic labor supply (W^*W_t) and positively sloped one ($W^*_1W_t$). Definitely, $W^*W_t > W^*_1W_t$ showing greater deduction from workers wage receipts in the case of perfectly inelastic supply curve. Note that in the case of positively sloped labor supply curve, some amount of the tax is borne indirectly by the employers as higher wage rate. In general

terms, of the total tax *dc* (on figure b above), *ec* is borne by workers as lower wages while *ed* is borne by employers as higher wage costs.

To summarize: Other things being equal, if the overall labor supply curve slopes upward, a personal income tax will reduce the quantity of labor supplied causing a rise in the wage rate and decrease employment. Given the elasticity of demand, the more elastic the labor supply curve, the greater the portion of income tax borne by employers in the form of a higher market wage.

Dear student! How will the income tax burden [is] be distributed (between employers and workers) in the case of perfectly elastic labor supply curve? Please demonstrate it. Good! Under these conditions the entire tax will be borne by employers and that the employment effect will be greater.

Note: Empirical studies suggest that labor supply is highly inelastic meaning that (a) workers bear nearly all of the personal income tax and (b) the tax has little impact on market wages and employment levels.

On individual labor supply: The income tax is similar in impact to a wage rate decrease-both reduce the actual return from an hour of work and lower total net income from any specific number of hours of work. The tax generates income and substitution effects which act in opposite directions. Theoretically, the overall effect of the tax on the quantity of labor supplied is indeterminate: it depends on the position of the individual's indifference curve (For some, it increases, and for others it decreases L_s).

6.4.5. Labor Law:

Dear student! Another mechanism through which government affects wage and employment out comes is by engaging in the establishment of legal rules and regulations for the economy. One, among many, of these rules & regulations is the minimum wage law. But the impact of minimum wage has been controversial since its inception. Proponents of minimum wage law argue that

- it ensure that workers receive a “living wage”

- it prevents monopsonistic employers from exploiting low skilled labor (usually minorities and women).

Opponents of the minimum wage argue that

- it increases unemployment;
- it causes a spillover effect which reduces wage rates in those sectors of the economy which are not covered by the law; and
- it is poorly targeted to reduce poverty; i.e., majority of the minimum wage workers do not live in poor households.

Dear student! Let us evaluate the theoretical effect of minimum wage law in perfectly competitive labor market. Here, we have two cases: where all workers are covered by the law and where the coverage is incomplete.

a. Complete coverage:

This is the situation where all employers in the economy are covered by the minimum wage law that labor and product markets all preachy competitive ($MRP = VMP$)

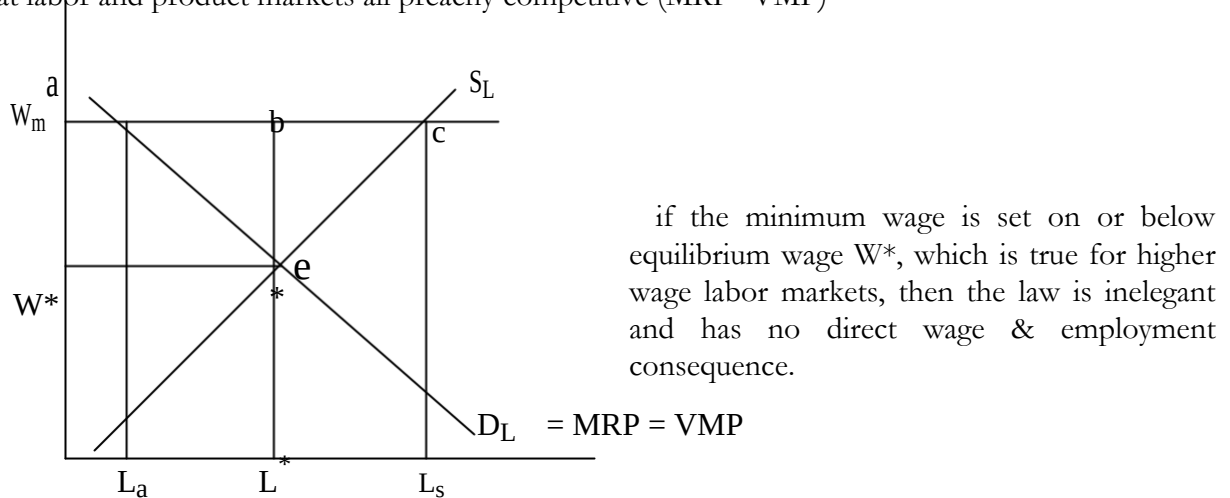


Fig.6.7. Effect of minimum wage law in perfectly competitive market (case of complete coverage)

Dear student! What if W_m exceeds W^* (equilibrium wage)? Please, write your answer on the space provided below.

Good! Compare your answer with the explanation given below.

At W_m , employers will hire only L_a workers rather than the original L^* . Stated differently, the MRP of the L_a through L^* workers will be less than the minimum wage and, therefore, profit maximizing employers will reduce employment. Supply curve suggests that W_m attracts L_s as opposed to L^* workers to the market. On the other hand, employers decrease employment by **ab** and, hence, unemployment increases by the larger amount **ac**. W_m creates allocative inefficiency because, the VMP of the displaced workers (**ae**) exceeds the supply price of greater value (L_a to L^*) then the displaced worker can contribute in their next most productive employment (L_d to L^*)

Generalization:

Other things being equal, the higher the minimum wage rate the more its relative employment & allocation effects.

The more elastic the labor supply and demand curves, the greater the unemployment consequences of the law.

Incomplete coverage

Although significant proportions of workers are usually included in the minimum wage there are some groups of workers who are not employed. A common group is that often uncovered by the minimum wage are self employed workers. Still there are some variations between sectors. Example, agriculture & service are less covered when compared to manufacturing.

Dear student! What impact might incomplete coverage have on the employment and efficiency effects which we have just discussed? Please, write your answer on the space provided below.

Good! Compare your answer with the explanation given below.

The following figure (a) & (b) portrays purely competitive labor market for unskilled workers. A is covered by minimum wage law and (b) is not.

Assumptions:

Jobs are equally attractive in both markets

Total quantity of labor hours supplied remains constant.

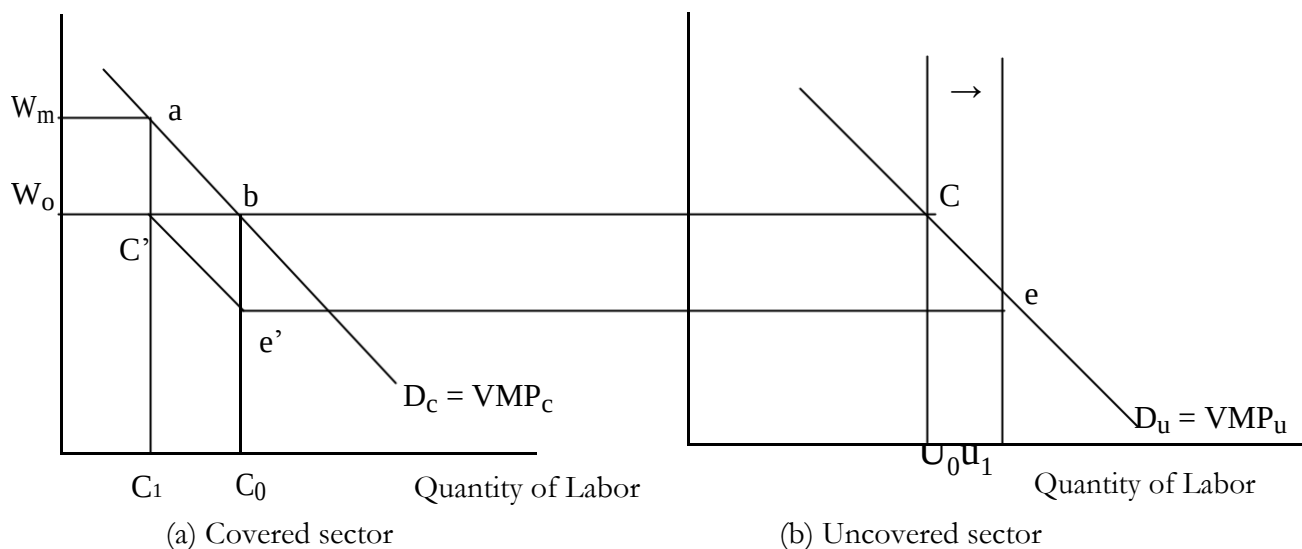


Fig.6.8. Effect of minimum wage law in perfectly competitive market (case of incomplete coverage)

In the absence of the minimum wage and in the presence of costless migration and perfect information, workers will migrate between the two sectors until a single equilibrium wage, say W_0 emerges. Employment at that wage will be C_0 in the soon to be “covered” sector (a) and U_0 in the sector shown in graph b. The minimum wage W_m imposed in the covered sector of the law wage labor market (a) reduces employment from C_0 to C_1 . These displaced workers seek employment in the uncovered sector (b). As a direct result, the supply of labor in the latter sector increases and the market wage falls from W_0 to W_m . Although total employment is unaffected, workers suffer a wage decline owing to the minimum wage (but those workers in the covered sector who are fortunate enough to retain their jobs will be benefited). The law will reduce employment in the covered sector which will increase employment in the uncovered sector. But the net employment effect is zero. It also results in an inefficient allocation of resources; i.e., society suffers a net loss of domestic output and income equal to the area **C’abe’** in the graph (a).

6.5. CHAPTER SUMMARY

Labor union is an association of workers for the purpose of improving their economic status and working conditions through collective bargaining with employers

Unions are essentially the offspring of industrialization

Although unions are one of the major institutional constraints on labor supply that exist in a modern economy, the union is by no means the only or perhaps any longer the most important qualification to competition in this area.

One of the main functions of trade union has been to protect labor from the consequences of competitive market. Trade unions principal impact on labor markets is to change the nature of and the conditions, under which labor is supplied.

These unions can increase the wage rate paid to those members who have jobs by increasing the demand for labor, restricting the supply of labor and bargaining for an above equilibrium wage.

Collective bargaining involves a symbiotic relationship between the two parties; i.e., a relationship that simultaneously involves elements of both cooperation and competition.

According to Chamberlain, bargaining power is the ability to secure your opponents agreement to your terms. For example, union's bargaining power can be defined as management's willingness to agree to the union's terms or demands.

Unions do engage in purposeful behavior; their goals are multidimensional and impossible to analyze through one- dimensional maximization assumptions.

While unions are ordinarily concerned with both wages and employment, it is probability the former which is paramount interest.

In almost all nations, government participate in the labor market via several ways such as creation of employment, non payroll spending, providing public goods and services, income tax, labor law.

Other things being equal, if the overall labor supply curve slopes upward, a personal income tax will reduce the quantity of labor supplied causing a rise in the wage rate and decrease employment.

6.6. SELF TEST EXERCISE

Dear student! Now it is your turn to reflect the important issues presented above. The following questions are designed to evaluate the extent to which you understood the main points discussed in this chapter. You are strongly advised to answer all of them. If you encounter challenges in answering them, you are strongly advised to refer back to the note provided in this chapter.

How did industrialization cause labor movement in developed country?

If labor movement is a by-product of industrialization in developed countries what cause labor movement in developing countries?

Compare and contrast the characteristic of labor union in developed and developing countries.

What are the factors that gave rise to labor union in Ethiopia?

Distinguish between

Quality code and worker democracy

Inclusive and exclusive unionism

“A union imposed above equilibrium wage creates a misallocation of labor service.”

How?

What is bargaining power? How is this power measured?

If reduction of working hour is a negotiable issue between union and employer, what is the cost of agreeing and disagreeing by a) Union b) Employer

One of the tools through which government influence wage and employment is through non payroll spending. What are these payroll spending? What effect does each of them has on a) wage rate b) unemployment level

“Transfer payment and subsidy have non exhaustive effect on labor resource.” Explain.

What would happen to labor supply if government provides public good that is equally accessible to everybody for free?

Demonstrate graphically how income tax burden will be distributed (between employee and employers) in the case of perfectly elastic labor supply curve.

“The income tax is similar in impact to a wage rate decrease.” Explain.

In perfectly competitive market, minimum wage law has zero net employment effect even if the law covers all sectors.” Do you agree? Justify your answer.

CHAPTER SEVEN: THEORIES OF UNEMPLOYMENT

7.1. INTRODUCTION

Overview:

Dear student! Unemployment rate is the most widely used indicator of the well-being of a labor market and an important measure of the state of an economy in general. As a result the issue of unemployment is the most sensitive and pressing agenda among economists, politicians and leaders. In your macroeconomics courses, you might have been introduced to the concept of unemployment. In this chapter you will be exposed to the issue in a greater detail.

Chapter Objective:

The major objective of this chapter is to acquaint students of economics with

- The concept, type and measurement of unemployment
- The possible causes of unemployment
- The different views on the effect of unemployment

Chapter Content:

- What is unemployment?
- Types of unemployment
- Measuring unemployment
- Causes of unemployment
- Benefits and costs of unemployment
- Aiding the unemployed
- Chapter Summary
- Self Test Exercise

7.2. WHAT IS UNEMPLOYMENT?

Dear student! What does unemployment mean? Does it mean just becoming idle? Please, write your answer on the space provided below.

Good! Compare your answer with the explanation given below.

The term unemployment is one description of the economic condition of a society at a given time. Low unemployment means most of the labor force has steady work. High unemployment is an indication of an economy in recession, or worse. But what does unemployment mean? Different institutions and countries use different technical definitions for unemployment. In its most obvious sense, unemployment means being without a job. As an economic definition, however, this is inadequate. The most widely accepted definition of unemployment was given by ILO.

ILO definition of unemployment

While the unemployment rate is in theory straightforward, classifying working age persons as either employed, unemployed, or out of the labor force is difficult in practice. Although the earliest efforts to establish international statistical standards of the measurement of unemployment can be traced back to 1895, the definition of unemployment currently recommended by the ILO has its roots in a resolution by the Eighth International Conference of Labor Statisticians (ICLS), convened by the ILO in Geneva in 1954. These have now been adopted, at least in some form, by most developed and a large number of developing countries, which has allowed the ILO to compile a sizeable number of roughly comparable labor market statistical series across countries and over time.

The ILO approach to defining unemployment rests on what can be termed the 'labor force framework', which at any point in time classifies the working age population into three mutually exclusive and exhaustive categories according to a specific set of rules: employed, unemployed,

and out of the labor force-where the former two categories constitute the labor force, i.e., essentially a measure of the supply of labor at any given time.

Although the definition of unemployment has since 1954 been periodically revised its basic criteria remains intact. Accordingly, a person is to be considered unemployed if he/she during the reference period simultaneously satisfies being:

‘without work’, i.e., were not in paid employment or self-employment as specified by the international definition

‘currently available for work’, i.e., were available for paid employment or self-employment during the reference period; and

‘seeking work’, i.e., had taken specific steps in a specified recent period to seek paid employment or self-employment.

The ‘without work’ condition serves to distinguish between the employed and the unemployed, and thus guarantees that these are mutually exclusive categories of the working age population, whereas the latter two criteria separate the non-employed into the unemployed and the out of labor force. The purpose of the availability for work condition is to exclude those individuals who are seeking work to start at a later date, and thus is a test of current readiness. The intention of the seeking work criterion is, on the other hand, to ensure that a person will have taken certain ‘active’ steps to be classified as unemployed.

Challenges in application of ILO Definition

Practical implementation of the ILO guidelines is, however, generally difficult. While employed persons are relatively easily classified in most countries, the issue of classifying non-employed persons as either unemployed or out of the labor force, especially according to criteria (c) is not uncontroversial; see, for instance, OECD (1987, 1995). For instance, the requirement of job search is attractive because it requires active demonstration of attachment to the labor force, but it also classifies a large number of non-searchers as out of the labor force. Some economists would argue that availability and willingness to work are sufficient to distinguish workers in the labor force from the non-attached. Moreover, while the requirement of active job search may be meaningful in industrialized countries where the bulk of the population engages in paid employment and where there are clear channels for the exchange of labor market information.

This may not be the case in many developing countries where search may be more costly and job search behavior is less meaningful, especially in large rural sectors.

The ILO itself notes that its labor force framework used to define unemployment is best suited to “situations where the dominant type of employment is regular full-time paid employment (and that in) practice, however, the employment situation in a given country will to a greater or lesser degree differ from this pattern” In view of this in 1982 the ILO Thirteenth International Conference of Labor Statisticians revised its definition of unemployment in the sense of introducing certain amplifications concerning, amongst other things, the criteria of seeking work and the statistical treatment of people currently available for work but not actively seeking work. These amplifications, allowing for broader definitions of unemployment, were specifically “aimed to make it possible to measure unemployment more accurately and more meaningfully both in developed and developing countries alike.”

Dear student, from the discussion held above, how do we categorize people as employed or unemployed? Please, write your answer on the space provided below.

Good! Compare your answer with the explanation given below.

The basic concepts involved in identifying the employed and unemployed are quite simple:

People with jobs are employed.

People who are jobless, looking for jobs, and available for work are unemployed.

People who are neither employed nor unemployed are not in the labor force.

Who is counted as employed? People are considered employed if they did any work at all for pay or profit during the survey week. This includes all part-time and temporary work, as well as regular full-time year-round employment.

Employed persons consist of:

All persons who did any work for pay or profit during the survey reference week.

All persons who did at least 15 hours of unpaid work in a family-operated enterprise.

All persons who were temporarily absent from their regular jobs because of illness, vacation, child care, problems, family or personal problems, bad weather, industrial dispute, or various personal reasons.

Typically, Employment and the labor force include only work done for monetary gain. Hence, a homemaker, full-time students, and prisoners are neither part of the labor force nor unemployed.

Who is counted as unemployed? Persons are classified as unemployed if they do not have a job, have actively looked for work in the prior 4 weeks, and are currently available for work.

Unemployed persons are:

All persons who were not classified as employed during the survey reference week, made specific active efforts to find a job during the prior 4 weeks, and were available for work.

All persons who were not working and were waiting to be called back to a job from which they had been temporarily laid off.

It is important to note that to be considered unemployed a person must be an active member of the labor force and in search of remunerative work

7.3. TYPES OF UNEMPLOYMENT

Dear student! How many types of unemployment may an economy exhibit? Please, write your answer on the space provided below.

Good! Compare your answer with the explanation given below.

There are about four major types of unemployment. These are:

Frictional Unemployment: Unemployment due to lack of information about jobs. The longer it takes to search for a job, the higher the frictional rate. The number of people finding jobs is equal to the number of jobs available. It takes time to match the groups together.

Structural Unemployment: Unemployment that is caused by changes in the structure of the economy. The changes may be due to a large decrease in demand for an industry's product that causes workers to lose their jobs or to a technological change that makes certain workers' skills obsolete.

Cyclical Unemployment: Unemployment resulting from business recessions. More people want jobs than jobs available.

Seasonal Unemployment: This is unemployment resulting from the seasonal pattern of work in specific industries due to such factors as weather or demand patterns.

The aforementioned types of unemployment are sometimes called open unemployment as they can be explicitly known and easily measured. There are some other types of unemployment that are not explicit. The following are among this category of unemployment.

Underemployment: people who are in a job that they don't belong (either over-skilled or under-skilled).

Disguised unemployment: Workers who have dropped out of the labor force and are not looking for work because of the poor job market.

Dear student! Sometimes unemployment may be created intentionally by some institution. For instance, consider the classical and Marxian unemployment.

Classical (real-wage): It is unemployment that could be created when real wages for a job are set above the market-clearing level, commonly by government (as with the minimum wage) or unions, although some suggest that even social taboos can prevent wages from falling to the market clearing level.

Marxian: It is unemployment that could be created when it is needed to motivate workers to work hard and to keep wages down.

Voluntary and involuntary unemployment

Dear student! Is there such a thing as involuntary unemployment? Please, write your answer on the space provided below.

Good! Compare your answer with the explanation given below.

Though there have been several definitions of **voluntary** (and **involuntary**) unemployment in the economics literature, a simple distinction is often applied. Voluntary unemployment is attributed to the individual unemployed workers (and their decisions), whereas involuntary unemployment exists because of the socio-economic environment (including the market structure, government intervention, and the level of aggregate demand) in which individuals operate. In these terms, much or most of frictional unemployment is voluntary, since it reflects individual search behavior. On the other hand, cyclical unemployment, structural unemployment, classical unemployment, and Marxian unemployment are largely involuntary in nature. However, the existence of structural unemployment may reflect choices made by the unemployed in the past, while classical unemployment may result from the legislative and economic choices made by labor unions and/or political parties. So in practice, the distinction between voluntary and involuntary unemployment is hard to draw. The clearest cases of involuntary unemployment are those where there are fewer job vacancies than unemployed workers even when wages are allowed to adjust, so that even if all vacancies were to be filled, there would be unemployed workers. This is the case of cyclical unemployment and Marxian unemployment, for which macroeconomic forces lead to microeconomic unemployment.

"Classical" ("laissez-faire") economists prior to the world Depression of the 1930s, and "post-Keynesian" or "neoclassical" economists such as Milton Friedman in the contemporary era, have denied the existence of what ordinary people consider "true" unemployment; this is involuntary unemployment where the job-seeker, despite his efforts, cannot seem to find a job. The classical/neoclassical theorist relies on "Say's law" which declares, in fine, that "markets clear" in an unfettered, unregulated laissez-faire economy: every seller will find a buyer at some strike price, every buyer will find a seller at some strike price, and "every Jack shall have his Jill" in a

"free" market. Sellers and buyers may refuse the strike price but this is taken as personal decision which causes the selling, or buying, atom to leave the economic model. However, they do not deny voluntary unemployment, such as taking a vacation or a personal choice to refuse "lousy" wages.

Dear student! Can an economy absorb all of its labor force? What does full employment mean? Does it mean zero unemployment? Please, write your answer on the space provided below.

Good! Compare your answer with the explanation given below.

Unemployment can never fall to zero. At any moment when a decennial or sample census is taken, some workers are bound to be in the process of job changing and, therefore, not employed in the census week. Hence, in almost all economy, there is always some level of unemployment. At best, an economy may have zero cyclical unemployment. The condition where cyclical unemployment is zero is called full employment or the natural rate of Unemployment. Therefore, even at full level of employment, there is some level of unemployment and full employment does not necessarily mean zero unemployment. Of course, economists assume that about 5% (probably less now) is "full employment rate of unemployment", or the "natural rate of unemployment."

Note that the Full Employment Rate of Unemployment or Natural rate of Unemployment is unemployment that prevails in the long-run minus cyclical. It includes the frictional unemployment and the structural unemployment, but no cyclical unemployment. In other words, full employment is zero cyclical unemployment. Dear student! If there is some frictional and structural unemployment in the economy can the potential level of output still be achieved? YES!

Frictional Unemployment and Potential Output

First, frictional unemployment is NECESSARY in order for the economy to achieve its potential level of output. For example, let's assume an engineering student has just graduated

from college and is looking for a job. He/she is frictionally unemployed. Would society's scarcity be reduced as much as possible if that engineer takes the first job he/she finds? On the way home from graduation he/she sees a "HELP WANTED" sign, turns in, applies, and works the rest of his/her life at Ethiopian Air Lines (Ethiopian). Is this good for society? OR would it be better for society if they NOT take that job at Ethiopian and remain frictionally unemployed longer? We need some frictional unemployment to get resources to the jobs where they produce the most. To produce as much as possible with our limited resources we need some frictional unemployment.

Frictional unemployment tends to be short-lived, BUT we do not want it to last too long. If that engineer is unemployed for many years looking for just the right job, then there would be more scarcity than if he/she had taken the job at Ethiopian. Therefore, programs to keep it low would help reduce scarcity and governments of developed countries have such programs: state employment offices and career placement offices at universities.

Structural Unemployment and Potential Output

Second, structural unemployment results from people not having the necessary skills. If these people are unemployed, what happens to scarcity? Nothing, because they don't have the skills needed. Therefore, we can still produce our potential level of output with our available resources even if there is structural unemployment. If resources without skills were put to work, they, by definition, couldn't produce anything because they don't have the skills. But, do we want these workers to just do nothing? NO. More workers or better workers results in economic growth. Economic growth is increasing our potential level of output. This is good for society since it also reduces scarcity. That is why in some developed countries like USA, governments have economic growth programs to reduce structural unemployment like financial aid for school and job training programs.

Cyclical Unemployment and Potential Output

If there is a recession and therefore an increase in unemployment associated with a decrease in output, this results in more scarcity. This is not good for society since it will be producing at a point inside its production possibilities curve or at a level of output short of the full employment

level. Therefore, governments have to have policies to reduce cyclical unemployment such as the demand management policies.

7.4. MEASURING UNEMPLOYMENT

Dear student! How do we measure unemployment level of an economy? Please, write your answer on the space provided below.

Good! Compare your answer with the explanation given below.

Recall that Unemployment is the condition of willing workers lacking jobs or "gainful employment". In economics, **unemployment** statistics measure the condition and extent of joblessness within an economy. A key measure is the unemployment rate, which is the number of unemployed workers divided by the total civilian labor force. The unemployment rate is expressed as a percent, and calculated as follows:

$$\frac{\text{Unemployed}}{\text{Total Civilian Labor Force}} \times 100$$

Simply stated, unemployment Rate (UR) is the percent of labor force that is unemployed. The civilian labor force ("total labor force") is the sum of all workers, both unemployed and employed - all those willing and able to work for pay.

The challenging task in this calculation is the measurement or estimation of unemployed work force. In developed countries like USA, four different methods are used to calculate the unemployment rate:

Labor Force Sample Surveys are the most preferred method of unemployment rate calculation since they give the most comprehensive results and enables calculation of unemployment by different group categories such as race and gender. This method is the most internationally comparable.

Official Estimates are determined by a combination of information from one or more of the other three methods. The use of this method has been declining in favor of Labor Surveys.

Social Insurance Statistics such as unemployment benefits are computed base on the number of persons insured representing the total labor force and the number of persons who are insured that are collecting benefits. This method has been heavily criticized due to the expiration of benefits before the person finds work.

Employment Office Statistics are the least effective being that they only include a monthly tally of unemployed persons who enter employment offices. This method also includes unemployed who are not unemployed per the ILO definition.

Limitations of the Unemployment Measurement

The unemployment rate may be different from the impact of the economy on people. The unemployment figures indicate how many are not working for pay but seeking employment for pay. The measures of employment and unemployment may be "too high". In some countries, the availability of unemployment benefits can inflate statistics since they give an incentive to register as unemployed. People who do not really seek work may choose to declare themselves unemployed so as to get benefits; people with undeclared paid occupations may try to get unemployment benefits in addition to the money they earn from their work.

Conversely, the absence of any tangible benefit for registering as unemployed discourages people from registering. In developing countries, for instance, the official unemployment level may be very low. Poorer countries lack a modern welfare state and unemployment insurance so that it is very difficult to afford being unemployed for very long: they often end up taking jobs below their skill levels. Those who might be counted as "unemployed" in the rich countries end up instead being underemployed and not counted in developing countries. Furthermore, children, the elderly, and some individuals with disabilities are typically not counted as part of the labor force in and are correspondingly not included in the unemployment statistics. However, some elderly and many disabled individuals are active in the labor market.

Critics believe that current methods of measuring unemployment are inaccurate in terms of the impact of unemployment on people as these methods do not take into account:

The available working population incarcerated in prisons (who may or may not be working while incarcerated).

Those who have lost their jobs and have become discouraged over time from actively looking for work.

Those who are self-employed or wish to become self-employed, such as tradesmen or building contractors or IT consultants.

Those who have retired before the official retirement age but would still like to work (involuntary early retirees).

Those on disability pensions who, while not possessing full health, still wish to work in occupations suitable for their medical conditions.

Those who work for payment for as little as one hour per week but would like to work full-time. These people are "involuntary part-time" workers.

Those who are underemployed, e.g., a computer programmer who is working in a retail store until he can find a permanent job.

Involuntary stay-at-home mothers who would prefer to work.

Graduate and Professional school students who were unable to find worthwhile jobs after they graduated with their Bachelor's degrees.

7.5. CAUSES OF UNEMPLOYMENT

Dear student! Is there a single cause of unemployment? What is/are the cause(s) of unemployment? Please, write your answer on the space provided below.

Good! Compare your answer with the explanation given below.

There is considerable debate amongst economists as to what the main causes of unemployment are. Keynesian economics emphasizes unemployment resulting from insufficient effective demand for goods and service in the economy (cyclical unemployment). Others point to structural problems (inefficiencies) inherent in labor markets (structural unemployment).

Classical or neoclassical economics tends to reject these explanations, and focuses more on rigidities imposed on the labor market from the outside, such as minimum wage laws, taxes, and other regulations that may discourage the hiring of workers (classical unemployment). Yet others see unemployment as largely due to voluntary choices by the unemployed (frictional unemployment).

On the other extreme, Marxists see unemployment as a structural fact helping to preserve business profitability and capitalism (Marxian unemployment).

Open unemployment of the sort defined above is associated with capitalist economies. Preliterate communities are thought to treat their members as parts of an extended family and thus not to allow them to be unemployed — in the effort to preserve the group. In pre-capitalist societies such as European feudalism, the serfs (though clearly dominated and exploited by the lords) were never "unemployed" because they had direct access to the land (and the needed tools) and could thus work to produce crops. Under both ancient and modern systems of slave-labor, slave-owners never let their property be unemployed for long. (If anything, they would sell the unneeded laborer.) Planned economies such as the old Soviet Union or today's Cuba typically provide occupation for everyone, using substantial overstaffing if necessary. (This is called "hidden unemployment," which is sometimes seen as a kind of underemployment.) Workers' cooperatives do not let their members become unemployed unless the co-op itself goes bankrupt.

On the other hand, under capitalism the individual profit-seeking employer does not have to bear the complete social costs of laying off or firing workers, so they are willing to live with (or even profit from) the existence of unemployment—unless employees are able to win good severance packages or protection from the government (such as restrictions on firing and layoffs, although some doubt if even these help since they may make employers more reluctant to take the risk of hiring someone in the first place). (That is, there is arguably a market failure due to the existence of external costs of firing or laying-off of people.)

Others argue that unemployment actually increases the more the government intervenes into the economy. For example, minimum wages raise costs of doing business and businesses respond by laying off workers. Laws restricting layoffs make businesses less likely to hire in the first place

leaving many young people unemployed and unable to find work. In this regard, it is widely argued that in developing countries, unemployment is often caused by burdensome government regulation.

Some say that one of the main causes of unemployment in a free market economy is the fact that the law of supply and demand is not really applied to the price to be paid for employing people. In situations of falling demand for products & services the wages of all employees (from president to errand boy) are not automatically reduced by the required percentage to make the business viable. Others say that it is the market that determines the wages based on the desirability of the job. The more people qualified and interested in the job, the lower the wages for that job become. Based on this view, the profitability of the company is not a factor in determining whether or not the work is profitable to the employee. People are laid off, because pay reductions would reduce the number of people willing to work a job. With fewer people interested in a particular job, the employees bargaining power would actually rise to stabilize the situation, but their employer would be unable to fulfill their wage expectations. In the classical framework, such unemployment is due to the existing legal framework, along with interferences with the market by non-market institutions such as labor unions and government. Others say many of the problems with market adjustment arise from the market itself (Keynes) or from the nature of capitalism (Marx).

7.6. BENEFITS AND COSTS OF UNEMPLOYMENT

Dear student! Is having unemployment a curse or a blessing? What is the benefit and costs of unemployment? Please, write your answer on the space provided below.

Good! As you might have mentioned it, unemployment may have advantages as well as disadvantages for the overall economy. The following are the typical benefits and costs of unemployment.

7.6.1. Economic Benefits of Unemployment

One of the benefit of unemployment is it may help avert runaway inflation, which negatively affects almost everyone in the affected economy and has serious long-term economic costs. The inflation-fighting benefits to the *entire economy* arising from a presumed optimum level of unemployment have been studied extensively. However, the historic assumption that full local employment must lead directly to local inflation has been attenuated, as recently expanded international trade has shown itself able to continue to supply low-priced goods even as local employment rates rise closer to full employment. Before current levels of world trade were developed, unemployment was demonstrated to reduce inflation, following the Phillips curve, or to decelerate inflation, following the NAIRU/natural rate of unemployment theory.

Beyond the benefits of controlled inflation, frictional unemployment provides employers a larger applicant pool from which to select employees better suited to the available jobs. The unemployment needed for this purpose may be very small, however, since it is relatively easy to seek a new job without losing one's current one. And when more jobs are available for fewer workers (lower unemployment), it may allow workers to find the jobs that better fit their tastes, talents, and needs.

As in the Marxian theory of unemployment, special interests may also benefit: some employers may expect that employees with no fear of losing their jobs will not work as hard, or will demand increased wages and benefit. According to this theory, unemployment may promote general labor productivity and profitability by increasing employers' monopsony-like power (and profits).

7.6.2. Costs of Unemployment

a. Individual costs

Lacking a job often means lacking social contact with fellow employees, a purpose for many hours of the day, lack of self-esteem, mental stress and illness, and of course, the inability to pay bills and to purchase both necessities and luxuries. The latter is especially serious for those with family obligations, debts, and/or medical costs, where the availability of health insurance (if exists at all) is often linked to holding a job. It is also argued that rising unemployment increases the crime rate, the suicide rate, and causes a decline in healthiness. Another cost for the

unemployed is that the combination of unemployment, lack of financial resources, and social responsibilities may push unemployed workers to take jobs that do not fit their skills or allow them to use their talents. That is, unemployment can cause underemployment. This is one of the economic arguments in favor of having unemployment insurance.

This feared cost of job loss can spur psychological anxiety, weaken labor unions and their members' sense of solidarity, encourage greater work-effort and lower wage demands, and/or abet protectionism. Finally, the existence of significant unemployment raises the oligopsony power of one's employer: that raises the cost of quitting one's job and lowers the probability of finding a new source of livelihood.

b. Social costs

The problem with unemployed resources is that they could have been used to produce more boats or cars or whatever it is that society wants. With unemployment there is more SCARCITY. This loss of goods that could have been produced if we had used all of our resources is called the GDP gap and it is a measure of the cost of unemployment.

$$\text{The GDP gap} = \text{potential GDP} - \text{actual GDP}$$

One way to measure this cost is with Okun's Law. Arthur Okun¹² noticed a striking statistical regularity: every one percentage point decrease in the unemployment rate seemed to be associated with a 2-3 percent increase in output relative to the economy's long-run potential growth path.

At first thought, this is kind of odd. A one percentage point decrease in the unemployment rate seems like it ought to be more-or-less a one percent increase in the number of workers. So we would expect output to grow by at most one percent (maybe less if the new workers cannot find sufficient capital goods to boost their productivity up to the level of the previously-employed). Instead, we find output growing by 2-3 percent. How?

Chairman of the Council of Economic Advisers under President Johnson in the 1960s

According to Okun, when the unemployment rate falls by one percentage point, the labor force rises by about one percent-discouraged workers re-enter the labor force. Hence, a one percentage point fall in the unemployment rate is associated with approximately 1.5 percent rise in the number of workers. A one percentage point fall in the unemployment rate is associated with 0.5 percent increase in the length of the average workweek. And, perhaps, a one percentage point fall in the unemployment rate is associated with 0.5 percent increase in average labor productivity. Production processes seem to work more smoothly, less downtime, less waiting around, more efficient use of fixed distributional resources, a whole bunch of things that you can label increasing returns to scale.

7.7. ACTIONS AGAINST UNEMPLOYMENT

Dear student! What should be done about the unemployed people? Please, write your answer on the space provided below.

Good! Compare your answer with the explanation given below.

As you might have said, the Government is expected to take the following (and more) actions against unemployment:

Unemployment benefits: unemployment insurance, social security payments

The most developed countries have aids for the unemployed as part of the welfare state. These unemployment benefits include unemployment insurance, welfare, unemployment compensation and subsidies to aid in retraining. The main goal of these programs is to alleviate short-term hardships and, more importantly, to allow workers more time to search for a good job.

In the U.S., the unemployment insurance allowance one receives is based solely on previous income (not time worked, family size, etc.) and usually compensates for one-third of one's previous income. To qualify, one must reside in their respective state for at least a year and, of course, work.

Making jobs in the public sector

Job training by public educational institutions

7.8. CHAPTER SUMMARY

According to ILO, unemployed workers are those who are currently not working but are willing and able to work for pay, currently available to work, and have actively searched for work.

Involuntary unemployment exists because of the socio-economic environment (including the market structure, government intervention, and the level of aggregate demand) in which individuals operate. Cyclical, structural, classical, and Marxian unemployment are largely involuntary in nature.

Natural rate of Unemployment is unemployment that prevails in the long-run minus cyclical unemployment. It is the steady-state rate of unemployment. It depends on the rate of job separation and the rate of job finding. It includes the frictional unemployment and the structural unemployment, but no cyclical unemployment. In other words, full employment is zero cyclical unemployment.

Because it takes time for workers to search for the job that best suits their individual skills and tastes, some frictional unemployment is inevitable.

Structural unemployment results when the real wage remains above the level that equilibrates labor supply and labor demand. Minimum-wage legislation is one cause of wage rigidity. Unions and the threat of unionization are another.

Unemployment rate is the number of unemployed workers divided by the total civilian labor force; i.e., it is the percent of labor force that is unemployed

There is no general consensus among economists as to what the main causes of unemployment are. While Keynesian economics emphasizes unemployment resulting from insufficient effective demand, classical or neoclassical economics focuses more on rigidities imposed on the labor market from the outside, such as minimum wage laws, taxes, etc. On the other extreme, Marxists see unemployment as a structural fact helping to preserve business profitability and capitalism.

Unemployment may have advantages as well as disadvantages for the overall economy, but with no doubt, the cost of unemployment outweighs its benefit.

7.9. SELF TEST EXERCISE

Dear student! Now it is your turn to reflect the important issues presented above. The following questions are designed to evaluate the extent to which you understood the main points discussed in this chapter. You are strongly advised to answer all of them. If you encounter challenges in answering them, you are strongly advised to refer back to the note provided in this chapter.

Critically evaluate the significance of the phrases “currently not working,” “willing and able to work for pay,” “available to work” and “actively searched for work” in ILO definition.

Technically define who unemployed labor force is.

Distinguish between:

- Frictional and structural unemployment

- Cyclical and seasonal unemployment

- Underemployment and disguised unemployment

- Voluntary and involuntary unemployment

“Unemployment can never fall to zero” why? Explain.

What does Full Employment Rate of Unemployment mean?

Critically evaluate the impact of structural, cyclical and frictional unemployment on potential level of output.

Critics believe that current methods of measuring unemployment are inaccurate. Do you agree? Justify your answer.

Argue against the idea that the main cause of unemployment is government intervention.

Explain the major benefits and costs of unemployment.

Do you think that unemployment insurance solve the problem of unemployment?

Justify your answer in the context of developed and developing countries.

REFERENCES

- Borjas, George. 1996. *Labor Economics*. McGraw-Hill Companies, Inc.
- Dickens, William T. and Kevin Lang (1992) *Labor market Segmentation Theory: reconsidering the Evidence*, Working paper No. 4087, NBER Working Papers series.
- Ehrenberg, Ronald G. and Robert S. Smith. 1997. *Modern Labor Economics* Addison-Wesley
- Elliott, R.F. 1990. *Labor Economics: A comparative text*. McGraw- Hill Companies
- Encyclopedia, Colombia University Press, <http://www.Answers.com/laborunion> Folbre, Nancy. 2003. **Lecture Notes: available at** <http://www.answers.com>
- King, J. E. 1990. *Labor Economics*, 2nd ed. St. Martins press, New York.
- Lazear, Edward P. and Paul Oyer (2003). Internal and External Labor Markets: A personal Economics approach; Working paper No. 10192, NBER Working Papers series
- Marshal, F. Ray, Carter, Allan M., and King, Allan G. 1976. *Labor Economics: Wages, Employment and Trade Unionism*. Richard D. IRWIN, Inc., Illinois.
- McCannel, Campbell R. and Stanley H. Brue (1989). *Contemporary Labor economics*, 4th ed. McGraw-Hill Ink, New York.
- Teferi Daba Lemma. 2007. Lecture Notes on Labor Economics (unpublished.)
- Teshome Mulat. (19??). *Labor Economics* (unpublished.)
- The Library of Congress. 1991. Country Studies, CIA World Factbook. http://www.photius.com/countries/ethiopia/economy/ethiopia_economy_labor_unions.html
- Pearce, David W. (1992) (Edr). *Macmillan Dictionary of Modern Economics*, fourth edition, the Macmillan Press Ltd, London
- Weib, P. 2001. *Unemployment in Open Economics: lecture notes in economics and mathematical system*. Springer -Verlag Berlin Theidelbeg, New York.