

**BACHELOR OF BUSINESS ADMINISTRATION
(FINANCIAL INVESTMENT ANALYSIS)
&
BACHELOR OF MANAGEMENT STUDIES**

MACROECONOMICS

BBA (FIA) SEMESTER - II (DSC-5)

BMS SEMESTER - III (DSC-8) COURSE CREDIT - 4



**DEPARTMENT OF DISTANCE AND CONTINUING EDUCATION
UNIVERSITY OF DELHI**

AS PER THE UGCF-2022 AND NATIONAL EDUCATION POLICY 2020

Editorial Board

Dr. Kumar Bijoy

*Associate Director, Campus of Open Learning,
University of Delhi*

Ms. Shalini Prakash

*Associate Professor, Shaheed Sukhdev College of Business Studies,
University of Delhi*

Content Writers

***Dr. Kumar Bijoy, Dr. Reema Aggarwal, Dr. Pooja Goel,
Dr. Rishi Taparia, Dr. Arjun Singh Solanki,
Dr. Minesh Kumar Srivastava, Dr. Manju Kumari***

Academic Coordinator

Mr. Deekshant Awasthi



© Department of Distance and Continuing Education

ISBN: 978-81-96217-78-5

1st Edition: 2023

E-mail: ddceprinting@col.du.ac.in
management@col.du.ac.in

Published by:

Department of Distance and Continuing Education
Campus of Open Learning/School of Open Learning,
University of Delhi, Delhi-110007

Printed by:

School of Open Learning, University of Delhi



This Study Material is duly recommended in the meeting of Standing Committee held on 08/05/2023 and approved in Academic Council meeting held on 26/05/2023 Vide item no. 1014 and subsequently Executive Council Meeting held on 09/06/2023 vide item no. 14 {14-1(14-1-11)}

Corrections/Modifications/Suggestions proposed by Statutory Body, DU/ Stakeholder/s in the Self Learning Material (SLM) will be incorporated in the next edition. However, these corrections/modifications/suggestions will be uploaded on the website <https://sol.du.ac.in>.

Any feedback or suggestions can be sent to the email-feedback.slm@col.du.ac.in.

Printed at: **Taxmann Publications Pvt. Ltd., 21/35, West Punjabi Bagh,
New Delhi - 110026 (300 Copies, 2023)**



Contents

PAGE

Lesson 1 : Ancient Indian Economy: Insights from Arthashastra

1.1	Learning Objectives	2
1.2	Introduction	2
1.3	Arthashastra	4
1.4	Taxation	6
1.5	Good Governance	11
1.6	Foreign Trade	13
1.7	Relevance of Arthashastra in Modern Times	16
1.8	Summary	18
1.9	Answers to In-Text Questions	19
1.10	Self-Assessment Questions	19
1.11	References and Suggested Readings	19

Lesson 2 : Classical Theory of Income and Employment

2.1	Learning Objectives	20
2.2	Introduction	21
2.3	Classical Theory of Income and Employment	23
2.4	Quantity Theory of Money - Cambridge Version	25
2.5	Classical Aggregate Demand Curve	31
2.6	Classical Theory of Interest Rate	39
2.7	Summary	47
2.8	Answers to In-Text Questions	48
2.9	Self-Assessment Questions	48
2.10	References	48
2.11	Suggested Readings	49

PAGE | i

**Lesson 3 : Keynesian Model**

3.1	Learning Objectives	50
3.2	Introduction	51
3.3	Simple Keynesian Model	52
3.4	Criticism of Keynesian Theory	57
3.5	Determination of Equilibrium in a Simple Two-Sector Economy	59
3.6	Investment Multiplier (k)	63
3.7	Paradox of Thrift	64
3.8	Determination of Equilibrium in Four-Sector Economy	66
3.9	Summary	68
3.10	Answers to In-Text Questions	69
3.11	Self-Assessment Questions	70
3.12	References	70
3.13	Suggested Readings	70

Lesson 4 : Theory of Income Determination and Interest Rate

4.1	Learning Objectives	71
4.2	Introduction	72
4.3	IS-LM Model	72
4.4	Equilibrium in Goods and Money Market	82
4.5	Impact of Fiscal and Monetary Policy on IS and LM Curves	83
4.6	Summary	89
4.7	Answers to In-Text Questions	90
4.8	Self-Assessment Questions	90
4.9	References	90
4.10	Suggested Readings	91

Lesson 5 : Inflation

5.1	Learning Objectives	92
5.2	Introduction	93



5.3	Monetary Policy Committee (MPC)	93
5.4	Inflation	94
5.5	The Natural Rate Theory	96
5.6	Monetary Policy, Output and Inflation: Monetarist View	98
5.7	Output-Inflation Trade-Off: Keynesian View	104
5.8	Evolution of the Natural Rate Concept	108
5.9	Summary	109
5.10	Answers to In-Text Questions	109
5.11	Self-Assessment Questions	110
5.12	Reference	110
5.13	Suggested Readings	110
Lesson 6 : Balance of Payment and International Trade		
6.1	Learning Objectives	111
6.2	Introduction	112
6.3	Balance of Payment	112
6.4	Market for Foreign Exchange and Exchange Rate	117
6.5	Monetary and Fiscal Policy in Open Economy	121
6.6	Mundell Fleming Model	126
6.7	Summary	132
6.8	Answers to In-Text Questions	133
6.9	Self-Assessment Questions	133
6.10	References	134
6.11	Suggested Readings	135
Glossary		137



Ancient Indian Economy: Insights from Arthashastra

Dr. Kumar Bijoy

Associate Director

Department of Distance & Continuing Education

Campus of Open Learning

University of Delhi

E-mail Id: associatedirector@col.du.ac.in

Dr. Reema Aggarwal

Assistant Professor

Department of Distance & Continuing Education

Campus of Open Learning

University of Delhi

E-mail-Id: Reemaaggarwal92@gmail.com

STRUCTURE

- 1.1 *Learning Objectives*
- 1.2 *Introduction*
- 1.3 *Arthashastra*
- 1.4 *Taxation*
- 1.5 *Good Governance*
- 1.6 *Foreign Trade*
- 1.7 *Relevance of Arthashastra in Modern Times*
- 1.8 *Summary*
- 1.9 *Answers to In-Text Questions*
- 1.10 *Self-Assessment Questions*
- 1.11 *References and Suggested Readings*



1.1 Learning Objectives

At the end of this lesson, the student should be able to:

- ◆ Explain the role of Arthashastra in state administration.
- ◆ Comprehend Kautilya's stance on foreign trade, taxation, and effective governance.
- ◆ Apprehend the importance or significance of Arthashastra in the contemporary era.

1.2 Introduction

“If I were to look over the whole world to find out the country most richly endowed with all the wealth, power, and beauty that nature can bestow—in some parts a very paradise on earth—I should point to India”. — Max Müller, (1883)

This lesson exposes us about the ancient thoughts on economic concepts, issues and practices, and try to establish its present-day relevance. India (Bharat) is the one of the oldest and culturally advanced civilization on earth. India was a great treasure of knowledge and wisdom even 5000 years back (pre – Vedic period) where Indian citizens had great art of making a balanced growth on both the fronts namely material and spiritual. They were knowing the best utilization of nature and natural resources and were sensitive towards replenishing those resources. During those periods, the way of living was very simple, natural and productive. For conservation of natural resources, they had symbolized every resource as representatives of God or Goddess like Earth as mother (Dharti maa); Solar energy as ‘Suryadev’; Water as ‘Varundev’; Air as ‘Pawandev’; Cow as ‘Gau mata’ etc. They used to worship the natural resources like river, trees, cow, harvests etc. The prime sources of livelihood during the Vedic period were Agriculture, Pastoring, animal husbandry, crafts and technology, trade and commerce. Trade was both internal and external. ‘Pani’ a class of merchants who were actively engaged in the trade whereas ‘ganas’ and the ‘shreshthins’ (guilds or corporations) were facilitator of trade and commerce.

The Vedic literature is very vast and deep which talks about every dimension of our life. It teaches us the art of living happy, prosperous and satisfied.



For example, Manduka Upanishad, illustrates a conversation between a guru (teacher) Angirasa and his disciple (student) Shaunaka where guru has classified the knowledge into two parts – *Apara Vidya* and *Para Vidya*. Apara Vidya deals with worldly knowledge which in present time are in the form of Art, Science, Commerce, Management, Technology, Engineering etc. Para Vidya is of higher category of knowledge *i.e.* spiritual and metaphysical in nature. Many modern scientists and great scholars from western world have highlighted the Vedas and Upanishad as supreme knowledge treasure. **Dr. John Hagelin**, a quantum physicist has delivered a number of lectures on Vedic Science. According to a German scientist **Norbert Weiss**, “the Vedas have the solution to every problem in the world. He also says he uses formulas of science to prove the Vedas are a storehouse of perfect science”.

The Vedic texts suggest that wealth should be earned or collected honestly, used judiciously on merit consumption and for the welfare of all, and not just for self. Agriculture was the main source of sustenance and prosperity in ancient times, and trade was seen as a way to increase a kingdom’s wealth. King used to collect **Bali** (Sacrifice or Tax) from the farm produce (normally one-sixth of the produce). Apart from Agriculture and animal husbandry, Crafts like Chariot-making, Carpentry, Tanning, etc. were also in practice. Copper was in use but no evidence of Iron use is available during this period. Although some Vedic sayings promote social and economic equality, however, they do not advocate for absolute equality. Hoarding of wealth and disrupting others’ livelihoods was strongly condemned and discouraged by the saying “a person who eats alone is nothing but a sinner”.

During Maurya dynasty period, Agriculture was the backbone of the economy, but trade and services were growing very fast. Tax structure was simplified and centralized but made Strict-and-fair for all. A unified currency for all India was introduced by the then king Chandragupta Maurya. **Chanakya (Kautilya)** an ancient Indian polymath, and royal advisor to Maurya dynasty is the author of ‘*Arthashastra*’ one of the oldest books on Political Science, Economic policy and Military strategy. It talks about seven tenets of governance *i.e.* **Satta** (the concept of Saptanga or the seven pillars that are required to build an effective and strong kingdom. The pillars are: **Amatya, Swami, Janapada,**



Kosha, Durg, Mitra iti pratikriya and Dand). Chanakya's ideologies, thoughts, ideas and comprehensive account on economic principles were basically manifestation of teachings and wisdom of Vedas. He always advocated the six principles of Vedas - 1. *Vasudha-Eva-Kutumbakam* (Accepting the whole world as one and one's family), 2. *Samarpan Bhaav* (Dedication), 3. *Lokasangraha* (Welfare of all beings), 4. *Shubh Laabh* (Ethical Profits), 5. *Nishkaama Karma* (Deeds without greed) and 6. *Ati-Hyaastha-Varjayet* (Shunning extremes). It has not only shaped and strengthened the Mauryan Empire, but is applicable in modern situations as well. The 4th principle *i.e.* Shubh Laabh is the need of the time. Absence of this and looking for only Laabh (profit) by any means is the root of many corporate frauds which is on increasing trend in modern time. Kautilya's Arthashastra provide a crucial precursor to classical economics. It had been taught and followed till the end of 12th Century but unfortunately, forgotten afterward till the beginning of 20th century. However, unlike Renaissance philosophers, Kautilya's theories, thoughts and contribution is not well credited in the modern economic literature. So, we have to extract all the merits and wisdom from these ancient treasure of knowledge and merge it with the modern economic thought, and practices. That will be pure, indigenous deep rooted but advanced economic principles of modern India and guide for the rest of the world.

1.3 Arthashastra

As described above, the Arthashastra of Kautilya is an ancient text on statecraft, military strategy and economic policy which postulates the principles of good governance. The term "Arthashastra" refers to the science of wealth, earth and polity, with "artha" being a broad term that encompasses various meanings such as material well-being, livelihood, productive economic activities, and trade, what later get conceptualized as "wealth" in Adam Smith's "Wealth of Nations". It prescribes the guidelines for the decision-making process of a king, the rules of administration, establishment of a stringent but fair tax system, timely unbiased judgment and justice for all. The title "Arthashastra," which means "the science of material gain" or "science of polity", reflects its purpose of guiding the ruler on means to attain his goal with moral sanction.



Leadership lessons from Kautilya's Arthashastra summarises as: 1. Your People Come First. 2. People In Power Must Be Accessible. 3. Hold People Accountable for their work. 4. Don't Delay Your Decisions – Do The Right Thing At The Right Time. Essentially, the Arthashastra can be understood as a science and art of politics and diplomacy. It is comprised of 15 books and 150 chapters, that cover virtually each and every topic related to running a state, taxation, law, governance, diplomacy, military strategy, economics and bureaucracy.

Kautilya's Arthashastra lays focus on how the king should be? He had suggested for democratic style of ruling by the king. He mentioned in this book that the King and the subjects of that kingdom are two sides of the same coin. According to him, A king should be well-versed in all the four Vedas and four sciences of government (Anvikshiki, Trayee, Varta, and Dandaniti) for the smooth functioning of administration and the welfare of the people. Kautilya's administrative and judicial structure was hierarchical in nature, with an emphasis on equity and immediacy for impartiality. Kautilya believed that it is the dual responsibility of both state and the individual for the each other's well-being. He puts the stress on the moral duties and rights of different parts of society while addressing practical issues in his work, Arthashastra. He provided solutions for a wide range of problems, such as land classification, trade regulations, revenue collection and accounting.

In his Arthashastra, Kautilya provided a balanced approach between state management and the welfare of the people, which he considered to be quintessential for human existence and survival. He was not only a great intellectual, but also a skilled statesman who played a pivot role during the Maurya Dynasty. His guidance and direction have helped the empire to achieve a level of stability and growth through strong administration and efficient fiscal management. While the Arthashastra lays emphasis on the importance of the king's wealth, effectiveness and well-being, Kautilya's ultimate objective was to benefit the people through public welfare. Modern economic policy formulation may derive wisdom from this great treasure of knowledge.



1.4 Taxation

According to Kautilya, the purpose of public revenue is not to satisfy the king's desires, but rather to serve as a means of enhancing the wealth of the nation. He acknowledged that the taxation is the primary source of revenue. Even though the state's power to tax is unlimited, excessive taxation should be avoided. He advocated for increasing the tax base rather than the tax rate and recognized the detrimental effects of excessive tax burden on the people. Kautilya compared the collection of tax with the honey bee. He suggested like honey bee sucks appropriate amount of honey from flower, so that both could survive. Similarly, king should collect appropriate amount of tax which is enough to sustain the kingdom happily without destroying or harming tax giver.

He proposed the implementation of tax holidays as an incentive, which would exempt individuals those who bring new land under cultivation from agricultural taxes for at least 2 years. He was in full support of having a mixed economy and emphasized the active involvement of the government. During his discussions on taxation, he outlined three principles:

- ◆ Power of taxation to be limited,
- ◆ Avoidance of levying heavy and excess taxation, and
- ◆ A pragmatic approach for tax increases.

Kautilya's tax system consisted of multiple key elements, including the taxpayer's sacrifice, direct benefit to the taxpayers, income redistribution¹ and tax incentives for desired investments. He believed that the "ideal" tax system should possess certain characteristics, such as being easy to calculate, convenient to pay, inexpensive to administer, equitable in its burden, neutral in its impact on economic behaviour, and generally not obstructive to economic growth and development.

In order to attain these objectives, the payment of Mauryan taxes can be done through various means, such as gold, silver or copper coins, cattle, agricultural produce, minerals, timber, and personal services like constructing roads, canals, and forts, or serving in the military.

1. Transfer of income and of wealth (including physical property) from some individuals to others by means of a social mechanism such as taxation.



The Kautilya's tax system-imposed taxes on income and wealth, covering both movable and immovable assets, as well as sales transactions including export and import duties, and poll taxes on all adult males.

Types of taxes

The Arthashastra suggested various forms of taxation to create income and accumulate funds in the state treasury, some of them are as follows:

- ◆ Customs duty (sulka) consisting of import duty (pravesya), export duty (nishkramya), octroi, and other
- ◆ Tolls (dwarabahirikadeya)
- ◆ Transaction tax (vyaji) including manavyaji (transaction tax for Crown goods)
- ◆ Share of production (bhaga)
- ◆ Tax (kara), in cash
- ◆ Taxes in kind (pratikara) including Labour (vishti) and Supply of soldiers (ayudhiya)
- ◆ Countervailing duties or taxes (vaitarana)
- ◆ Road cess (vartani)
- ◆ Monopoly tax (parigha)
- ◆ Royalty (prakriya)
- ◆ Taxes paid in kind by villages (pindakara)
- ◆ Army maintenance tax (senabhaktam)
- ◆ Surcharges (parsvam)

IN-TEXT QUESTIONS

1. Kautilya, author of Arthashastra is:

(a) Teacher	(b) Philosopher
(c) Economist	(d) All of these
2. The Arthashastra is comprised of 15 books and 150 Chapters, that cover virtually each and every topic related to running a state, taxation, law, governance, diplomacy, military strategy, economics and bureaucracy.

(a) True	(b) False
----------	-----------

***Kautilya's principles of taxation can be summarized as follows:***

- 1. Collection of taxes:** Kautilya believed that taxes should be collected when they become due, just as fruits are harvested when they ripen. Taxation should not be carried out prematurely as this could damage the source of revenue and cause great harm or difficulty to the tax payers.

Kautilya believed that taxation should not come as a burdensome for people. Tax rates should not be set so high that people lose their motivation to engage or work more in productive activities, which will ultimately conclude with a downfall in overall economic activity and overall wealth. High tax rates can also discourage mutually beneficial transactions and result in deadweight loss², ultimately reducing government tax revenue.

- 2. Ability to pay taxes:** The principle of ability-to-pay taxation in earlier times meant that taxes were imposed based on the taxpayer's capacity to pay. Wealthier individuals were subject to higher taxes while lower-income groups were exempted. Additionally, tax exemptions were given to sectors where high tax rates could have a negative impact on the activities of production and development. Sales tax rates were higher for expensive commodities such as gold, silver, diamonds, and pearls, while less expensive commodities like cloths, grains, and dairy products, as well as firewood, earthen vessels, and bamboo were subject to lower rates of taxation.

Kautilya advised that taxes should only be fetched when taxpayers are capable of paying them. He believed that the tax system should be just, and tax rates should be in proportionate with individuals' capacity to pay, whether in terms of wealth, income, or sales revenue.

- 3. Economic Security:** Kautilya believed in the importance of providing a safety net for those facing hardships, social security for the elderly, supplemental security income³ for children, and welfare payments for the poor. In cases where a government servant passed away while on duty, their salary and food allowance would be provided

2. In economics, deadweight loss refers to the fall in total surplus (Consumer and producer surplus) that results from a market distortion, such as tax. In other words, it is a measurement of how far taxes reduce the standard of living among the taxed population.

3. Providing benefits to disabled adults and children who have limited income and resources.



to their wives and children, with additional support given to minors and sick or elderly relatives. The families of deceased government servants would also receive monetary gifts and honourable treatment on occasions such as funerals, births, or illnesses as a gesture of appreciation for their service to the king.

- 4. Tax Compliance and Evasion:** Taxes has to be collected in cash from skilled individuals and they should not be allowed to escape tax payment by pretending that the sales were made on someone else's behalf. Such individuals will not be forgiven for evading taxes.

Kautilya's belief on taxation can be regarded as falling within the framework of "Optimal Tax Systems". However, he is not in the favor of the use of lump-sum taxes⁴ as they could create a sense of unfairness and reduce overall economic efficiency, potentially leading to political instability. Additionally, tax evasion was considered a serious crime in the Arthashastra, and the penalty for it was determined on the basis of the amount of tax evaded rather than the amount of income concealed.

Laffer Curve and Kautilya

Laffer curve was developed by Arthur Laffer, explains the relationship between tax rate and resulting levels of revenue for government. The theory suggests that lower tax rates can increase people's motivation to work, leading to improved economic conditions and potentially higher tax revenue.

Conversely, excessively high tax rates can reduce tax revenue as they create disincentives to work. For every type of tax, there is a threshold rate beyond which the motivation to produce more diminishes, reducing government revenue.

However, the Laffer curve has some basic problems. It can be discontinuous, making it difficult to develop a revenue-maximizing tax rate model. Additionally, it relies on simplistic assumptions that are insufficient to capture the complexities of the tax system. It can be further clearly understood by the following figure 1.1.

4. A tax in which the taxpayer is assessed the same amount regardless of circumstances.



Notes

Arthashastra also talks about job of magistrates. Kautilya suggests that Judges should be impartial and while making decisions they should remain neutral between the King and his subjects. This indicates that he should be fair in the process or case we handle, regardless of the individuals involved. It is an ideal justice system that punishes those who commit crimes and releases those who are innocent. Kautilya suggested following for decision making:

1. 'Dharma', which is based on truth
2. 'Evidence', which is based on witnesses
3. 'Custom', *i.e.* tradition accepted by the people
4. 'Royal Edicts', *i.e.* law as promulgated.

Dharma was supreme when there were contradictions between various laws. Rajasasana defined the relationships between the three main social groups, namely, citizen, association and state. Constitutional rules at the state level were laid down in rajasasana, while constitutional rules at the association level were to be determined by the association members. The association's members also determined mutual elections and the association's rules of procedure, but countries enacted laws to protect individual members from the oppression of the association's majority. Arthashastra outlines the systems of civil, criminal and commercial law. Although Arthashastra's primary purpose and responsibility is human well-being, Kautilya nonetheless includes rules in his treatise to protect the environment and other living things. This is because Indian society values all living things based on their beliefs.

Arthashastra provided basic guidelines for the proper management of the country's economy. A ruler must know how to use resources such as funds which contribute to economic development. Arthashastra emphasizes on the importance of irrigation and amenities for agricultural development and suggests to address it on a priority basis. Today professionals must be aware of systematic agricultural patterns and irrigation regimes followed by Kautilya. Apart from that, it is also necessary to learn various agricultural processes as they help produce and store resources used in society.

Arthashastra combined political and economic leadership. Arthashastra sees economic governance as the end goal and political governance as



the means to achieve it. However, because economic objectives cannot be achieved without political ones, political governance becomes an end in itself and economic governance becomes the means to achieve it. This is based on the belief that the end justifies the means, with political power and material wealth being both the means and the ends of governance. Good governance, whether political or economic, depends on justifying the ends and means according to the socio-economic and political circumstances. The Arthashastra provides basic guidelines for proper economic management, emphasizing the importance of managing resources such as monetary funds and prioritizing agriculture, including irrigation and organic farming. It also emphasizes the need to learn various agricultural processes to aid in production and storage of resources for society's use.

Prevention of Corruption: The Arthashastra, as narrated by Kautilya, indicates that corrupt officials can be identified by an increase in spending and a decrease in revenue collection. To combat corruption in the judicial system, fines were imposed on judges who acted unjustly or delayed trials without cause. An espionage network was established to detect financial misappropriation and judicial misconduct, with spies recruited for their honesty and good conduct. Whistle blowers⁵ were encouraged and rewarded for reporting financial wrongdoing. Kautilya also recommended periodic transfers of government officials, reducing the number of government servants and promoting honesty through public recognition and rewards. However, Kautilya acknowledged that it was impossible to completely eliminate corruption and that some level of corruption would always exist.

1.6 Foreign Trade

Mandala Theory

Kautilya's Mandala Theory is based on the belief that one's neighbours are natural enemies, while the neighbours of those neighbours are friends. The word "mandala" refers to a circle in Sanskrit, and this theory was one of the earliest works on ancient systems of kings, kingdoms, and

5. A person who exposes any kind of information or activity that is deemed illegal, unethical, or not correct within an organization.



empires, similar to a model of international relations. According to Kautilya, the ultimate goal of a potential conqueror king is to achieve the happiness and welfare of their kingdom, which can be attained through the Mandala theory. This theory is a system devised by Kautilya to help his king achieve the twin objectives of foreign policy, namely, security and interest.

The Mandala theory consists of several key elements, including:

- ◆ The central king or potential conqueror, whose kingdom is divided into the front and the rear.
- ◆ The immediate front neighbour, also known as the enemy. In this case, all neighbouring states are considered enemies.
- ◆ The neighbour of the enemy, who is considered the friend of the king according to the adage “the enemy of my enemy is my friend”.
- ◆ The state next to the ally’s front border is the enemy of the king.
- ◆ The state adjacent to the arch enemy of the king becomes the king’s ally.
- ◆ The neighbouring state of the king’s ally is considered the enemy of the king.

In Kautilya’s mandala theory, there are two additional types of kingdoms:

- ◆ The intermediary king is situated near both the conqueror and the immediate enemy, and is capable of aiding or opposing either of them.
- ◆ The neutral king is located beyond the territories of all other kings and has the power to support or resist any of them.

The conqueror should view the circle of states as a wheel, with himself as the hub and his allies as spokes. By surrounding and pressuring the enemy, even a strong foe can become vulnerable to attack. To advance his interests, the conqueror must establish a network of excellent allies both in the front and rear of his kingdom. He should maintain envoys and spies in all states within the circle, who will undermine any individuals acting against the conqueror’s interests, while maintaining secrecy. Any failure to maintain secrecy will lead to failure, even if there are temporary successes.



Kautilya supports the use of tariffs for both imports and export. Kautilya worked to attract foreigners with good skills. He supported using import and export tariffs. He proposed imposing heavy tariffs on foreign luxury goods and low tariffs on consumer goods. Items of great utility to the country should be exempt from import duties. He was the first to discuss the passport required to cross the border.

Kautilya's Six-fold Policy – the backbone of foreign policy analysis:

Kautilya's Six-fold Policy is a framework for analyzing foreign policy. It includes different strategies that a king can use to achieve progress in their relations with neighboring states. These strategies include the following:

- ◆ **Making peace:** If a king realizes that he is not as strong as his enemy, he should make peace or sign an agreement. The king should consider making peace when he and the enemy have progressed equally in the same amount of time, or if both have declined equally, or if there has been no change in their respective situations during the same period of time.
- ◆ **Waging war:** If a king has certain advantages such as superior forces and an impregnable fort on the border, he can achieve progress by waging war. Additionally, if the enemy has been weakened by a calamity or if a part of their country can be absorbed while they are busy fighting elsewhere, the king can also achieve progress by waging war.
- ◆ **Doing neither:** A king can achieve progress without waging war or making peace if neither he nor his enemy can harm each other's undertakings. Alternatively, if the enemy is facing a crisis or struggle, the king can focus on building his own resources.
- ◆ **Preparing for war:** A king can also make progress while preparing for war, but only if he can first ensure that his kingdom is well-protected before bringing about the enemy's ruin.
- ◆ **Seeking protection:** If a king is unable to protect his own kingdom from enemy attacks or bring about the enemy's ruin, he should seek help from another king. This will allow him to avoid decline and move towards progress.



- ◆ **Adopting a dual policy:** A king can promote his own undertakings by making peace with one enemy while waging war against another to ruin their undertakings. This is called a dual policy.

According to Kautilya, when progress can be achieved through either peace or war, peace should be preferred. However, if a king is unable to ruin their enemy's undertakings or protect their own from enemy attacks, seeking the help of a stranger king may be necessary. While Kautilya's model has relevance in modern diplomacy, it also has some limitations and loopholes. For example, Kautilya assumes that neighboring states are natural enemies, which is not always the case in contemporary international relations. Additionally, the model can be self-destructive in the long run if a king becomes embroiled in unmitigated conflict. Despite its limitations, Kautilya's model provides a basic framework for understanding international relations and diplomacy.

1.7 Relevance of Arthashastra in Modern Times

Kautilya, the distinguished Indian political philosopher, left a lasting legacy and a remark that continues to influence modern political thought. Despite living in a bygone era, many of his theories still remain relevant and useful to contemporary governance. His Sanskrit text offers insights into the principles and practices of statecraft, with a key emphasis on the well-being of the populace. While the economic language of the Arthashastra may be not up to the latest trend, but the role of the state in the economy remains a constant theme across all eras. The Arthashastra covers a wide range of topics, including administration, politics, and economics, making it a comprehensive guide for the growth of the country and it is still applicable. Kautilya's ideas are still widely embraced in India, attesting to his enduring impact on political philosophy.

It provided a valuable foundation for economics. Arthashastra contains beneficial economic ideas on foreign trade, taxation, public spending, agriculture and industry. Good governance and stability are two sides of the same coin. A ruler has stability when responsive, accountable, removable, and recallable. Otherwise, there is uncertainty. It is relevant in the current democratic system. He recommended avoiding high taxes. If the tax rate is high, people will not be willing to pay taxes, and they



will try to find tax evasion methods. Lower tax rates bring more revenue to the government.

He recognized that trading terms depended on many factors, not just the economy. Without specific precautions and policies, no autonomous mechanism ensures that a country benefits from trade. Social welfare is the main focus of Kautilya's economic concept. The state was supposed to help the poor and helpless and actively contribute to the welfare of its citizens. Kautilya focuses on the formation of human capital as it relates to modern times because without human capital growth, no development is possible. Apart from these ideas, some things are of great importance in Arthashastra, such as protecting natural resources. Arthashastra taught much basic knowledge about economics, and some of his ideas are still important in today's economic system.

In short, the Arthashastra is an exceptional text of all Indian literature. Arthashastra covers a wide range of economics, including infrastructure (road building, irrigation, forestry and fortification), weights and measures, labour and employment, trade and commerce, commodities and agriculture, land use and property law, money and coins, interest rates and credit markets, tariffs and taxes, government spending and the treasury. It is worth noting that this comprehensive book includes economics, political science, public administration, law and political science intended to give practical advice on how to run a nation and thereby increase national prosperity.

Kautilya's foreign policy has some similarities with modern diplomacy, but it also has some flaws that make it less relevant or useful today. Kautilya has always believed that neighbouring states were natural enemies, but this presumption can't be right always in contemporary times. His model is unstable and could lead to conflict, which would be self-destructive in the long run. The roles of intermediary and neutral kings are unclear, as Kautilya does not explain how they should use their power or abilities to help potential kings. Although Kautilya's mandala theory and six-fold policy may not be applicable to the current political landscape, they still provide a foundation for understanding international relations and diplomacy.



Kautilya had a more advanced concept of economics and the factors contributing to a nation's wealth compared to the Physiocrats⁶ and Mercantilists⁷. Unlike the French Physiocrats who emphasized agriculture as the sole basis of wealth, Kautilya acknowledged the importance of agriculture while also recognizing the significance of industry, trade, and commerce in securing a nation's prosperity. He believed that the development and efficient operation of various economic sectors were critical for a nation's wealth and security, which is why he emphasized inter-industry analysis.

1.8 Summary

Arthashastra is a remarkable work in Indian literature because there is no impractical or faulty reasoning and its support of realpolitik⁸. This book provides a comprehensive coverage of the economy, including infrastructure, labor, commerce, agriculture, land use, money, taxation, and government expenditures. It is notable that a book of this magnitude was written over 2300 years ago in northern India, and it encompasses economics, political science, public administration, law, and statecraft. Its purpose is to offer practical guidance for managing the state and improving the nation's wealth.

According to Kautilya's beliefs, Kautilya prioritized ethics, or dharma, over material well-being, or artha, because he believed that dharma was not only essential for achieving happiness but also very important for achieving prosperity. He viewed his Arthashastra as a guiding map for promoting the socio-economic welfare of the state. His notion of effective governance was comprehensive and encompassed a wide range of factors, and it still holds relevance in today's contemporary world.

6. Physiocracy is an economic theory developed by a group of 18th-century Enlightenment French economists who believed that the wealth of nations was derived solely from the value of "land agriculture" or "land development" and that agricultural products.
7. Mercantilism, is a system in which a country attempts to amass wealth through trade with other countries, exporting more than it imports and increasing stores of gold and precious metals.
8. A system of politics or principles based on practical rather than moral or ideological considerations.



1.9 Answers to In-Text Questions

1. (d) All of these
2. (a) True
3. (b) False
4. Arthur Laffer
5. (a) True
6. (d) All of the above

1.10 Self-Assessment Questions

1. Explain Kautilya's view on taxation?
2. Explain relevance of Arthashastra in modern time?
3. Describe principles of taxation?
4. What is Laffer Curve?
5. According to Kautilya how corruption could be identified and what could be done to reduce it?
6. Write a short note on kautilya's view on the job of a magistrates.
7. Name various types of taxation suggested in Arthashastra for state treasury.
8. Write a short note on Mandala Theory.
9. Is teachings of Arthashastra relevant in modern times. If yes. Explain.

1.11 Reference and Suggested Reading

- ◆ Kautilya's Arthashastra - The way of Financial management and economic governance (2012) (6th Edition) Jaico Publishing House.



Classical Theory of Income and Employment

Dr. Pooja Goel
Associate Professor
Department of Management
Institute of Applied Medicines & Research, Ghaziabad
Chaudhary Charan Singh University, Meerut
Email-Id: poojagoel13@gmail.com

STRUCTURE

- 2.1 *Learning Objectives*
- 2.2 *Introduction*
- 2.3 *Classical Theory of Income and Employment*
- 2.4 *Quantity Theory of Money - Cambridge Version*
- 2.5 *Classical Aggregate Demand Curve*
- 2.6 *Classical Theory of Interest Rate*
- 2.7 *Summary*
- 2.8 *Answers to In-Text Questions*
- 2.9 *Self-Assessment Questions*
- 2.10 *References*
- 2.11 *Suggested Readings*

2.1 Learning Objectives

- ◆ Understand the high level and quick expansion of output.
- ◆ Understand the high employment rate and low involuntary unemployment.
- ◆ Describe the concept of price-level stability.
- ◆ Understand the controlling the money supply to determine interest rates.



- ◆ Explain the concept of employment, under-employment and full employment.
- ◆ Describe the excess demand and deficit demand.

2.2 Introduction

The basic contention of classical economists was that “given flexible wages and prices, a competitive market economy would operate at full employment. That is, economic forces would always be generated to ensure that the demand for labour would always equal its supply”.

In the classical model the equilibrium levels of income and employment were supposed to be determined largely in the labour market. The demand curve for labour shows the relationship between the real wage (equal to the value of the marginal product of labour in a competitive economy) and the demand for labour by employers.

The lower the wage rate, the more the workers will be employed. This is why it is downward sloping. The supply curve of labour is upward sloping for obvious reasons. The higher the wage rate, the greater the supply of labour.

The basic contention of classical economists was that “given flexible wages and prices, a competitive market economy would operate at full employment. That is, economic forces would always be generated to ensure that the demand for labour would always equal its supply”.

In the classical model the equilibrium levels of income and employment were supposed to be determined largely in the labour market. The demand curve for labour shows the relationship between the real wage (equal to the value of the marginal product of labour in a competitive economy) and the demand for labour by employers.

The lower the wage rate, the more the workers will be employed. This is why it is downward sloping. The supply curve of labour is upward sloping for obvious reasons. The higher the wage rate, the greater the supply of labour. Macroeconomics and microeconomics are the two facets of the study of economics.

Macroeconomics, as the name suggests, examines the entire, broad picture of the economy. In order to understand how the economy



Notes

works, it focuses on how the economy runs overall and then examines how various economic sectors interact with one another. This entails taking a close look at elements like inflation, GDP, and unemployment. Macroeconomists create models that depict the connections between these variables. These macroeconomic models, along with the forecasts they generate, are used by governments to aid in the development and evaluation of economic policy, by corporations to determine their market strategies in both domestic and international markets, and by investors to forecast and prepare for movements in a variety of asset markets.

With the extent of government spending as well as the impact of economic policy on individuals and businesses, macroeconomics undoubtedly has significant significance. When used correctly, economic theories can provide insight into how economies work as well as the long-term effects of certain policies and actions. By enhancing our knowledge of how to maximise utility and make the most of finite resources as well as how to best understand how other parties are motivated, macroeconomic theory can also assist small firms and individual investors in making better decisions.

Understanding the constraints of economic theory is also crucial. Very times, theories are developed in a vacuum, disregarding specifics from the real world, such as taxes, laws, and transaction costs. It is even more complicated in the real world because concerns of social conscience and preference do not lend themselves to quantitative investigation.

It is crucial and beneficial to monitor the key macroeconomic indicators like GDP, inflation, and unemployment even given the limitations of economic theory. The economic environment in which businesses operate has a big impact on how well they do, and consequently how well their stocks do. An investor can make more informed judgments and identify turning points by investigating macroeconomic data.

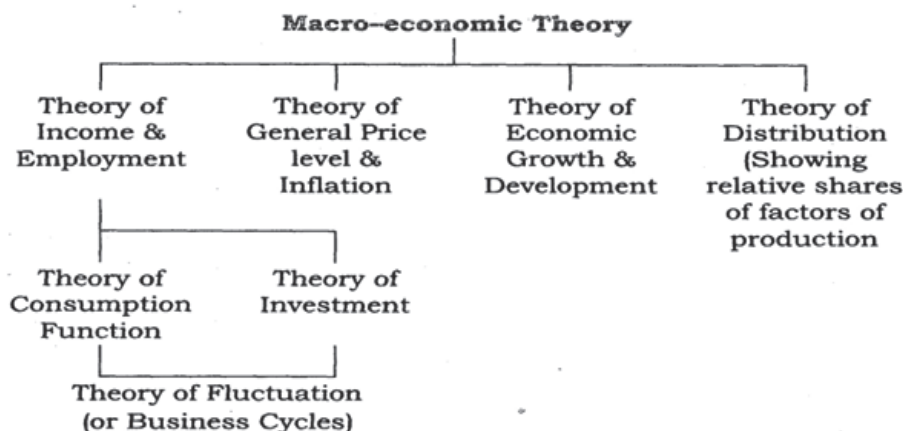


Figure 2.1

Sources: *Economicdiscussion.net*

The core tenet of classical economics was that a competitive market economy would function at full employment provided wages and prices were flexible. In other words, constant economic pressures would be created to maintain a constant balance between the supply and demand for labour.

The classic model predicts that the employment and income levels at equilibrium should be largely determined by the labour market. The labour demand curve illustrates the relationship between real wages, which in a viable economy is equal to the value of the marginal product of labour, and the demand for labour by employers.

As the wage rate falls, more people will be employed. It slopes down because of this. The supply curve for labour is upward-sloping for obvious reasons. As wages grow, the supply of labour rises as well.

2.3 Classical Theory of Income and Employment

The conventional theory of employment was created by old classical economists such as Adam Smith, Ricardo, J. B. Say, J. S. Mill, and N. Senior, who developed the classical theory of employment (no government intervention in any economic activities). This viewpoint says that full employment is a typical trait of a capitalist economy. According to the traditional notion of employment, unemployment is impossible in a free-



Notes

market system. With full employment, the economy would always be in an equilibrium position.

The classical theory of employment is based on Say’s law of the market, the flexibility of interest rates, and the flexibility of wage rates.

According to Say’s Law of the Market, “supply creates its own demand.” The automated system strikes an equilibrium between total supply and total demand.

According to the classical model, there can never be an instance of either an overproduction or an underproduction of commodities and services.

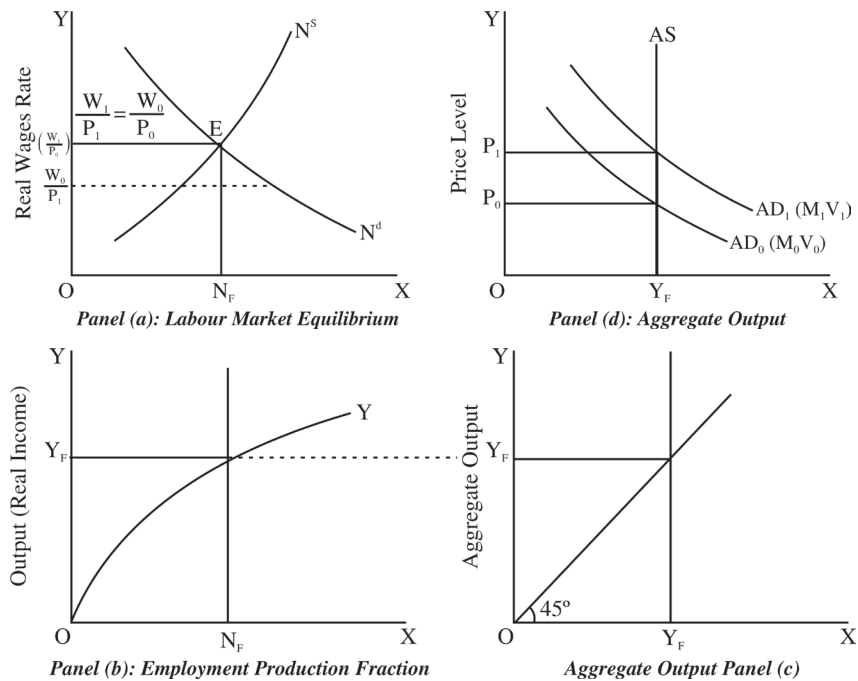


Figure 2.2

The Classical Theory of Employment failed terribly during the 1930s Great Depression.

In his 1936 book “General Theory of Employment, Interest, and Money,” Professor J. M. Keynes created a new theory of employment.

Effective demand is the foundation of Keynesian theory of employment. According to Keynes, demand generates its own supply.

Effective demand is the level of income at which overall supply and demand are balanced.



Professor J. M. Keynes determined the equilibrium of full employment using the approach of aggregate supply and demand.

2.4 Quantity Theory of Money - Cambridge Version

The quantity theory of money provides a framework for understanding price changes in relation to the amount of money available in an economy. The idea is that the money supply, usually referred to as the quantity of money in circulation, rises at a rate that eventually catches up to price levels.

The general level of pricing for goods and services is inversely connected with the money supply, according to the money quantity hypothesis. According to the idea, for instance, if the money supply in the economy doubles, price levels will also double.

The idea implies that the value of money is determined by the quantity of money in an economy. The value of money declines as a result of an increase in the money supply, which also causes an increase in the rate of inflation. As inflation rises, purchasing power decreases. In order to acquire the same amount of goods or services, more units of currency are required as a unit's purchasing power decreases.

The following figure can be used to illustrate the entire argument.

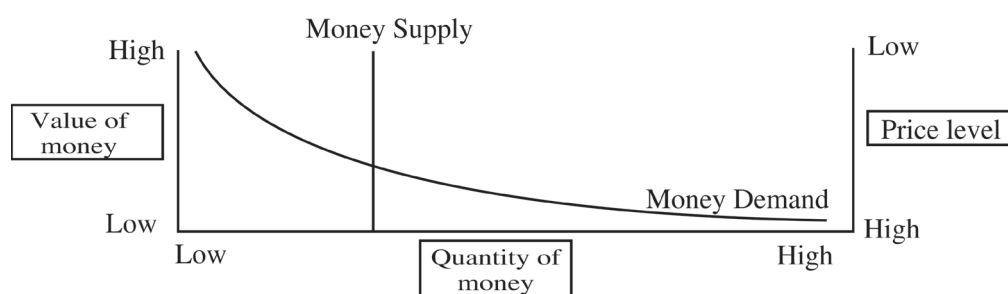


Figure 2.3

The money market of a sample economy is shown in the above figure. Because the monetary authority (in this case, the RBI) determines the amount of money accessible without taking the value of money into account, the money supply curve is vertical. The downward slope of the money demand curve results from consumers having to carry more cash to make purchases when the cost of services and products rises as the



value of money declines. Similar to this, consumers want less money when the worth of money is high since it is possible to buy goods and services for reasonable costs. Both the equilibrium value of money and the equilibrium price level can be seen at the junction of the money supply and demand curves.

Versions of Quantity Theory of Money

1. Quantity Theory of Money— Fisher's Version:

The most well-known version, also known as the “neo-quantity theory” or Fisherian theory, was put forth by American economist Irving Fisher and holds that shifts in the money supply and shifts in the general level of prices are mechanically and proportionally related. Irving Fisher asserts that the same factors that determine the price of a good or service also determine the value of money. In his theory of money demand, Fisher focused on the function of money as a medium of trade. In other words, the requirement for transactions necessitates payment.

The Fisher equation is calculated as:

$$M \times V = P \times T \quad (1)$$

where:

M = Money supply, V=velocity of money, P=average price level

T = volume of transactions in the economy

In general, the relationship between inflation and an expanding money supply is explained by the quantity theory of money. A change in M has an immediate effect on P since in the original theory V was considered to be constant and T was assumed to be stable with regard to M. Since the average price level tends to increase according to the money supply, the effect on actual economic activity won't be significant (and *vice versa*).

By defining the money supply to include bank deposits, Fisher's cash transaction version can be expanded. Bank money, 'M', as well as legal tender money, M, are now included in the money supply. This bank money has likewise a steady velocity of circulation, 'V'.

2. Quantity Theory of Money: Cambridge Version:

In the early 1900s, a group of Cambridge economists including Pigou, Marshall, Robertson, and Keynes created an alternative version known as the cash balance version. Some economists contend that money serves as



both a wealth storage and a means of exchange. The quantity of money that people wish to hold rather than saves is what we refer to as the cash balance and money balance in this context.

People want to keep cash on hand, according to Cambridge economists, in order to finance transactions and provide security against unforeseen demands. They also implied that a person's need for cash or money holdings is inversely correlated with his income. Of course, the need for cash or money balances increases with an individual's income. Thus, the demand for cash balances is specified by:

$$M_d = kPY \quad (1)$$

where

Y is the physical level of aggregate or national output

P is the average price

k is the proportion of national output or income that people want to hold.

Let us assume that the supply of money, 'MS' is determined by the monetary authority, *i.e.*, $MS = M$ - (2)

Equilibrium requires that the supply of money must equal the demand for money, or

$$MS = M_d$$

or $M_d = kPY$

d $M = kPY$

or $P = \frac{M}{kY}$

k and Y are determined independently of the money supply. With the k constant given by the transaction demand for money and the Y constant because of full employment, an increase or decrease in money supply leads to a proportional increase and decrease in the price level. This conclusion holds for the Fisherian version also. Note that Cambridge 'k' and Fisherian V are reciprocals of one another, that is, 1/k is the same as V in Fisher's equation.



Criticisms

1. The Chain of Causation: According to critics, statistical analyses have demonstrated the interdependence of every element in the equation of exchange, which makes them all variables. Moreover, the direction of causality is not always from M (the money supply) to P. (the price level). May be from V to P. Prices will vary if the rate of consumption changes while all other variables stay the same, just as they would if the Quantity Theory of Money were altered while all other variables stay the same.

Or Prices will alter if T changes while other factors stay the same. It is therefore challenging to accept the assumption that shifts in the money supply are always the root causes of variations in the level of prices. Research have demonstrated that altering the quantity of cash and credit available for the purchase of goods and services cannot easily and quickly change the price level.

It's also possible to assert that, in some cases, a rise in money supply won't result in a change in the level of prices. Keynes has noted that a country with jobless resources cannot adopt the Quantity Theory (capital and labour not in use).

More money being created in such a nation will result in increased employment, higher output (a greater supply of products), and no change in the level of prices. Only when there is no room for more output, that is, when there are no resources in the economy that are idle, will prices fluctuate in proportion to the money supply.

2. There are Inactive Balances: According to Fisher's formula, the total amount of money affects the price level. But, only a small portion of the total amount of money determines prices. Hoards of inactive balances are constantly present and put no impact whatsoever on the cost of goods and services. When depression strikes, this is very obvious.

3. Simultaneous Changes: The *ceteris paribus* assumption, or "other things remaining constant," is the only condition under which the Quantity Equation may be used to analyse the impact of changes in M or T on the price level. Such an assumption, however, cannot be made in the case of financial variables. T and V both change



when M changes. M and V alter when T does. Every change in one of the quantity equation's variables will have a different overall impact on the price level depending on how the other variables are also altered.

- 4. The Process of Change:** The mechanism by which changes in the money supply affect the price level is not explained by theory. Keynes placed a lot of stress on this idea.

Observation:

“The fundamental problem of monetary theory is not merely to establish identities or statistical relationships, but to treat the problem dynamically, analysing the various elements involved in such a way as to exhibit the causal processes by which the price-level is determined and the method of transition from one equilibrium to another,” states the International Monetary Fund.

- 5. The Assumption of Full Employment:** Hence, price increases are not necessarily correlated with increases in money supply. If there are unemployed resources, a rise in money does not increase prices but rather employment. Keynes observes that the Quantity Theory is predicated on the idea of Full Employment.
- 6. The Value of Money Determines the Quantity of Money:** Quantity Theory predicts that a rise in the supply of commodities will result in a decrease in the price level P. Increases in the supply of goods always result in increases in the supply of money, according to monetary and banking principles (through creation of credit and otherwise). T and M are not independent variables; M depends on T. If this theory is right, the quantity of money does not determine its value; rather, the value of money determines the quantity of money.
- 7. Non-Monetary Factors:** For causes that have nothing to do with the amount of money, prices can change and the value of money can change.

Some examples are given below:

- (i) Price changes and changes in production costs may result from changes in the level of efficiency wages.



- (ii) Marginal costs will grow and prices will rise if output increases under conditions of declining returns. According to this, prices will decrease if output rises while returns grow.
- (iii) Prices will rise and fall in accordance with changes in the monopoly's power.
- (iv) Changes in actual demand or spending have an impact on prices. Both consumption and investment expenses change, as does the ratio between them.

8. Misleading Emphasis: Finally, Crowther claims that the Quantity Theory overemphasises the relevance of money amount as the reason for price variations and undervalues the level of prices. These Quantity Theory tenets do not match the facts in the short term. In real life, there is a cyclical pattern to the production volume and price levels.

The quantity of money is one significant component that drives price change, and the Quantity Theory specifically calls this out. Even though it is acknowledged that the quantity formula “hides many links in the chain of causation,” it is undeniable that the formula provides us with a quick and dirty way to calculate the effects of changes in the amount of money and certain other elements influencing the price level.

It is obvious from the discussion above that the Quantum Theory is inadequate and destructive. It does, however, have certain advantages. Typically, we observe when money supply increases, the price level rises. For instance, the volume of notes and bank advances increased significantly while the price level increased quickly in India between 1939 and 1945. So, there is some connection between the amount of money and its value. The Quantum Theory approximates the relationship rather than stating it exactly.

The 1976 Nobel Prize winner Dr. Milton Friedman thinks that the quantity theory of money, which states that price (P) varies with money quantity, is accurate in its purest or simplest form (M). According to him, there is a relationship between the amount of money in circulation and the general level of prices in an economy.



2.5 Classical Aggregate Demand Curve

Aggregate Demand: Aggregate demand is the overall amount of demand for goods and services in an economy over the course of a year. It is expressed in terms of the community's overall outlay.

Two motives drive demand for goods and services: (1) consumption and (2) investment.

Private (family) consumption and public (government) consumption are the two categories of consumption. Similar to that, there are two different kinds of investments: private (home) and public (government).

Aggregate Demand (AD) = Consumption Demand (C) + Investment Demand (I)

$$AD = C + I$$

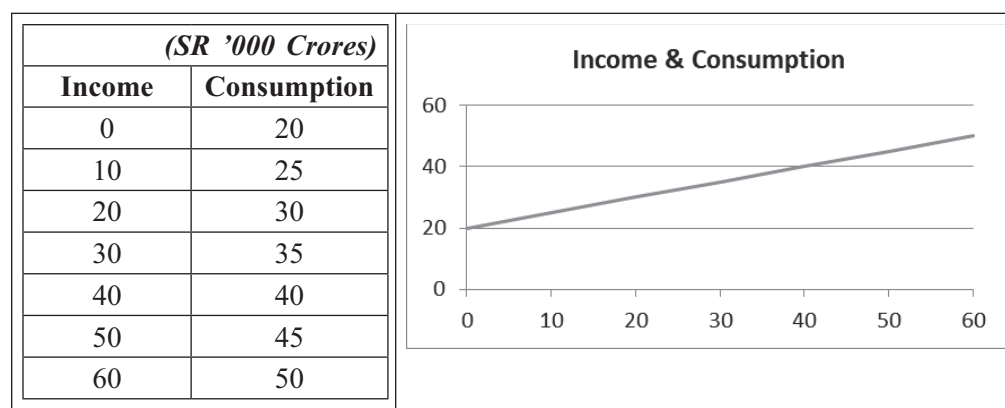
$$Y = C + I$$

Aggregate Demand Schedule: By adding aggregate consumption (C) and aggregate investment (I) at various income levels, the aggregate demand schedule may be created.

Consumption depends on income (Y), propensity to consume (c) and many other factors.

$$C = a + cY$$

Relationship between Income and Consumption:



Aggregate Investment: The aggregate investment comes in two varieties: induced investment and autonomous investment.

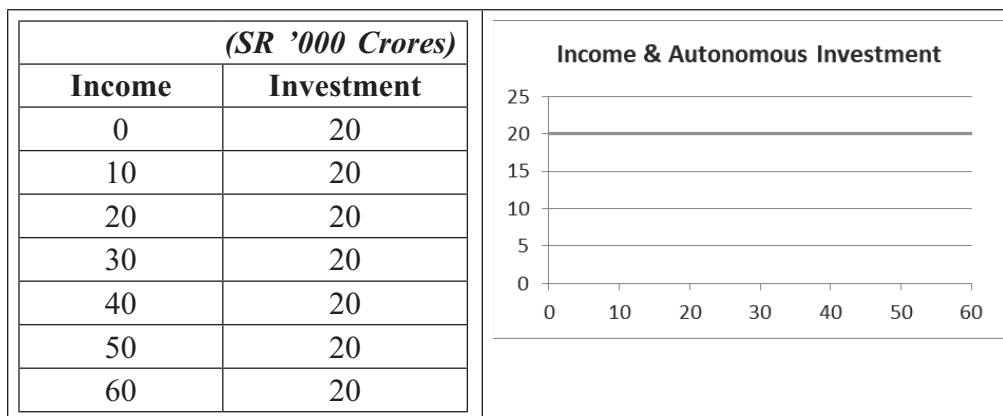
Autonomous Investment: Autonomous investment is capital creation spending that is made without consideration of income level.



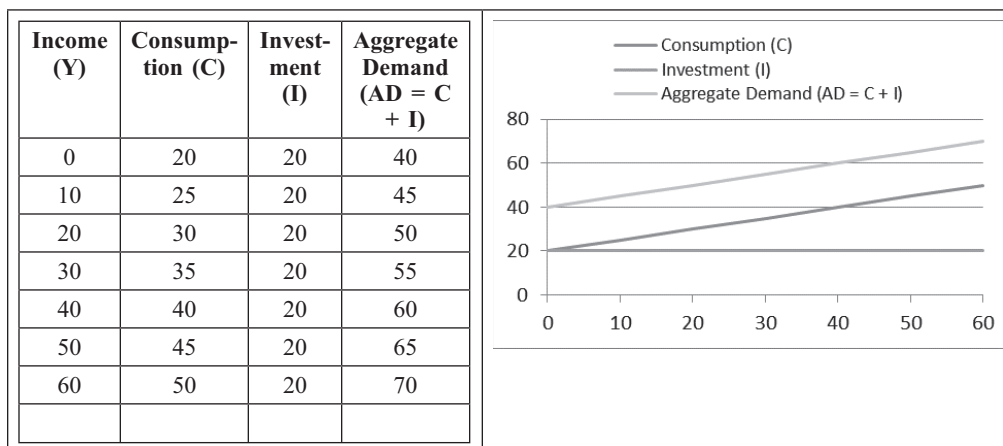
Notes

Induced Investment: Induced investment is the spending on stocks as well as fixed assets that is necessary for the economy to be able to create more as aggregate demand increases.

Here, we use the assumption that the sole type of investment spending that occurs in the economy is an autonomous investment.



Aggregate demand schedule can be derived by adding consumption schedule and investment schedule.



Components of Aggregate Demand: There are four major components of aggregate demand-

1. Household consumption expenditure (C);
2. Government final consumption expenditure (G);
3. Private and public investment expenditure (I); and
4. Net export (X-M)



Symbolically,

$$AD = C + I + G + (X-M)$$

Aggregate supply

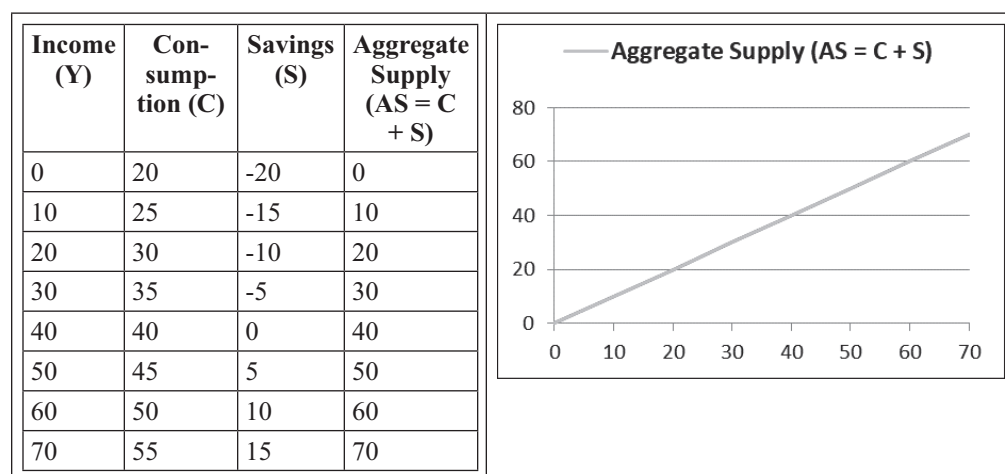
Aggregate supply is the monetary value of all products and services produced in a nation over the course of a year. Given that it represents the monetary value of all goods and services generated over the course of a year, it actually refers to the national income of a nation.

Aggregate Supply = Domestic Product = Total Factor Incomes = National Income

Aggregate Supply (AS) = Consumption (C) + Saving (S)

$$Y = C + S$$

Aggregate Supply Schedule: The aggregate supply schedule can be created by adding together consumption costs and savings at various income levels.



Determination of Equilibrium: Determination equilibrium of an economy can be studied by two approaches:

1. As equality of aggregate demand and aggregate supply; and
2. As equality of saving and investment.

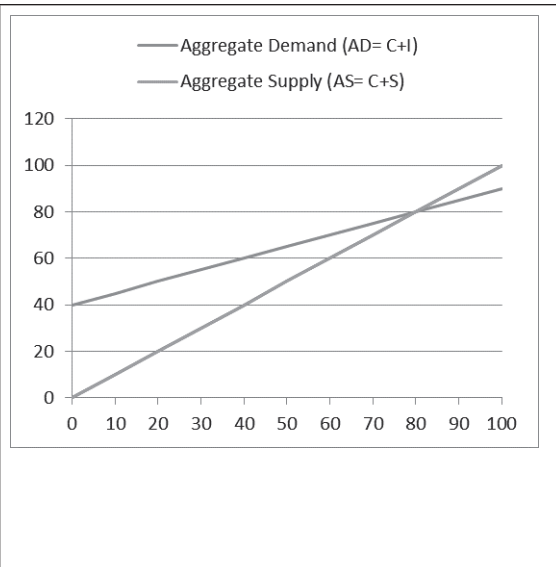
AS and AD Approach: Where the aggregate demand curve crosses the aggregate supply is where the income equilibrium level is found. In other words, when aggregate supply and demand are equal, the amount of income will be at equilibrium.



Notes

Example:

(SR '000 Million)		
Income (Y)	Aggregate Demand (AD= C+I)	Aggregate Supply (AS= C+S)
0	40	0
10	45	10
20	50	20
30	55	30
40	60	40
50	65	50
60	70	60
70	75	70
80	80	80
90	85	90
100	90	100



If Aggregate Demand is not equal to Aggregate Supply:

Aggregate Demand (AD) =

Aggregate Supply (AS)

If $AD > AS$

If $AD < AS$

↓

↓

Increase in employment of factor services

Decrease in employment of factor services

↓

↓

Increase in the level of output of goods and services

Decrease in the level of output of goods and services

↓

↓

Ultimately $AD = AS$

Ultimately $AD = AS$

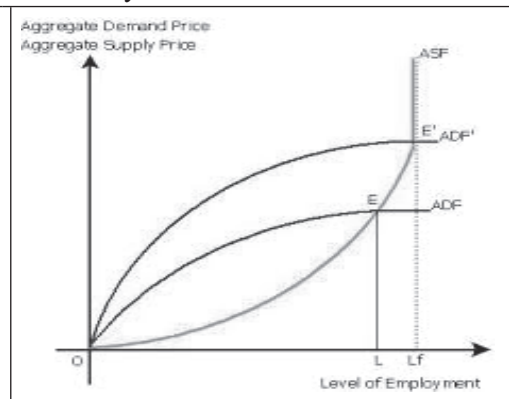
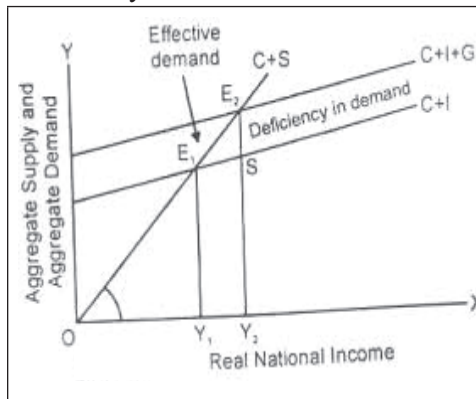


Figure 2.4



Alternative Approach to Equilibrium (Saving and Investment Approach):

Since, AD is:

$$Y = C + I, \quad (1)$$

And,

AS is:

$$Y = C + S, \quad (2)$$

By putting together equations (1) and (2), we get

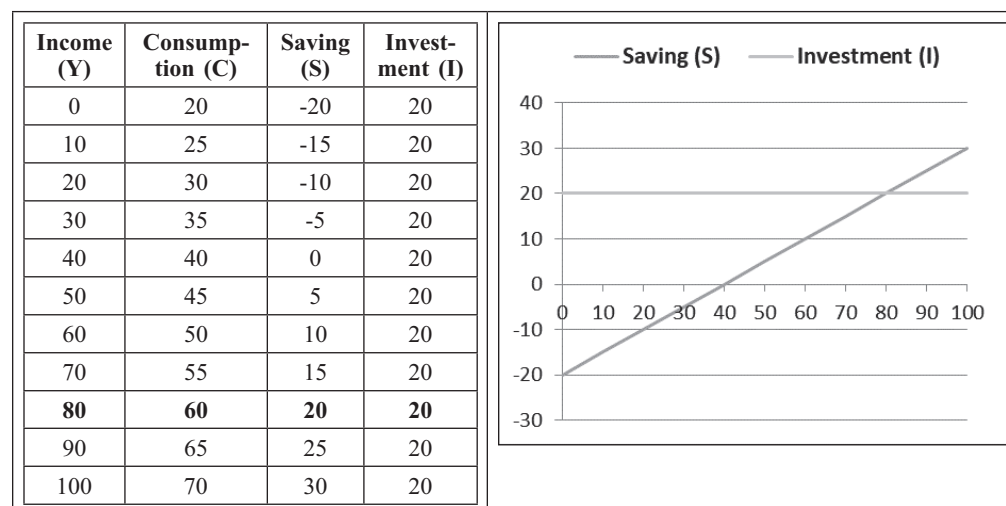
$$C + I = C + S$$

Hence,

$$I = S$$

i.e., aggregate investment equals aggregate saving in the economy.

Diagrammatic Presentation:



The intersection of aggregate supply and demand determines the level of employment (or income) that prevails in an equilibrium situation.

The traditional economists believed that full employment would be reached at this equilibrium level of employment. There won't be any forced unemployment of either labour or capital. Interest rates and pay rates would change if there were any unemployment resources. To achieve full employment in the economy, wage and interest rates would need to change.



Professor J. M. Keynes disagreed with this interpretation of classical economics. He listed three different equilibrium scenarios:

1. Equilibrium at the level of full employment;
2. Equilibrium at the level of less than full employment;
3. Equilibrium at the level of more than full employment.

Equilibrium at full employment level: This will happen when AD and AS are equal at a point where the available resources are being used for gainful work.

Equilibrium at a level below full employment (Deflationary Gap): This will happen when there is insufficient aggregate demand to accommodate all job seekers. It is obvious that the economy will experience involuntary unemployment. Deficient demand would have been the reason of this.

Equilibrium at a level of employment that is higher than full employment (inflationary gap): This condition develops when the economy's resources are insufficient to meet the total quantity of demand for products and services. It is obvious that the economic glut is to blame for this situation.

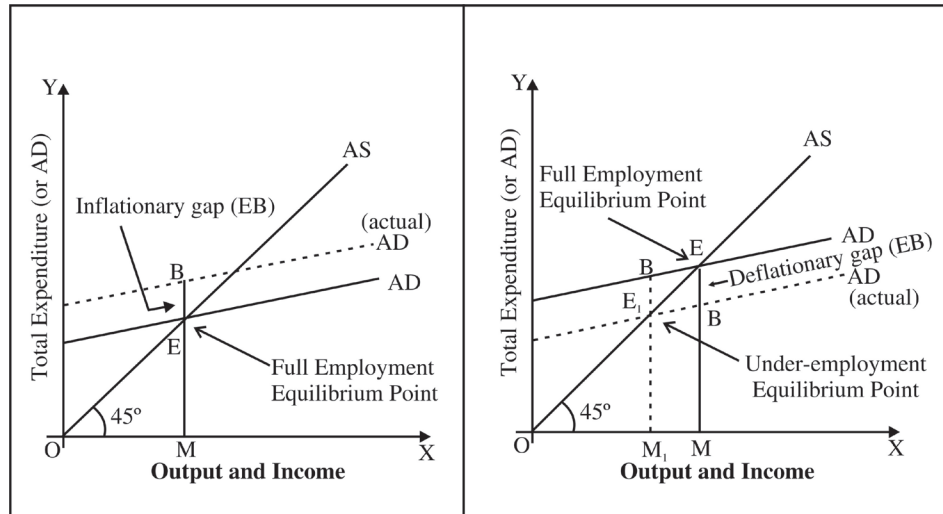


Figure 2.5

Causes of Excess Demand (Inflationary gap) and Deficient Demand (Deflationary gap):



Causes	
Of Excess Demand	Of Deficient Demand
◆ Government expenditure > Government revenue	◆ Government expenditure < Government revenue
◆ Increase in autonomous investment	◆ Cut in autonomous investment
◆ Surplus on balance of payments	◆ Deficits in balance of payments
◆ Increase in capital formation	◆ Cut in capital formation

Effects of Excess Demand: In cases when there is excess demand, projected aggregate expenditure exceeds planned aggregate output. The entire utilisation of all the resources is already complete. Thus, there is no likelihood of further raising the employment level.

In the same way, increasing the level of output won't be possible either because no new resources are accessible.

But, if the economy is already at full employment, a significant increase in aggregate spending would raise the general level of prices. As a result, excess demand has the potential to cause general inflation, which is why it is often referred to as an inflationary gap.

Effects of Deficient Demand: When there is insufficient demand, planned aggregate production falls short of intended aggregate expenditure. There will likely be a trend to reduce employment in this situation.

The excess output availability will cause a decrease in the general price level since the total output cannot be satisfied by the total spending. Deficient demand is also referred to as the deflationary gap since it has the potential to cause general deflation.

How to Address Deficient Demand:

1. **Tax policy:** lowering tax rates and raising spending by the government.
2. **Monetary policy:** lowering the bank rate, lowering reserve requirements, and acquiring public debt.
3. Export Marketing

Procedures to Reduce Demand:

1. **Tax policy:** An increase in tax rates and a reduction in government spending.



2. **Monetary policy includes the following actions:** Raising the bank rate, raising reserve requirements, and selling public debt.

3. **Import marketing:**

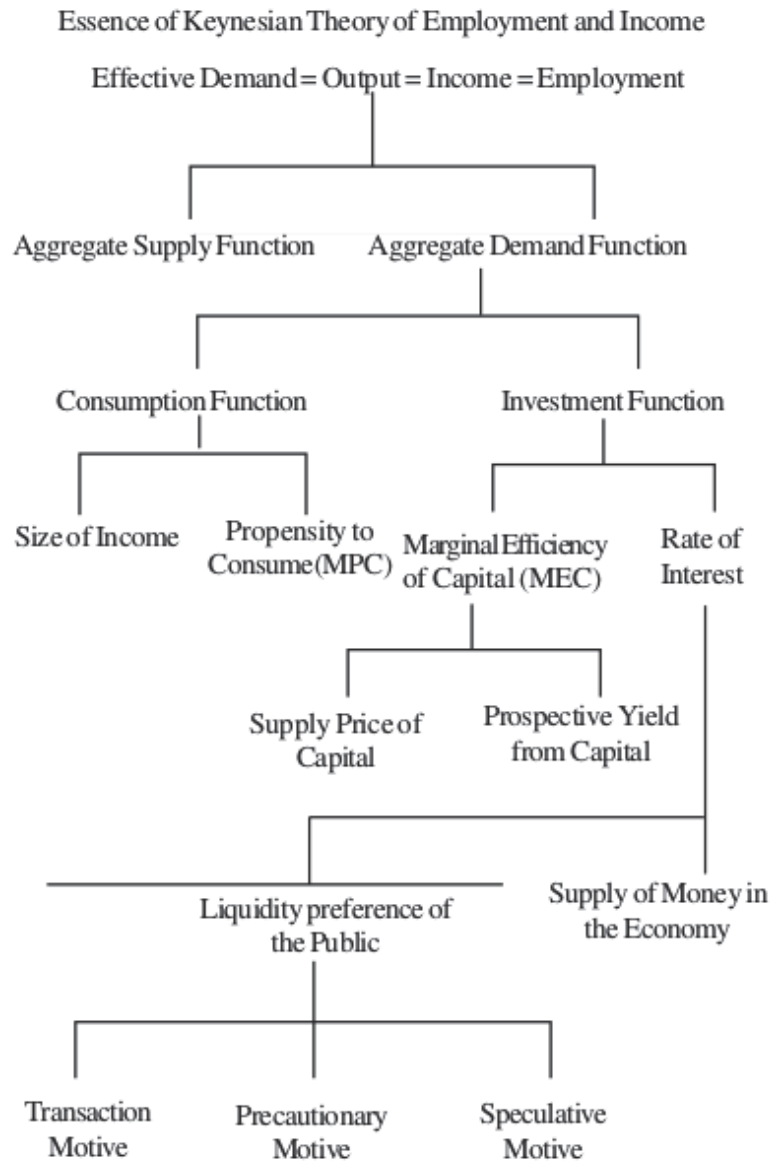


Figure 2.6

Source: *tutorsglobe.com*



2.6 Classical Theory of Interest Rate

Economists like Ricardo, J. S. Mill, Marshall, and Pigou developed the classical theory of interest, often known as the capital theory of interest, saving-investment theory of interest, or the real theory of interest. According to this view, interest is a real phenomenon, and the rate of interest is solely determined by the supply and demand for capital in a setting of perfect competition. Whereas the supply of capital is governed by savings or time preferences, the demand for capital is governed by its productivity.

Classical Theory of Interest Assumptions: The following premises underlie the classical theory of interest:

- (i) The factor market has perfect competition.

The following conclusions flow from this supposition:

- (A) The competitive dynamics of supply and demand in the capital market determine the equilibrium rate of interest.

- (a) The interest rate is flexible, allowing it to freely fluctuate to the level that supply and demand require.

- (ii) The theory presupposes complete resource utilisation.

The following conclusions flow from this supposition:

- (a) Saving requires the sacrifice of postponing or refraining from consumption, and interest is the reward for abstinence or waiting: Higher rates of interest are only given when all resources are completely utilised to encourage people to save, postpone or refrain from consuming.

- (b) The assumption is that the income level will remain constant; income and output become constant when there is full employment.

- (c) Full employment and a predetermined level of income lead to the additional assumption that the demand and supply schedules for capital are independent and have no bearing on one another. Savings only vary as a result of income variations brought on by changes in investment.

Economic actors behave logically, which means they are driven by self-interest and seek to maximise economic gain.



Notes

- (iv) A constant price level is assumed. Real interest rates, not changes in money interest rates, are used to determine savings and investment decisions, thus if it changes, economic agents will not experience the illusion of money.
- (v) Money is neutral and simply used as a means of transaction, not as a store of value.

Capital Market Demand and Supply

Capital Availability: Savings, which in turn depend on a variety of psychological, economic, and institutional elements that can be broadly categorised as (a) the will to save, (b) the power to save, and (c) the facilities to save, are the main sources of capital. Saving is the practice of reducing or delaying current consumption. Saving, therefore, requires sacrifice, abstinence, or waiting. The interest rate is seen as the incentive for delaying or abstaining.

It serves as a motivation to save money or refrain from current consumption. The opportunity cost of each alternative is determined by the rate of interest, and it must be considered when choosing between the present consumption (which requires no saving) and the future consumption (which does).

For instance, if the current interest rate is 5%, then by spending Rs. 1 of income today, the person is skipping the expenditure of Rs. 1.05 a year from now. Since present consumption has a higher opportunity cost than future consumption, there is a greater incentive to save from current income at a higher current rate of interest.

As a result, saving is interest elastic and the link between interest rates and saving is favourable. The saving schedule curve, also known as the supply curve of capital (SS curve in Figure 2.7), slopes upward and to the right, indicating that as interest rates rise, savings grow and the supply of capital also rises.

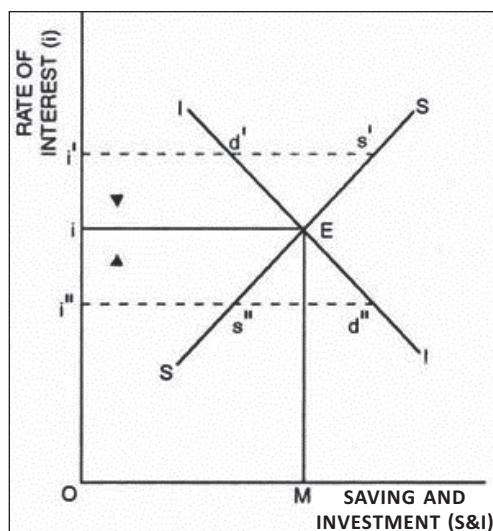


Figure 2.7

Demand for Capital: Investors want capital because it is productive and profitable for them. Demand for capital, also known as investment demand, is influenced by two factors: the productivity of capital, or returns on investment, and the rate of interest, or the cost of investing. The law of decreasing returns affects how productive capital is.

The marginal productivity of capital decreases as more capital is invested because additional units of capital are less productive than the initial units. The producer will keep making capital investments as long as capital productivity is higher than the rate of interest and will stop making new investments once capital productivity is equal to the rate of interest.

As a result, the relationship between interest rates and capital demand is averse. The investment schedule (II curve in Figure I) or demand curve for capital slopes downward and to the right, indicating that demand for capital decreases as interest rates rise.

Determination of Rate of Interest:

Assuming the income level to be given, the rate of interest is determined by the intersection of the demand curve and the supply curve of capital.

The determination of equilibrium rate of interest of the following three conditions:



(i) The supply of capital or saving is an increasing function of the rate of interest:

$$S = f(i); dS/di > 0$$

(ii) The demand for capital or investment is a decreasing function of the rate of interest:

$$I = f(i); dI/di < 0$$

(iii) The supply of capital equals the demand for capital:

$$S = I$$

Where, S = saving, I = investment,
and i = rate of interest.

At point E in Figure 1, the SS curve and the II curve, which represents the supply and demand for capital, intersect. O_i is the equilibrium rate of interest, and OM is the amount of capital that is being provided and demanded at this rate. In other words, saving = investment = OM at the equilibrium rate of interest, O_i .

Any departure from the interest rate of equilibrium (O_i) will result in instability. If the rate of interest ever climbs to O_i , more money is available than is needed ($I_s > I_d$). This excess of capital supply will cause the interest rate to decrease to its equilibrium level (O_i).

Similar to this, if the interest rate drops to " O_i ", there will be more demand than supply for capital ($I_d > I_s$). The rate of interest increases to its equilibrium level as a result of this excess in capital demand (O_i).

Features of Classical Theory:

The distinguishing features of the classical theory of interest are given below:

- 1. Capital Theory of Interest:** According to this traditional view, interest is compensation for the use of capital, and the supply and demand for capital influence the interest rate. The demand for capital is a negative function of interest rates, while the supply of capital is a positive function.
- 2. Real Theory:** The primary focus of classical theory is the real rate of interest, which is primarily impacted by the actual components of saving and investment. The actual rate of interest is defined



as the money or market rate of interest less the predicted rate of inflation. If it is assumed (as in the classical theory) that the price level is constant and that everyone anticipates that it will remain constant, then real and money rates of interest are comparable.

- 3. Flow Theory:** The theory is expressed in terms of flow. Overall investment and total saving have been viewed as flows across time. In other words, the demand for investment is seen as a flow of money away from the capital market, while the supply of savings is seen as a flow of money towards the capital market. The balance between the flows of saving and investment is necessary for the capital market to be in equilibrium.
- 4. Equilibrating Mechanism:** The rate of interest, in accordance with the conventional wisdom, acts as a countervailing force to investment and saving. Anytime there is an imbalance between saving and investing, the equilibrium is restored by adjustments to the interest rate. When saving outpaces investment ($I_s' > I_d'$ at O_i' rate of interest Figure I), the rate of interest decreases, bringing saving and investment into balance. The rate of interest rises and equalises saving and investment if, on the other hand, investment outpaces saving ($I_d > I_s$ at O_i rate of interest).
- 5. Positive Rate of Interest:** The classical theory of interest makes the assumption that there is a positive real rate of interest one of its key characteristics. The demand and supply curves for capital must intersect at a positive real rate of interest for the theory to hold. For instance, there will be an excess supply of capital ($O_s > O_d$) at a zero rate of interest if the two curves do not overlap at a positive rate of interest (as seen in Figure 2.8). This broad oversupply condition suggests that equilibrium is incompatible with full employment.

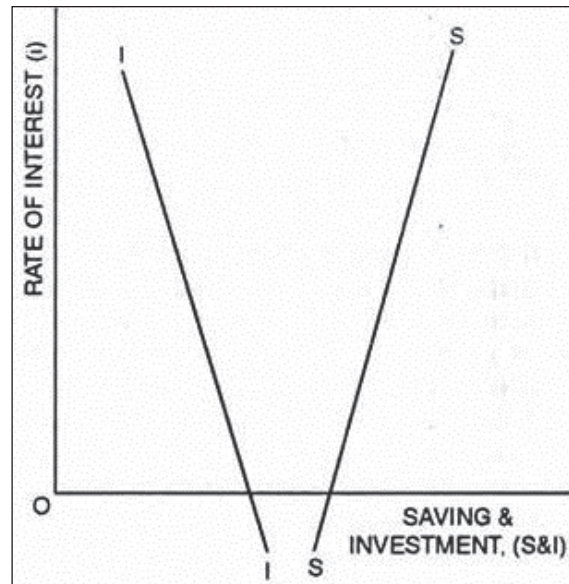


Figure 2.8

Keynes challenged the classical theory of interest on a number of different grounds, including:

1. **Interest is not a Reward for Saving:** Keynes disputed the conventional wisdom that interest is a reward for capital accumulation or saving.
 - (a) A person can earn interest by lending money that he has inherited from his ancestors but hasn't saved.
 - (b) If someone keeps their savings in cash, they will not receive interest.
 - (c) As savings are based on income as well as interest rate, interest cannot be a benefit for saving.
 - (d) Keynes views interest as a phenomenon of money and characterises the rate of interest as compensation for releasing liquidity (or cash balances) as opposed to compensation for saving.
2. **Saving and Investment not Interest Elastic:** According to the traditional conception, investments and savings are interesting elastic, or responsive to fluctuations in the rate of interest. However, this is not always the case. In actuality, especially during depressed times, the marginal efficiency of capital and future expectations matters more than the interest rate. Savings are also not typically



interest-elastic. Individuals can save regardless of an increase in the interest rate or even if it decreases to zero. In actuality, the level of income has a greater impact on savings than the interest rate.

- 3. Rate of Interest, not Equilibrating Force:** According to traditional economics, the interest rate adjustment mechanism upholds the equality between saving and investing. Keynes disagreed with this viewpoint and offered an alternative method of re-establishing equality. He contends that income, not interest rates, is the factor that balances saving and investing. Whenever time saving outpaces investing, income level falls. As a result, saving falls and becomes equal to investment. Similarly, if investment exceeds saving, income level rises, saving increases and becomes equal to investment.
- 4. Role of Money Ignored:** The traditional theory of interest makes the conviction that money is neutral and only used for exchange. It disregards the function of money as a store of value, ignoring the potential that savings may be hoarded. Moreover, it totally disregards the significant effect that money supply, money creation, and bank lending might have in determining interest rates. The classical theory is rendered implausible and out of date in the contemporary dynamic environment by all of these considerations.
- 5. Unrealistic Assumption of Full Employment:** Due to the fact that it operates under the unique circumstances of full employment, the classical theory is impractical. In the real world, conditions that are less than full employment or not at all are typical. Keynes argued that when resources are idle in the economy, people do not need to be compensated for not buying things (*i.e.*, for saving). In such an economy, the challenge is to make use of idle resources rather than release employed resources from their current position. As a result, interest cannot be a reward for abstinence or patience when there is unemployment.
- 6. Discrepancy between Market and Natural Rates:** The difference between the natural (real) and market (money) rates of interest, according to classical economics, is essentially a matter of chance and cannot last for a very long period. The market rate of interest typically deviates from the natural rate of interest, according to Wicksell, Keynes, and other monetary economists, and this deviation



is brought on by the effect of monetary factors such the production and destruction of bank credit.

7. **Narrow View of Supply of Capital:** Only saving was considered a part of the supply of capital by classical economics. Nevertheless, the supply of capital actually consists of wasted money. Moreover, recently minted money and bank credit are significant sources of fresh capital supply.
8. **Narrow View of Demand for Capital:** According to traditional conception, investors are the only ones who need capital to cover investment expenses. It utterly disregards the reality that loans are frequently obtained for personal consumption.
9. **Indeterminate Theory:** Keynes criticised the traditional idea of investment because it is uncertain. The intersection of the saving and investment curves, in accordance with classical theory, determines the rate of interest. The income level determines where the saving curve is located; if income rises, the saving curve moves to the right, and *vice versa*.

Hence, until we already know the income level, we cannot determine the interest rate. Nevertheless, before we can determine the amount invested, we must first determine the volume of investment, and determining the volume of investment necessitates knowing the interest rate. Hence, the traditional theory of interest does not provide a solution because it cannot predict the rate of interest until we already know it.

IN-TEXT QUESTIONS

1. A situation when the workers are willing to work under any conditions and at any wage rate but fail to get employment, is called-
 - (a) Voluntary Unemployment
 - (b) Involuntary Unemployment
 - (c) Cyclical Unemployment
 - (d) Frictional Unemployment
2. A temporary unemployment that exists during the period of the transfer of labour from one occupation to another is called-



- (a) Voluntary Unemployment
 - (b) Involuntary Unemployment
 - (c) Cyclical Unemployment
 - (d) Frictional Unemployment
3. Who developed the Classical Theory of Income and Employment?
- (a) J.B. Say
 - (b) J.S. Mill
 - (c) Ricardo
 - (d) All of the above
4. “*The supply creates its own demand*”. This is the famous law of—
- (a) Market (*Say’s Law of Market*)
 - (b) Demand
 - (c) Supply
 - (d) None of the above
5. The Classical Theory of Income and Employment states that full employment is a normal feature of a capitalist economy.
- (a) True
 - (b) False
6. The level of income will be in equilibrium when aggregate demand is greater than aggregate supply.
- (a) True
 - (b) False

2.7 Summary

In this lesson, we discussed about economist evaluate the success of an economy over all performances by how well it attains the objectives: (a) high level and rapid growth of output and consumption (output is usually measured by the gross domestic product), (b) low unemployment rate and high employment with an ample supply of good jobs, (c) price level stability.



Notes

The central concepts for understanding the determination of national output and the price level are Aggregate Supply (AS) and Aggregate Demand (AD). Aggregate demand consists of the total spending in an economy by household, businesses, governments, and foreigners.

It represents the total output that would be willingly bought at each price level, given the monetary and fiscal policies and other factors affecting demand.

2.8 Answers to In-Text Questions

1. (b) Involuntary Unemployment
2. (d) Frictional Unemployment
3. (b) J. S. Mill
4. (a) Market (*Say's Law of Market*)
5. True
6. False

2.9 Self-Assessment Questions

1. Define the aggregate income in macroeconomics?
2. What is modern theory of income and employment?
3. What is the main implication of classical theory of income and employment?
4. Describe the assumption of classical theory of income and employment determination?
5. What are the components of aggregate demand?

2.10 References

- ◆ Atkeson, Andrew, and Ariel Burstein. 2008. "Pricing-to-Market, Trade Costs, and International Relative Prices." *The American Economic Review*, 98(5): 1998? 2031.
- ◆ Burstein, Ariel, and Gita Gopinath. 2014. "International Prices and Exchange Rates." *Handbook of International Economics*, 4: 391?451.



- ◆ Corsetti, G., L. Dedola. 2005 “A Macroeconomic Model of International Price Discrimination”, *Journal of International Economics*, 67 (1), 129-155.
- ◆ Corsetti, G., L. Dedola, and S. Leduc. 2008. “International Risk Sharing and the Transmission of Productivity Shocks,” *Review of Economic Studies*, 75(2), 443-473.
- ◆ Heathcote, J., F. Perri. 2013. “The International Diversification Puzzle Is Not As Bad As You Think,” *Journal of Political Economy*, 121 (6), 1108-1159.

2.11 Suggested Readings

- ◆ *Macroeconomics: Principles, Problems, and Policies* - Campbell McDonnell, Stanley Brue, Sean Flynn.
- ◆ *The Future of Capitalism: Facing the New Anxieties* - Paul Collier.
- ◆ *Macroeconomics* - Paul Krugman, Robin Wells.
- ◆ *Gigged: The Gig Economy, the End of the Job, and the Future of Work* - Sarah Kessler.
- ◆ *The Willing World: Shaping and Sharing a Sustainable Global Prosperity* - James Bacchus.



Keynesian Model

Dr. Rishi Taparia

Director – Management Studies
Institute of Advanced Management & Research
Ghaziabad
E-mail Id: rishitaparia@yahoo.com

STRUCTURE

- 3.1 *Learning Objectives*
- 3.2 *Introduction*
- 3.3 *Simple Keynesian Model*
- 3.4 *Criticism of Keynesian Theory*
- 3.5 *Determination of Equilibrium in a Simple Two-Sector Economy*
- 3.6 *Investment Multiplier (k)*
- 3.7 *Paradox of Thrift*
- 3.8 *Determination of Equilibrium in Four-Sector Economy*
- 3.9 *Summary*
- 3.10 *Answers to In-Text Questions*
- 3.11 *Self-Assessment Questions*
- 3.12 *References*
- 3.13 *Suggested Readings*

3.1 Learning Objectives

- ◆ Learn where Keynesian economics came from and why it's important.
- ◆ Look into the parts of aggregate demand in an economy.
- ◆ Understand the role of consumption and the factors that affect it.
- ◆ Learn about government purchases of goods and services and how they affect aggregate demand.
- ◆ Understand how net exports affect aggregate demand.



- ◆ Learn how equilibrium income and output are calculated in a two-sector economy.
- ◆ Understand what a multiplier is and how it works.

3.2 Introduction

In the preceding chapter, we studied Classical Economics who believed that full employment exists in the economy or that there is always a tendency towards full employment. According to their belief in Say's Law of Markets, they held this opinion of them. They believed that, given free and perfect competition in the economy, when unemployment is present, certain economic factors will naturally restore full employment. Throughout the years 1920 to 1933, there was a severe economic downturn in capitalist nations, which resulted in a decline in national income due to the massive unemployment of labour and other resources. Due to this depression, many factories were closed in these nations, and those that remained open were not operating at full capacity. As a result of depression-induced unemployment, poor income, and productivity, people endured a tremendous deal of pain. This state of sadness and unemployment did not appear to vanish on its own. Consequently, actual evidence demonstrated the classical theory of full employment to be false. Keynes responded by penning the book *General Theory of Employment, Interest, and Money*, in which he not only questioned and criticized the validity of the classical theory of employment, but also proposed a new theory of income and employment that current economists believe to be right and valid.

Before discussing Keynes's thesis, let's briefly examine that of classical economists. Say's law is the best way to express the reasoning of classical economists. Say's law disproves the likelihood of widespread overproduction. In some markets, overproduction may occur as a result of the misallocation of resources, *i.e.*, low demand for one product results in high demand for another. If one commodity is overproduced, market forces will cause a shift in production so that, in the long run, supply and demand are balanced. It should be noted that optimal production also entails complete employment, since all available resources will be utilized and all output will be sold. In the event of unemployment, the wage rate will decrease until all job-seekers are employed.



Notes

It is vital to highlight that the Keynesian Theory of Income and Employment is a short-run theory because Keynes assumes that the amount of capital, the size of the population and labour force, technology, and the labour force's productivity, among other factors, do not vary. Consequently, according to Keynesian Theory, the level of employment depends on national income and production. In the Keynesian short term, the higher the level of national income, the higher the employment rate, and *vice versa*. It is vital to remember that Keynes believed that prices and wages do not quickly adjust to achieve equilibrium between supply and demand. In his theory of income and employment, he therefore assumes that prices and nominal wages remain constant. Keynes contested that an unrestrained competitive economy does not necessarily result in full employment; rather, the system may have a stable equilibrium with under-employment (or under-production) as its natural state. He maintained that if the government does not intervene, this equilibrium might persist for a long time.

3.3 Simple Keynesian Model

Depressions, according to Keynes' theory of employment and output, are the outcome of insufficient aggregate demand in the economy. He believed that production decisions are influenced by consumer spending decisions. An increase in the population's expenditures results in an increase in production, whereas a fall in expenditures results in a decline in output. Hence, aggregate demand determines the level of economic output. By highlighting the prospect of lesser expenditure, Keynes refuted the reasoning of classical economics who dismissed the possibility of global overproduction. According to Keynes, aggregate spending may not necessarily equal income in an economy with full employment. In accordance with Keynesian theory, the economy is in equilibrium when aggregate demand and aggregate supply are equal, *i.e.*, when people's spending decisions and firms' production decisions coincide. Keynes referred to this as effective demand.

To comprehend the Keynesian argument, we will distinguish between actual and planned expenditure. Actual expenditure is the amount spent on goods by consumers, businesses, and the government. Actual expenditure in the economy equals total national income since one



person’s expenditure is another’s income. Gross domestic product is equivalent in a closed economy (GDP). In contrast, planned spending is the amount that consumers, businesses, and the government want to spend on goods. Actual expenditure may differ from planned expenditure because a company may sell more or less than intended, resulting in an increase or decrease in inventories. Hence, the actual spending may be less or greater than the budgeted expenditure.

The planned expenditure (P) in a closed economy comprises of consumption (C), planned investment (I), and government expenditure (G). Hence, it can be expressed as:

$$P = C + I + G \dots\dots\dots (1)$$

A consumption function is $C=f (Y-T)$, where Y is the income of the people and T is the tax paid to the government. The function demonstrates that consumption is contingent on the disposable income, $Y - T$, of the population. By substituting C with the consumption function in (1), one obtains:

$$P = f (Y-T) + I + G \dots\dots\dots (2)$$

Assume that investment, government spending, and tax are fixed and set exogenously. To distinguish fixed investment, taxes, and government spending, we will denote them as \bar{I} , \bar{G} , and \bar{T} , respectively. Now, the third equation can be expressed as:

$$P = f (Y-\bar{T}) + (\bar{I}) + \bar{G} \dots\dots\dots (3)$$

Planned spending is a function of income (Y), tax (\bar{T}), government expenditure (\bar{G}), and planned investment (\bar{I}), as shown by Equation (3).

The relationship between planned expenditure (P) and income is depicted in Figure 3.1. (Y). A linear relationship between Y and P is assumed for convenience. Yet, this assumption can be dropped without affecting the fundamental reasoning or relationships. A linear relationship implies that the slope of the line is constant. The slope of the line is the ratio between the change in consumption (ΔC) and the change in income (ΔY), which indicates the change in consumption expenditure per unit change in income. This ratio is known as Marginal Consumption Propensity (MPC).

$$MPC = \Delta C / \Delta Y$$



Notes

For instance, the MPC is 0.8 if for a 100 rupee increase in income results in an 80 rupee rise in consumption. MPC can also be the derivative of C with respect to Y , $\Delta C/\Delta Y$, for a consumption function that is differentiable. For instance, if $C = a + b(Y - \bar{Y})$, then $MPC = \Delta C/\Delta Y = b$. As tax, investment, and government spending are assumed to be constant (in equation 3 and figure 3.1), the MPC is equal to the slope of the anticipated expenditure line. Hence, the MPC in the given figure is also equal to $\Delta P/\Delta Y$. The slope of the line in Figure 3.1 indicates that for every 1 rupee increase in income, the growth in anticipated expenditures will be less than 1 rupee, or $MPC < 1$. That is expected because people frequently do not spend their entire income rise.

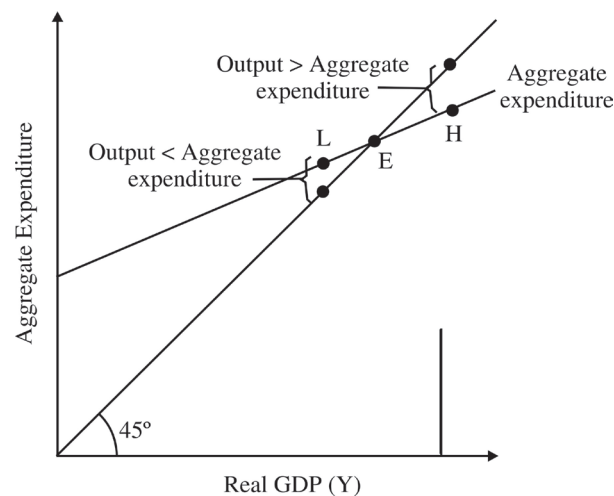


Figure 3.1

The economy is in equilibrium when planned expenditures and output are equal (that is, actual expenditure). Yet, as previously discussed, projected expenditures may exceed or fall below output. The given figure depicts these three options. At point E, the economy is in balance since planned expenditures equal income. Since people's plans are realised in equilibrium (or aggregate demand and aggregate supply are equal), enterprises do not need to alter their production. Consider now the second situation that expected expenditures exceed income (at income, Y_1 in given figure). At present, corporations are selling more than they are producing; consequently, their inventories will decrease. In reaction, businesses will raise production and staff levels. In other words, if anticipated expenditures exceed income in any period, subsequent income



and employment will increase. A rise in income will also result in an increase in projected expenses. As $MPC < 1$, the growth in projected expenditures will be less than the rise in income. The economy will approach equilibrium point E as a result of an increase in revenue and projected spending.

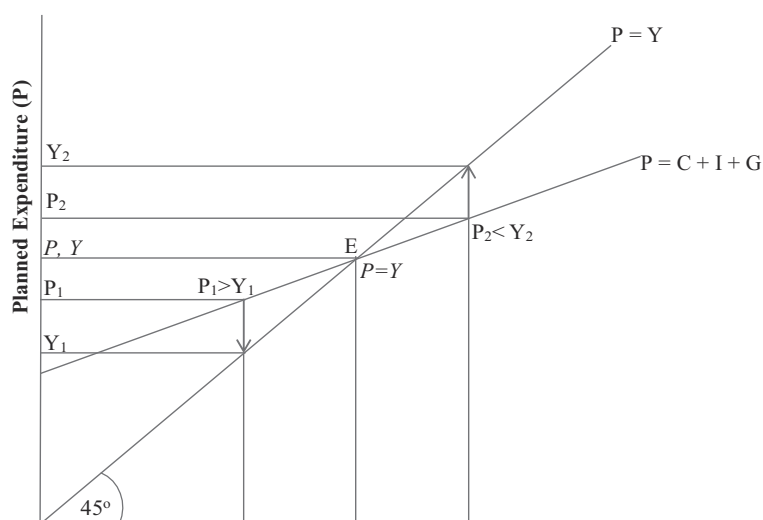


Figure 3.2

Now suppose that the economy has reached Y_2 in terms of income and that projected expenditures (P_2) are less than Y_2 . In this case, enterprises will sell less than anticipated and will stockpile inventories. The enterprises will respond to the circumstance by decreasing their production, resulting in a drop in total income. The decline in output will be mirrored by a decline in employment, as excess personnel will be laid go. The projected expenditures will decrease along with the income, although the fall will be less as $MPC < 1$ approaches. The economy will once more approach equilibrium point E. Consequently, the economy tends to return to equilibrium, where income and anticipated expenditures are equal. The employment rate in the economy will also be proportional to Y . Nevertheless, a full employment equilibrium is not required. The equilibrium, E, is the moment where aggregate demand and aggregate supply are equal in the economy. It is feasible that the income level at full employment lies to the right of Y . Consider Y_2 to be the full employment income level. It is not a sustainable level of income due to lower aggregate demand (or fewer planned expenditures),



Notes

and the economy will return to its previous level of income, Y . With full employment income there will be widespread overproduction (that is, Y_2). The situation is analogous to a position of equilibrium in which there is no over production but a portion of the labour force is not participating (or is only partially included) in the production and exchange process.

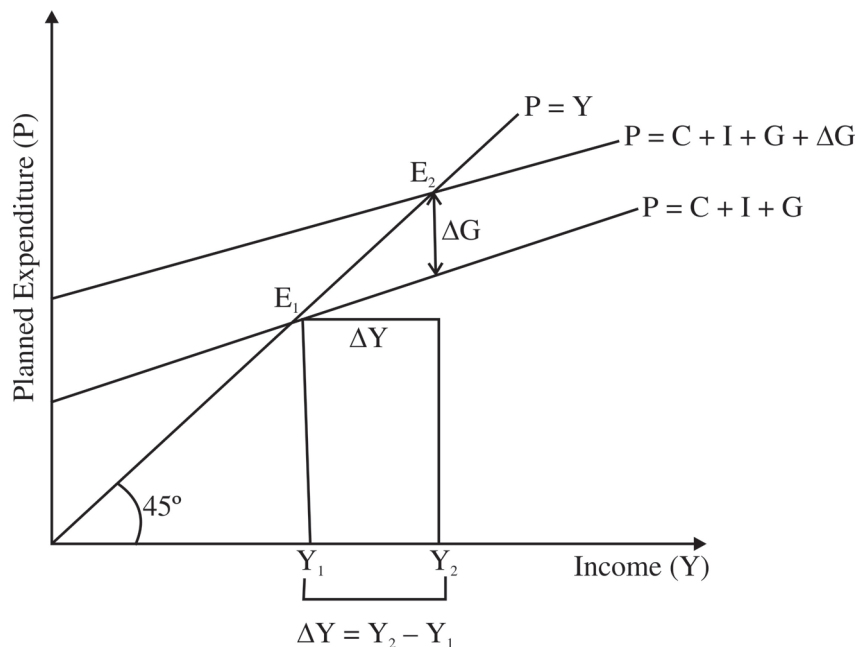


Figure 3.3

Keynes argued that the government can use fiscal policy to boost the economy's income level. The argument can be explained with the aid of above figure. Assume that the economy is in equilibrium E_1 and the full employment equilibrium income is Y_2 . It indicates that the economy is producing below the level of full employment. As was previously mentioned, any change in income will not persist unless the equilibrium is adjusted to E_2 , which corresponds to the income at full employment. Suppose that the government's expenditures increase by a fixed amount ΔG . This increase will result in an upward change in anticipated expenditures since the higher expenses will be added to the projected expenditures at each income level. Owing to this change, the new equilibrium point will be E_2 , and the new equilibrium amount of income will be Y_2 . In addition, full employment will exist in the new equilibrium economy. Hence, the fiscal policy may raise the income to the level of full employment. In addition to calling for an increase in government spending, Keynes also



disputed the conventional premise that wage decrease will result in full employment. Under the Keynesian model, projected expenditures play a significant role in determining the level of income. Keynes claimed that any decrease in the wage rate also reduces the purchasing power of the populace, so shifting the planned expenditure line downwards into a worse income equilibrium. Hence, the reduction in wage rate cannot remedy the problem of overproduction in general.

$$\begin{aligned} \text{Total Income Increase} &= 100 + 100 \times 0.8^1 + 100 \times 0.8^2 + 100 \times 0.8^3 + \dots \\ &= 100 + 80 + 64 + 51.2 + \dots = 100 \times (1/1-0.8) \\ &= \text{Rs. } 500 \end{aligned}$$

In general, the calculation for the overall increase in income (ΔY) resulting from an increase in government expenditure (ΔG) is as follows:

$$\begin{aligned} \Delta Y &= \Delta G + \Delta G \times MPC + \Delta G \times MPC^2 + \\ &\Delta G \times MPC^3 + \dots = \Delta G \times (1/1-MPC) \end{aligned}$$

3.4 Criticism of Keynesian Theory

Keynesian theory is also criticized for its inability to accurately predict economic activity. The Keynesian theory highlighted the issue of low aggregate demand. The majority of unemployment after the 1950s, however, was due to supply side restrictions. Because Keynes considered the aggregate supply curve to remain elastic even in the long run, this issue arises. Nevertheless, this is only true in the short term, as the form of the aggregate supply curve is contingent on the flexibility of prices and wage rates in the economy. According to traditional economics, excess output will disappear if prices and wage rates are flexible (lower prices and wages increase the demand for commodities and labour services). Hence, the overall output of an economy is contingent upon the amount of capital and labour, as well as the current technology, and the aggregate supply curve is inelastic. In contrast, the rigidity of pricing and pay rates makes adjustment difficult, resulting in an elastic aggregate supply curve. Prices and wages are often stiff in the near term and flexible in the long term. As seen in Figure 3.4, the aggregate supply curve over the long run is vertical (a). The vertical aggregate supply curve indicates that prices have no effect on the supply of products. Prices and pay rates are often stiff in the near term. As a result, the aggregate supply curve is



Notes

horizontal, as depicted in below figure, indicating that producers respond to price changes by altering production, with lower prices resulting in decreased output. If overall economic output is governed by the interaction of aggregate demand and aggregate supply, Raising aggregate demand boosts production in the short term, but has no influence on income in the long term. A consequence of the aggregate demand–aggregate supply paradigm is that demand management will fail if supply is constrained.

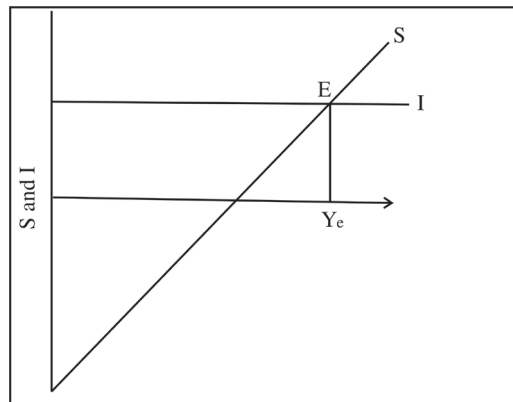


Figure 3.4

Using Keynesian policy suggestions during a recession is likewise fraught with pitfalls. To comprehend this, let's explore the potential funding sources for greater government expenditures. The higher expenditures may be financed through an increase in taxes or a budget deficit. A high tax rate hinders economic activity and reduces people's consumption. Thus, any positive effect of increased expenditure is nullified by the negative impact of taxes (in fact, Keynesian economists suggest cutting taxes during recession). Consequently, deficit financing is the optimal method for funding the additional expenditures. The deficit can be financed through market borrowing or by printing money. If supply constraint is the issue, borrowing money from the market results in a rise in interest rates (especially in a situation of full employment), which reduces private investment in the economy (called crowding out effect). Hence, the favourable impact of the additional expenditure may be significantly reduced or even negative (if government expenditure is less productive than private investment). However, deficit financing by the printing of money may result in inflation, particularly if the economy is already recovering. In addition, it is difficult to determine the precise



increase in government spending (or fiscal stimulus) necessary to pull the economy out of recession. A stronger stimulus could result in far more severe inflation and crowding out. Hence, increased government spending is not devoid of complications.

3.5 Determination of Equilibrium in a Simple Two-Sector Economy

Assume a simple economy without government and foreign sectors. In this type of economy, households are the consumers and businesses are the producers. Investment is assumed autonomous for simplicity. In subsequent models, this assumption will be relaxed.

The sum of consumption and investment expenditures constitutes aggregate demand.

Thus, $AD = C + I$

As there is no government, there will be no taxes, and Y will equal the consumers' disposable income. Hence, the consumption function is $C = a + bY$.

$Y = AD$ represents the equilibrium condition on the goods market.

$$Y = a + bY + I$$

$$Y - bY = a + I$$

$$Y(1-b) = a + I$$

The formula for the equilibrium output level is:

$$Y_e = (1 / 1-b) (a + I)$$

The process of visually depicting the determination of equilibrium income in a two-sector economy is presented here. The C and AD curves can be found in the upper panel. $C = a + bY$ is the formula that is used to describe the consumption function. The aggregate demand curve can be represented by the equation C plus I . The slope of the AD curve is the same as that of the consumption curve because it is assumed that investment is unrelated to consumption. I represents the horizontal gap that exists between C and AD across all income levels. The line at 45 degrees is drawn so that we can locate the point of equilibrium between the total aggregate supply (or production) and the total aggregate



Notes

demand. The components that make up aggregate demand are plotted along the vertical axis, while aggregate production is measured along the horizontal axis. The horizontal and vertical coordinates of any point along a line at 45 degrees are equal to one another, denoted by the notation $Y = AD$. The equilibrium level of revenue for this basic economy can be found where the 45-degree line intersects with the AD curve.

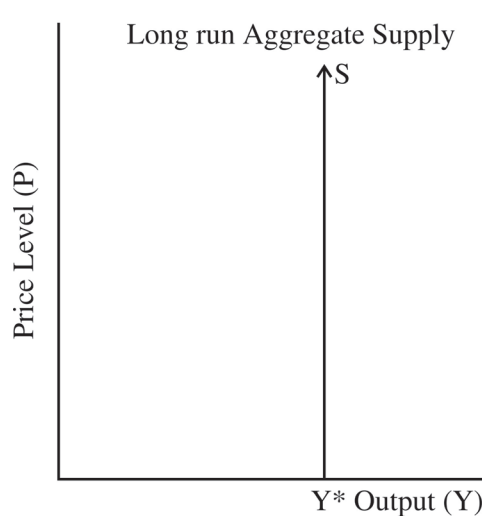


Figure 3.5

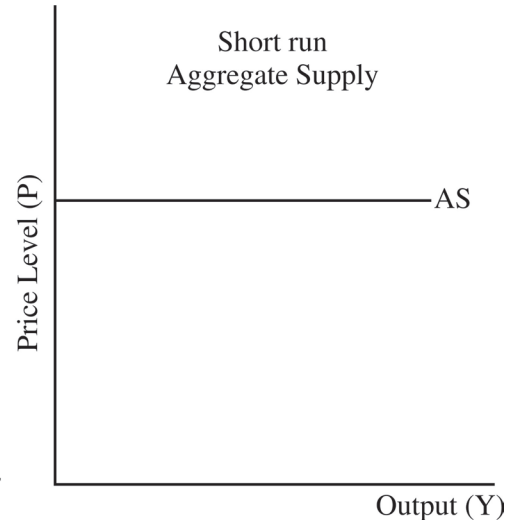


Figure 3.6

There exists a unique equilibrium where aggregate demand (C+I) of the economy is equal to aggregate output or supply Y, according to the analysis shown above (both with the aid of equations and diagrams). This level of equilibrium agrees with the equilibrium point given by the interaction of S and I, as shown in the lower panel. These equilibrium conditions are almost identical.

That is, $Y = C + I$

Rewriting the previous equation as $Y - C = I$ yields a new relationship.

That is, $S = I$

As a result, the level of output, denoted by Y_e , is the level of output at which the economy is considered to be in equilibrium. Let's demonstrate the determination of equilibrium with a simple example? Consider the consumption function to be $C = 12.5 + 0.75 Y$, and the investment to be represented by $I = 120$. AD is equal to, and represents, the total amount spent on consumption and investment.



$$AD = C+I = 12.5 + 0.75Y + 120 = 132.5 + 0.75Y$$

For equilibrium, $Y=AD$, *i.e.* $Y = 132.5 + 0.75Y$ $0.25 Y = 132.5$ $Y_e = 530$

$$S = Y-C, \text{ i.e. } S = Y - 12.5 - 0.75Y = 0.25 Y - 12.5$$

$$\text{When } Y = 530, S = (0.25) (530) - 12.5 = 120 = I$$

Therefore, savings and investments both amount to the same total at this level of output. It is only at this income level (530) that there will not be an unexpected change in the inventory. At a lower level of income ($Y < AD$), demand will be higher than production, and existing stock will be depleted; however, at a higher level of income ($Y > AD$), production will be higher than demand, and existing stock will be replenished. Because planned investments have already accounted for expected stockpile replenishments, any decrease in stock or increase in it must have been an unexpected and unwelcome development. $C = 12.5 + 0.75 \times 550 = 12.5 + 412.5 = 425$. To the right of the equilibrium, such as at a point where $Y = 550$, AD can be calculated as $C + I$. So, $AD = 425 + 120 = 545$. AS is the 550 production level. In this instance, AS is more than AD and there is an unanticipated increase in inventory stock ($550 - 545 = 5$).

Consider a point to the left of E , such as the location where Y equals 500. AD may be calculated at $Y = 500$ as $C + I$. $C = 12.5 + 0.75 \times 500 = 12.5 + 375 = 387.5$. $AD = C + I = 387.5 + 120 = 507.5$. AS is the production level of 500. In this instance, AS is less than AD by 7.5 units, resulting in unanticipated inventory depletion when 7.5 units are removed from current inventory stock to close the demand-supply imbalance. Only at equilibrium E does supply equal demand and there is no unanticipated change in inventories.

Now, let's examine how changes to any component of aggregate demand affect equilibrium. Assume autonomous investment grows. How does this affect the income equilibrium? The equilibrium income will increase by a multiple of the initial investment increase. This notion is known as the multiplier.

Continuing with the preceding example of income determination, where $C = 12.5 + 0.75 Y$, $I = 120$, and equilibrium income (output) is 530, we have the following expression: Suppose now that investment grows to 125.

$$Y = 12.50 + 0.75 Y + 125 \text{ is the new equilibrium.}$$



Notes

$$Y = 137.5 + 0.75Y$$

$$0.25 Y = 137.5$$

$$Y_e = 550$$

The new income equilibrium is Rs. 550. As investment grows by 5 (from 120 to 125), income grows by 20 (from 530 to 550). As seen by this example, an increase in income is proportional to an increase in investment. In the above instance, the multiplier is 4.

Not only does the multiplier (denoted by k) apply to an increase in autonomous investment, but also to any component of autonomous demand. For instance, if investment remains unchanged at 120 while autonomous consumption increases by 17.5 (an increase of 5 units from 12.5). The new equilibrium income will once again equal Rs. 550.

Thus, the multiplier can be defined as the increase in revenue caused by a rise in any independent component of aggregate demand. $k = 1/(1-b) = 1/(1-MPC) = 1/(MPS) = 1/(1-0.75) = 1/0.25 = 4$ may be calculated.

Two points should be made regarding the multiplier. Initially, a rise in b (MPC) increases the multiplier's value. This is the case because a greater b indicates a greater amount of increased consumption in the economy as a result of a rise in income. In contrast, an increase in MPS ($1-b$) reduces the income-generating potential of an increase in autonomous investment or consumption. Second, the multiplier is bidirectional. Whereas a rise in the autonomous demand component leads in numerous income increases, a reduction in the autonomous demand component results in multiple income decreases.

Let us now examine the multiplier's underlying logic. We must determine what initiates the process that results in a multiplication of income. The MPC in our scenario is 0.75. If autonomous demand grows by 100, then income increases by the same amount as output increases by 100 to meet this additional demand. Yet, this is simply the initial round of direct autonomous demand effects. This increase in income (of 100) boosts consumption by $0.75 \times 100 = 75$. To accommodate this demand, output (and thus income) increases by 75 per cent. In the subsequent cycle, a 75 rise in income translates in a 56.25 increase in consumption (0.75×75). This much will be added to output (and income) as a result of this increase in demand. This process will continue, and the initial 100-unit



increase in autonomous demand will result in a 400-unit increase in income, yielding a multiplier of 4.

$$\begin{aligned}\Delta Y &= 100 + 75 + 56.25 + \dots \\ &= 100 (1) + 100 (0.75) + 100 (0.75)^2 + 100 (0.75)^3 + \dots \\ &= 100 (1 + 0.75 + 0.75^2 + 0.75^3 + \dots) \\ &= 100 (1 / 1 - 0.75) = 100 (1 / 0.25) = 100 \times 4 = 400\end{aligned}$$

Nota bene: the above total is legitimate because the common ratio of the geometric series included in brackets is 0.75, which is a fraction. Assuming that $0 < b < 1$, the multiplier formula $k = 1 / 1 - b$ is valid in general.

3.6 Investment Multiplier (k)

The multiplier (k) is the change in income resulting from a change in government spending, hence the multiplier ($\Delta Y / \Delta G$) equals $1 / 1 - MPC$. The value of multiplier ranges from 1 to ∞ .

$$k = 1 / 1 - MPC = 1 / MPS$$

Suppose an additional government expenditure (ΔG) of Rs. 5,000 crores in an economy generates an additional income (ΔY) of Rs. 20,000 crores. Calculate the value of multiplier (k)?

$$k = \Delta Y / \Delta G = 20,000 / 5,000 = 4$$

It means, income increased 4 times with a single increase in government expenditure.

Multiplier and MPC

- ◆ There is a direct relationship between MPC and the value of the multiplier.
- ◆ Higher the MPC, more will be the value of multiplier and *vice versa*.
- ◆ The concept of the multiplier is based on the fact that one person's expenditure is another person's income.
- ◆ When government expenditure is increased, it increases employment and also increases the income of the people. People spend a part of this increased income on consumption. However, the amount of



increased income spent on consumption depends on the value of MPC.

- ◆ *In case of higher MPC*, people will spend a large proportion of their increased income on consumption. In such case, value of multiplier will be more.
- ◆ *In case of low MPC*, people will spend lesser proportion of their increased income on consumption. In such a case, value of multiplier will be comparatively less.

Q. Calculate multiplier if MPC is 0.75?

Ans. Multiplier (k) = $1 / 1 - MPC = 1 / 1 - 0.75 = 1/0.25 = 4$

Q. Calculate multiplier if MPS is 0.40?

Ans. Multiplier (k) = $1 / MPS = 1 / 0.40 = 2.5$ [MPS = 1 – MPC]

Q. In an economy, 60% of increased income is spent on consumption. If Rs. 4.00 crores are invested in a project, find out the increase in income and saving?

Ans. Multiplier (k) = $1 / 1 - MPC = 1 / 1 - 0.60 = 2.5$

We also know that: $k = \text{Change in Income } (\Delta Y) / \text{Change in Investment } (\Delta I)$

Change in investment (given) = Rs. 4.00 crores

$$2.5 = \Delta Y / 4$$

Change in Income (ΔY) = Rs.10 crores

$$MPS = 1 - MPC = 1 - 0.60 = 0.40 \quad [MPC + MPS = 1]$$

$$MPS = \text{Change in Saving } (\Delta S) / \text{Change in Income } (\Delta Y)$$

Change in Saving (ΔS) = MPS x Change in Income (ΔY) = 0.40 x Rs.10 crores = Rs. 4 crores

3.7 Paradox of Thrift

The Paradox of Thrift is an intriguing discovery that wonderfully illustrates the significance of demand in the Keynesian paradigm. Assume that at some point in time, the residents of an economy decide to become more frugal and begin to save a bigger proportion of their income at each income level. Average propensity to spend, APC (C/Y), decreases across



the board as average propensity to save, APS (S/Y), increases. This results in a decrease in autonomous C , which is represented by a negative value for the a parameter of the consumption function. This results in a downward shift in the consumption relationship, while the slope of the MPC remains unchanged (upward shift in the saving function, with slope MPS remaining unchanged). If the value of investments stays the same, then the value of the equilibrium income will go down. In order for there to be equilibrium, S must equal I , and since I has not changed, saving will remain at the same level it was at before despite the fact that the tendency to save has increased. This is the conundrum. Attempts to conserve more are hurting output by reducing consumption demand. Finally, as a result of this decline in Y , saving remains equivalent to the unchanged amount of investment.

As an example, suppose the autonomous consumption changes from 12.5 to 10.

$C = 10.5 + 0.75 Y$ represents the new consumption function.

The new equilibrium point will be at $Y = C + I$.

That is:

$$Y = 10.5 + 0.75 Y + 120$$

$$Y = 130.5 + 0.75 Y$$

$$0.25 Y = 130.5$$

$$Y = 522$$

At the new equilibrium income (of 522) savings (S) is equal to

$$S = Y - C = Y - 10.5 - 0.75Y = 0.25Y - 10.5 = 0.25 \times 522 - 10.5 = 120$$

In the new equilibrium, S has remained the same at 120 ($=I$).

In conclusion, this section addressed the determination of equilibrium in a two-sector economy with no government or international trade. In addition, the process by which an economy reaches a new equilibrium following a change in the demand components was described. When the number of sectors is increased to make the model more complex, the procedure remains the same. This is covered in the following section.



3.8 Determination of Equilibrium in Four-Sector Economy

Now Government (G) and the External Sector (X) is introduced.

The government influences aggregate demand through purchasing goods and services (G), levying taxes (T), and making transfer payments to households (TR), such as unemployment benefits, subsidies, and so on. These government actions represent the government’s budgetary instruments. It is assumed that taxes are proportional to income and that government expenditures and transfer payments remain constant.

Foreign trade would necessitate the incorporation of exports (X) and imports (M) or net exports (NX) into the model. Increasing income will raise import demand. Hence, it is assumed that $M = m_0 + mY$, with $m > 0$. m_0 indicates the independent demand for imports in this equation. m is the marginal propensity to import (a concept similar to marginal propensity to consume or save). It measures the extent to which a unit increase in income increases imports. Exports are reliant on foreign income, not local income, and are independent in this paradigm. Imports and exports are also influenced by other variables, such as relative pricing and the exchange rate between the two nations, as mentioned in the module on exchange rates. Unfortunately, this module does not examine these variables.

Now Aggregate Demand (AD) is the sum of expenditures on consumption, investment, government purchases, and net exports. In equation form, we obtain

$$AD = C + I + G + NX \dots\dots\dots (1)$$

In order for equilibrium to exist, supply (output) and demand must be equal. Thus,

$$Y = AD \dots\dots\dots (2)$$

The result of equations 1 and 2 is

$$Y = AD = C + I + G + NX \dots\dots\dots (3)$$

Investment (I), government purchasing (G), and exports (X) are considered to be autonomous for simplicity. Consumption (C) includes both autonomous and induced components, as shown by

$$C = a + bY_d \text{ where } a > 0 \text{ and } 0 < b < a \dots\dots\dots (4)$$



The disposable income (Y_d) is calculated by subtracting income from direct tax payments and transfer payments. Direct tax $T = tY$, where $0 < t < 1$, with t being the proportional tax rate. Hence, $Y_d = Y - tY + TR$.

Substituting in equation 4, we get $C = a + bY - btY + bTR$

The equilibrium condition is

$$Y = C + I + G$$

$$Y = a + bY - btY + bTR + I + G + X - m_0 - mY$$

Rewriting,

$$Y - bY + btY + mY = a + bTR + I + G + X - m_0$$

$$Y(1 - b + bt + m) = a + bTR + I + G + X - m_0$$

The equilibrium income, denoted by Y_e is then given by the equation

$$Y_e = (1 / (1 - b + bt + m)) \times (a + bTR + I + G + X - m_0)$$

This is the economy's equilibrium income. Changes in autonomous levels of consumption (a), investment (I), government spending (G), and net export ($X - m_0$) correspond to the multiplier $k = 1 / (1 - b + bt + m)$. Now, the multiplier is smaller than it was in a two-sector economy. Note that both taxes and imports are leakages from the flow of income and expenditures. Due to these leakages, the ability of increases in autonomous demand to generate money is diminished. With $b = 0.75$, the multiplier in a two-sector economy was 4, for instance. In our four-sector economy, the multiplier is $k = 1 / (1 - b + bt + m) = 1 / (1 - 0.75 + 0.75 \times 0.10 + 0.25) = 1 / 0.575 = 1.739\%$.

This illustration demonstrates that the multiplier in a four-sector economy is lower than in a two-sector economy.

Additionally, in the four-sector economy, the multiplier will decrease if the import propensity (m) or tax rate (t) increases.

This module examined two models in order to comprehend the process of income determination in a Keynesian paradigm. It is possible to construct multiple models with differing degrees of complexity. Nonetheless, the fundamental premise of Keynesian theory remains unchanged. The significance of collective demand in the process of achieving equilibrium is brought to light by these models. Any variation in components like aggregate demand, government spending, investment, or net export, will have a multiplicative effect on income because of the operation of the



multiplier process. Nonetheless, it should be highlighted that the models examined in this and the preceding module were restricted to the goods market.

IN-TEXT QUESTIONS

1. AD curve is a:
 - (a) Horizontal straight line parallel to x- axis
 - (b) Positively sloped curve
 - (c) Negatively sloped curve
 - (d) Vertical straight line parallel to y-axis
2. At equilibrium level:
 - (a) Consumption = Investment
 - (b) Aggregate Demand = Aggregate Supply
 - (c) Saving = Investment
 - (d) Consumption = Saving
3. The maximum value of multiplier is _____ when the value of MPC is _____.
 - (a) Infinity, zero
 - (b) Infinity, One
 - (c) One, Infinity
 - (d) None of these

3.9 Summary

- ◆ The failure of classical economists to explain the Great Depression of the 1920s and 1930s led to Keynesian theory, which changed the way economists think about macroeconomic issues. The theory is based on the idea that an economy's income depends on the total amount of things that people want. The level of production in the economy is set by how much the aggregate demand changes the expectations of producers. When the needs of the people are met, the economy is in balance. But this equilibrium point doesn't have to be full employment. So, if the government gets involved



by spending more, it could help the economy reach a state of full employment. Even though it was criticised a lot, the theory, and the debates about it taught us a lot about macroeconomics and the role of government spending.

- ◆ The Keynesian theory proposes that the equilibrium level of income can only be attained when $Y=AD$.
- ◆ The term “multiplier” refers to the process through which an increase in independent spending results in a multiplicative increase in income.
- ◆ In a simple two-sector economy, where k stands for “multiplier,” $k = 1/ (1-b)$.
- ◆ If people try to save more, they won’t be able to because their income will go down because their spending will go down. It’s called the “Paradox of Thrift.”
- ◆ The total demand can be influenced by the government through the purchasing of goods and services (G), the imposition of taxes (T), and the distribution of funds to households in the form of unemployment benefits, subsidies, and so on. These things that the government does make up its fiscal policy.
- ◆ As income rises, there will be more demand for imports.
- ◆ The marginal propensity to import shows how much more people import when their income goes up by one unit.
- ◆ Exports are independent as they depend on income of other countries, not income of domestic country.
- ◆ In an economy with four sectors, the multiplier is $k = 1/(1-b+bt+m)$.
- ◆ High marginal propensity to import and high tax rate bring down income because both imports and taxes take money away from domestic production.

3.10 Answers to In-Text Questions

1. (b) Positively sloped curve
2. (b) Aggregate Demand = Aggregate Supply
3. (a) Infinity, zero



3.11 Self-Assessment Questions

1. Calculate MPC from the following table:

Income (Y)	0	100	200	300	400
Consumption (C)	60	110	150	180	200

2. Discuss the significance of 45° line in Keynesian Economics.
3. “When MPC is equal to MPS, increase in income will be two times the increase in investment”. Comment.
4. In a two sector economy, the saving function is given as: $S = -10 + 0.2Y$ and investment function is expressed as $I = -3 + 0.10Y$. Calculate the equilibrium level of income?
5. Why must aggregate demand be equal to aggregate supply at the equilibrium level of income and output? Explain with the help of a diagram.
6. The value of MPC is double the value of MPS. Find the value of multiplier.
7. What are the two alternative ways of determining equilibrium level of income? How are these related?
8. What is meant by the “Effective Demand Principle” in Keynesian Theory of Employment. Discuss using a schedule or a diagram?
9. Explain “Paradox of Thrift”.
10. Explain the working of Investment Multiplier with the help of a numerical example.

3.12 References

- ◆ Macroeconomics: Theory and Policy by H L Ahuja, S Chand.
- ◆ Macroeconomics: Theory and Policy by D N Dwivedi, McGraw Hill.

3.13 Suggested Readings

- ◆ Macro Economic Theory by M L Jhingan, Vrinda Publications
- ◆ Macro Economics by T R Jain and V K Ohri, V K Global Publications.



Theory of Income Determination and Interest Rate

Dr. Arjun Singh Solanki

Professor

Meerut Institute of Technology

Email-Id: ar21mp@yahoo.com

STRUCTURE

- 4.1 *Learning Objectives*
- 4.2 *Introduction*
- 4.3 *IS-LM Model*
- 4.4 *Equilibrium in Goods and Money Market*
- 4.5 *Impact of Fiscal and Monetary policy on IS and LM Curves*
- 4.6 *Summary*
- 4.7 *Answers to In-Text Questions*
- 4.8 *Self-Assessment Questions*
- 4.9 *References*
- 4.10 *Suggested Readings*

4.1 Learning Objectives

- ◆ To develop a deep understanding of the basic macroeconomic variables important to achieve the stability and growth in an economy.
- ◆ To understand the role of macroeconomic policies in achieving price stability, low inflation and full employment.



- ◆ To understand the theoretical rationale behind policies framed at the country as well as corporate level.
- ◆ To provide the learners sound knowledge of different instruments of fiscal and monetary policy used in times of recession and inflation.

4.2 Introduction

Keynesian theory of national income determination explains how the equilibrium level of income is determined by the equilibrium in the goods market. He explained the inverse relationship between investment demand and interest rate and showed it as independent of the level of income. The rate of interest in Keynesian theory was determined by the demand and supply of money in the money market. Any change in money demand and money supply will affect the rate of interest, and the level of investment demand in the goods market gets affected. So any increase or decrease in investment demand affects the level of income and output accordingly in the goods market.

4.3 IS-LM Model

By using the Keynesian theory IS-LM model explained a complete and integrated model of the goods and money market. In this model, the goods market is represented by IS curve, and the Money market is represented by the LM curve. They jointly determine the equilibrium level of income and the interest rate in the economy.

Goods market and the IS curve

The goods market will be in equilibrium at the point where demand for goods is equal to its supply.

The following equations summarize the demand for goods and services –

$$Y = C + I + G \dots\dots\dots (1)$$

$$C = C (Y - T)\dots\dots\dots (2)$$

$$I = I (r)\dots\dots\dots (3)$$

$$G = G \dots\dots\dots (4)$$

$$T = T \dots\dots\dots (5)$$



The above equation summarizes the demand for the economy's output (Y). The demand in the economy comes from consumption (C), investment (I), and government purchases (G). Consumption demand depends on the disposable income, investment depends on the real interest rate (r), and government purchases and taxes (T) are the exogenous variables decided by the government policy.

The investment demand curve and the interest rate

In an economy, planned investment is negatively related to the interest rate. It can be expressed as follows—

$$I = I(r)$$

Since the interest rate is the cost of borrowing for firms so it affects the profitability of firms. An increase in the interest rate increases the cost of borrowing to the firms so they decrease their planned investment. On the other hand, decrease in interest rates leads to a decrease in the cost of borrowing and their profitability increase which motivates them to do more planned investments in the economy.

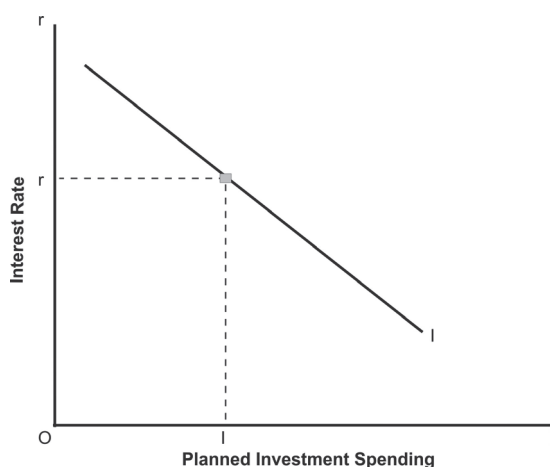


Figure 4.1: Investment Demand Curve

Figure 4.1 shows the negatively sloped investment demand curve. It shows the negative relationship between the rate of interest and the investment demand. Any decrease in the interest rate reduces the cost of borrowing to the firms and accordingly they increase their planned investment, and an increase in interest rate will increase the cost of borrowing and firms reduce their planned investment.



Notes

Equilibrium in the goods market and Derivation of IS curve

The factors of production (K, L) and the production function determine the quantity of output supplied to the economy:

$$Y = f (K, L)..... (6)$$

$$= Y$$

Let's combine these equations describing the supply and demand for output, we get-

$$Y = C (Y - T) + I (R) + G..... (7)$$

We know the variables *G* and *T* are fixed by government, and the level of output *Y* is fixed by the factors of production and the production function, we can write—

$$Y = C (Y - T) + I (R) + G..... (8)$$

The equation-8 states that the supply of output equals its demand, which is the sum of consumption, investment, and government purchases. It is clear from the equation -8 that interest rate is an important variable which determines the equilibrium in the goods market.

We know that the interest rate and investment are inversely related. The higher is the interest rate, the lower is the level of investment, and thus the lower the demand for goods and services. If the interest rate is too high, then investment is too low and the demand for output falls short of the supply. If the interest rate is too low, then investment is too high and the demand exceeds the supply. So at the equilibrium interest rate, the demand for goods and services equals the supply.

The goods market is represented by the IS curves. In order to summarize the equilibrium points between the rate of interest and the level of income in the goods market IS curves are used.

The IS curve represents the investment (I) and saving (S) curves in the goods market.

As we know from the Keynesian theory that the planned investment is negatively related to the interest rate, firms do more investment at lower interest rate and do less investment at higher interest rate.

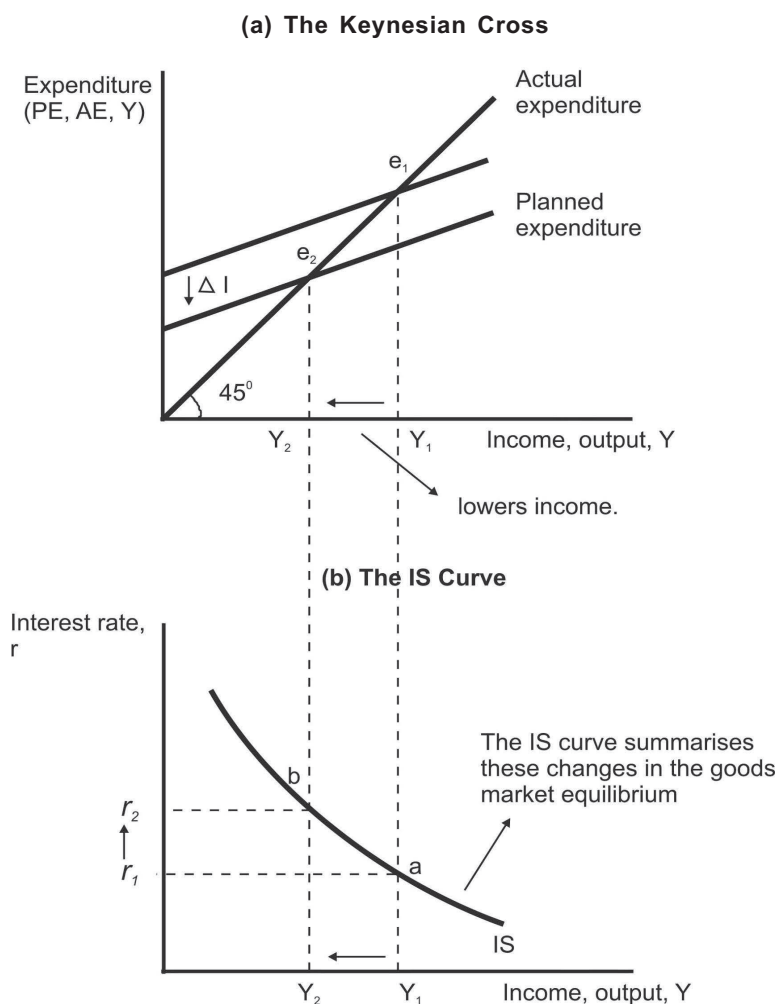


Figure 4.2: Derivation of IS Curve from Keynesian Cross

In figure 4.2 the derivation of IS curve is explained with the help of the Keynesian cross. The above figure is divided into two panels, (a) and (b). in the panel- a Keynesian cross is shown, where the economy is initially in equilibrium at point e_1 with Y_1 level of income. So if there is any increase in interest rate it will lead to an increase in the cost of borrowing to the firms and the firms are forced to reduce their planned investment and this shifts the planned investment expenditure curve downwards and the new equilibrium is reached at e_2 with lower income level Y_2 . So if we extend the equilibrium points of the Keynesian cross and draw a curve showing the relationship between the interest rate



and a given level of income, we will get a downward slope IS curve in panel-b of the Figure 4.2.

The IS curve shows all the equilibrium points in the goods and services market with the interest rates and the level of income in the economy. The downward slope of IS curve explains the negative relationship between the interest rate and the level of income in the economy. The increase in interest rate leads to a decrease in income, so higher is the interest rate lower is the income level. On the other hand, lower interest rate will induce the firms to invest more and the economy will move towards a higher level of income.

The slope and position of IS curve

The slope of IS curve depends upon the following-

1. The elasticity of Investment demand curve:

The elasticity of the investment demand curve to the changes in interest rate affects the investment demand and accordingly the slope of IS curve gets affected.

If the investment demand curve is interest elastic, any small change in interest rate will lead to a large change in investment demand. On the other hand, if the investment demand curve is relatively interest inelastic, any large change in interest rate will lead to a relatively small change in investment demand.

Thus, due to elastic investment demand to the interest rate, the IS curve will be flatter. On the other hand, an inelastic investment demand curve to the interest rate will lead to a relatively steeper slope of IS curve.

2. The size of multiplier:

From the Keynesian theory, we know the value of the multiplier depends upon the marginal propensity to consume (MPC). Therefore, higher MPC will lead to a larger value of the multiplier, and any small change in investment caused by an interest rate change will lead to a larger change in the equilibrium level of income.

Therefore, if the MPC is higher it will lead to a higher value of multiplier and a small change in investment demand will lead to a larger change in the level of equilibrium income, and accordingly the IS curve will be relatively flatter. On the other hand, the smaller the MPC smaller will



be the value of the multiplier and a large change in investment will lead to a small change in the equilibrium level of income, and accordingly the IS curve will be relatively steeper.

The position of IS curve

To see the effect of policy change in the IS-LM model, it is important to understand what causes a shift in IS curve. As we know that the aggregate expenditure in the economy is determined by the summation of consumption demand, investment demand, and government expenditure.

The shift in IS curve takes place because of the increase in autonomous expenditure. Autonomous expenditure is the amount that does not depend on the level of income and the interest rate. Here, we assume that the autonomous expenditure is the sum of autonomous consumption, autonomous investment, and government expenditure.

From the consumption function, we know that consumption is the function of income, but some minimum consumption is required for an individual to survive and this consumption amount does not depend on the level of income. This minimum amount of consumption which does not depend on the level of income is called autonomous consumption. Likewise, we know that from the investment demand function investment depends on the interest rate and marginal efficiency of capital. But some amount of investment does not depend on the interest rate and takes place in the economy because of population increase or innovation. For example, the construction of houses and roads due to population increase. Government expenditure is autonomous and does not depend on the level of income. The government does expenditures for social welfare activities and the economic development of the country.

From Figure 4.3 we can see the effect of any increase or decrease in the autonomous expenditure on the IS curve, it will shift upward or downward and accordingly the level of income will increase and decrease. The increase and decrease in income will be equal to the autonomous expenditure times the size of the multiplier.



Notes

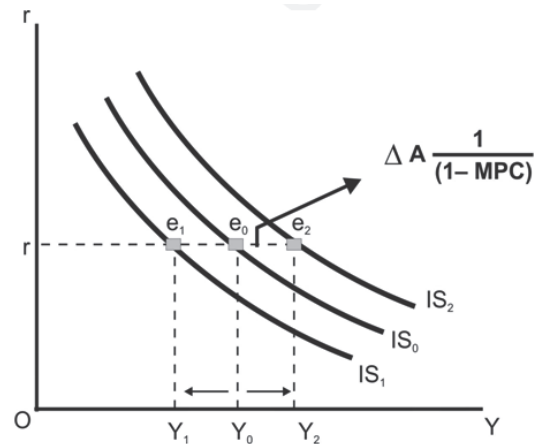


Figure 4.3: Shift in IS curve as a result of increase and decrease in autonomous expenditure

Money Market and the LM Curve

In the money market, the demand for money and the supply of money determine the interest rate. Since the supply of money is exogenously determined by the central bank of a country, so we assume it is constant. Therefore, it is the demand for money which plays a crucial role in determining the rate of interest in the money market.

Demand for Money and Supply of money

The demand for real money balances is explained by equation given below:

$$(M/P)_d = L(r)$$

Here, the left side of the equation shows the supply for real money balances $(M/P)_d$ and the right side of the equation shows the quantity of money demanded (L) depends on the interest rate (r). Here we know that the interest rate is the cost of holding money, so individuals hold more money at the lower interest rates and hold less money when interest rates are higher. This is the reason the demand curve for money is of negative slope.

Equilibrium in the money market and Derivation of LM curve

The equilibrium in the money market is achieved at the point where the demand for the money curve (L) and supply of the money curve (M_s)



intersect and the equilibrium interest rate is determined as shown in a part of Figure 4.4.

Here, money supply is given and determined by the central bank, so money demand leads to change in interest rate and plays a very important role in establishing the equilibrium in the money market.

Here for simplification we assume that people hold money in two forms-

1. They hold money in cash to meet their day today transactions, and
2. They invest their money to earn interest for example; they invest in bonds or fixed deposits.

In any economy, people maintain their portfolio of money as per their preference for holding cash. Let there be any disequilibrium in the money market which leads to an increase in interest rate. This increase in interest rate will force individuals to convert their cash holdings into fixed deposits to earn more interest until the financial institutions offering higher interest rates reduce the interest rate they are offering. People will not stop depositing their cash into a fixed deposit until the cost of holding money is equal to depositing it into the fixed deposit, and this equilibrium is established by the interest rate.

Conversely, if due to any reason interest rate falls, this reduction in interest rate will reduce the cost of holding money and the individuals start converting their fixed deposits into cash until the financial institution offering a lower interest rate will increase the rate of interest rate. It is an interest rate that establishes equilibrium in the money market by adjustment and readjustments in the demand for real money balances (M/P) .

Here, it is important to understand that the demand for real money balance also depends upon the level of income in the economy.

This relationship between the two is explained as follows-

$$(M/P)_d = L(r, Y)$$



Notes

It can be seen from the above equation that the demand for money at the given price level is directly related to the level of income (Y) and inversely related to the interest rate (r).

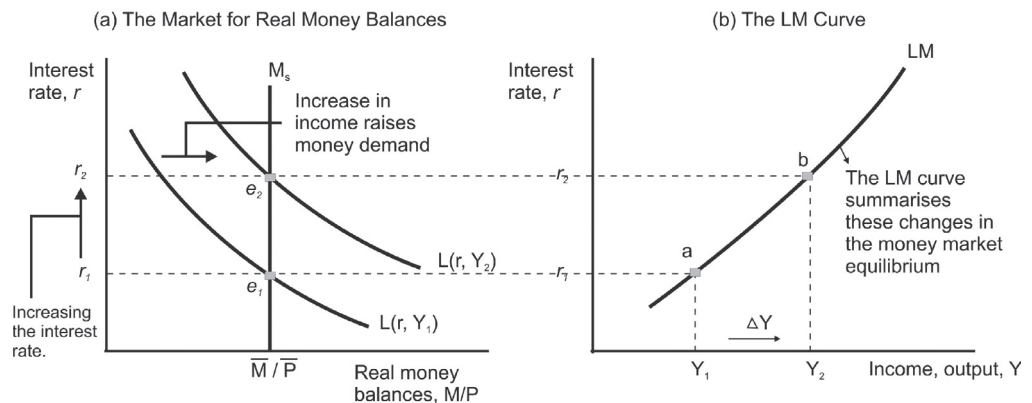


Figure 4.4: Derivation of LM curve

In Figure 4.4 the panel-(a) shows the equilibrium in the money market, where demand and supply for real money balances are in equilibrium with r_1 interest rate. Due to increase in income from Y_1 to Y_2 demand for real money balance increases and the demand curve for money balance shifts rightward. Correspondingly in panel-(b) the LM curve summarises the points of equilibrium in the money market and represent positive relationship between income and interest rate.

In case of higher interest rate the income level will also higher as shown by the positive slope of LM curve.

Here, we understand that each point of LM Curve illustrates equilibrium in the money market. Higher is the level of income, higher will be the demand for money at the given price level, and the equilibrium will be at higher interest rate. Because of this reason, the *LM* curve slopes upward.

The slope and position of LM curve

The LM curve shows the equilibrium points in the money market. Its positive or upward slope shows the positive relationship between the level of income and the interest rate.

There are two factors on which the slope of LM curve depend—



1. The sensitiveness of the demand for money to the changes in the level of income

If there is any increase in the level of income, people will demand more money for transaction purposes. As the money supply is given and constant, this increase in money demand for transaction purposes will increase the interest rate and the new equilibrium will be settled at a higher level of interest rate and income. At this new equilibrium point, the transaction demand for money increases, and the money demand for speculative purposes will decrease due to a higher rate of interest.

Thus, the greater the responsiveness of transaction demand for money to the changes in the level of income, the larger will be the rise in interest rate, and consequently, the slope of the LM curve will be relatively steeper.

2. The sensitiveness of the demand for money to the changes in rate of interest

An interest rate increase will decrease the speculative demand for money and a decrease in interest rate will increase the speculative demand for money. So if the demand for speculative motive is less sensitive to the interest rate change, the LM curve will be relatively steeper. On the other hand, if it is highly sensitive to the change in the interest rate the LM curve will be relatively flatter.

The position of LM curve

From the above explanation and derivation of the LM curve, we know that the money supply is assumed constant, and a change in demand for money will affect the equilibrium in the money market. Therefore, money supply and money demand jointly determine the equilibrium in the money market. Any change in money supply and money demand will shift the LM curve.

We can see the effect of change in money supply and money demand on LM curve in figure 4.5(a) and 4.5(b). If there is any increase in money supply by the central bank with given money demand it will increase the level of income with a given interest rate and the LM curve will shift rightward. On the other hand, if the money supply is reduced LM curve will be shifted leftward.



Notes

The second important factor is the demand for money in the economy. Any increase in demand for money for speculative or transaction purposes will shift the LM curve rightward or leftward.

Any increase in demand for money with the given level of money supply will increase the interest rate with a given level of income and the LM curve shifts leftward. So if the money demand decreases it will shift the LM curve rightward.

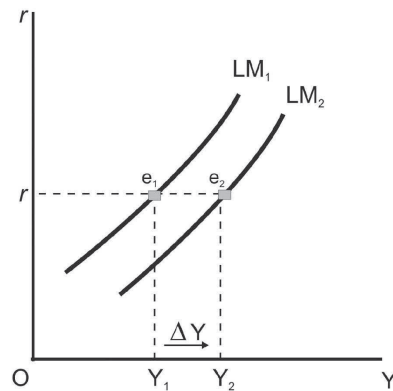


Figure 4.5(a) – Rightward shift in LM curve due to increase in money supply

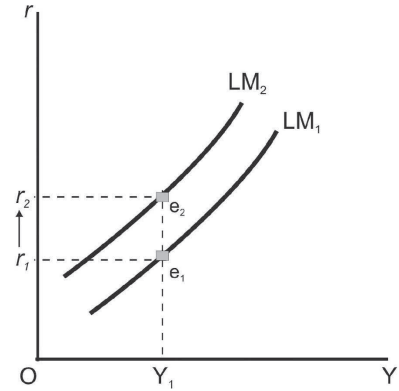


Figure 4.5(b) – Leftward shift in LM curve due to increase in money demand

4.4 Equilibrium in Goods and Money Market

After the derivation of IS and LM curves, now we will establish the equilibrium simultaneously in the both markets.

The equilibrium will be established at the point where both curves intersect each other, and at this point, both markets are in equilibrium with a given level of income and interest rate.

The two equations of this model are-

$$Y = C (Y-T) + I (r) + G \dots \dots \dots IS$$

$$M/P = L (r, Y) \dots \dots \dots LM$$

The IS curve provides the combinations of r and Y that satisfy the equation representing the goods market, and the LM curve provides the combinations of r and Y that satisfy the equation representing the money market.

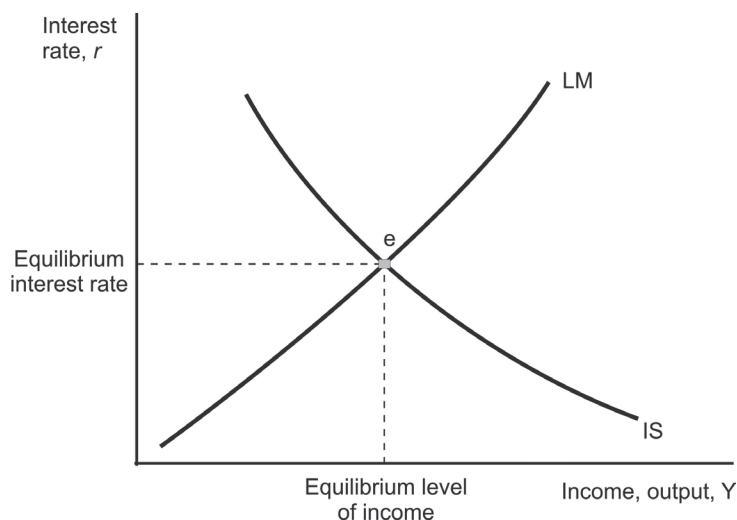


Figure 4.6 : Simultaneous Equilibrium of Goods (IS) and Money Market (LM)

Here, in figure 4.6 the intersection of both the curves show equilibrium in both the markets simultaneously with a given income level and interest rate. This point gives the interest rate r and the level of income Y that satisfy conditions for equilibrium in both the markets.

4.5 Impact of Fiscal and Monetary Policy on IS and LM Curves

Fiscal policy and monetary policy are two important instruments of the macroeconomic policy of a government. They play a useful role in attaining macroeconomic objectives of economic growth, full employment, price stability and distributive justice. Monetary and fiscal policies are important instruments available to a government that influences the economic activities at the macroeconomic level and also ensure smooth functioning of the economy.

The equilibrium level of income and interest rate is determined by the intersection of IS and LM curve. Any change in the factors on which IS and LM curve depends will shift the IS and LM curve.

Role of Fiscal policy

Fiscal policy is the use of government spending and taxation to influence the aggregate demand in the economy. In actual practice government



Notes

interventions in the form of fiscal policy are required to achieve the potential output, income, and employment objectives.

In a developing economy like India, government uses this policy to affect the aggregate demand in the economy in times of Inflation and recession. As per the requirements government increase and decreases it's spending and affects the aggregate demand.

Government purchases and government transfer payments act like increases in autonomous spending in their effects on equilibrium level of income. Here we will explain the effects of fiscal policy changes on the IS-LM model in the short run.

Effect of Government Expenditure

Government expenditure is one of the important tools of fiscal policy, in times of recession when the consumption and investment demand is low; increase in government expenditure will increase the planned expenditure in the economy so the production level in the economy increases and accordingly the level of income will rise to a higher level. Government expenditure on social security measures also increases the consumption demand in the economy and accordingly the demand in the economy will be raised at the higher level of income.

From the above discussion of the goods market, we have seen that a change in autonomous expenditure will shift the IS curve, and the level of income changes by the multiplier times the change in autonomous expenditure.

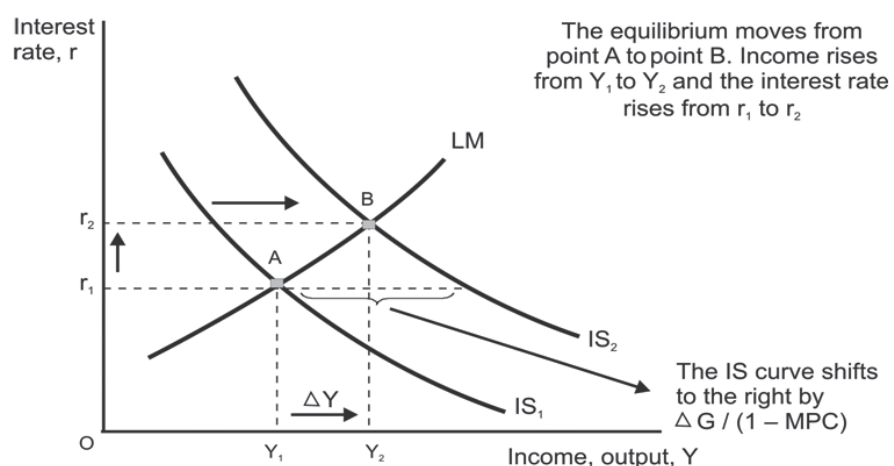


Figure 4.7: Effect of expansionary fiscal policy in IS-LM Model



If the government increases the expenditure, it will shift the IS curve from IS_1 to IS_2 as shown in the figure 4.7. Given the equilibrium in the money market as shown by the LM curve this increase in government expenditure increases the level of income at the given interest rate by the multiplier times the increase in government expenditure. This increase in income will lead to an increase in transaction demand for money and the interest rate will rise from r_1 to r_2 and the new equilibrium will be settled at B. At this new equilibrium, the rise in income will be less than the multiplier times the increase in government expenditure. The income increase at this point (B) is less, because the increase in transaction demand for money will increase the interest rate, and due to the increase in the interest rate the private investment was partially reduced and therefore the level of income was not increased by the multiplier times of the increase in government expenditure.

Effect of changes in Taxes

Taxes are an important instrument of fiscal policy. It is not only used to generate revenue for the government but also helps in controlling the consumption demand in the economy. If the government increases the tax rates on income, it will reduce the disposable income of individuals and they reduce spending on consumption, and accordingly, the production level was cut down by the firms.

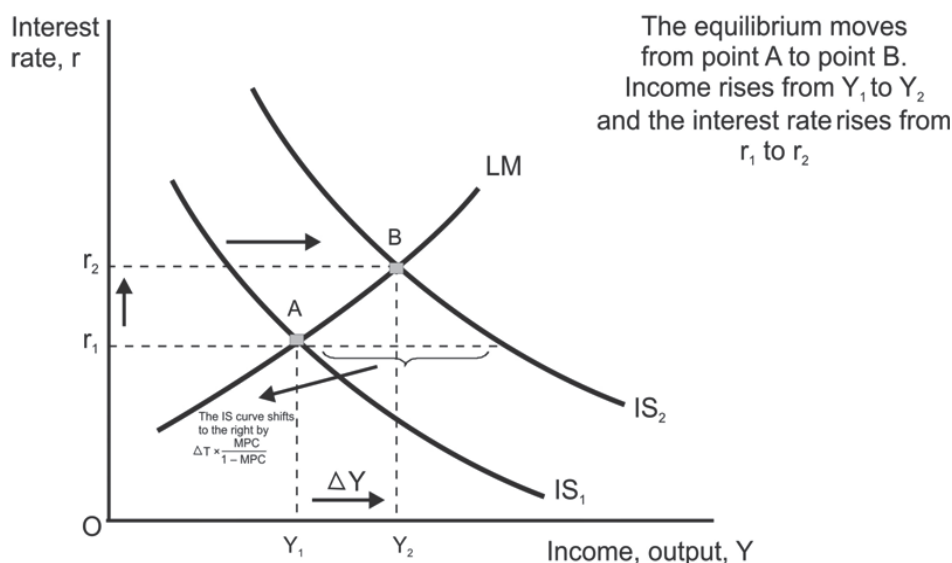


Figure 4.8: Effect of decrease in taxes in IS-LM Model



Notes

From the Figure 4.8 let us see the effect of tax reduction on the equilibrium point-A in the IS-LM model. Any decrease in tax rate will increase the disposable income of consumers and accordingly the level of income will increase by the multiplier times the decrease in taxes. From the figure, we can see the shift of IS curve from IS_1 to IS_2 . This will lead to an increase in the level of income and the interest rate. So this interest rate increase will partially offset the increase in income and the new equilibrium in the economy will be reached at point B, where the IS curve intersects the LM curve.

Role of Monetary policy

Monetary policy is an important instrument of macroeconomic policy by which macroeconomic objectives can be achieved. In India, the Reserve bank of India works on behalf of the government and acts as per the objectives decided by the government. Like fiscal policy, monetary policy is also used to achieve a full employment level of output, maintain price stability, and faster economic growth in an economy.

Monetary policy affects the demand and supply of money in the economy, first by affecting the interest rates and then by affecting the aggregate demand. In order to squeeze or expand the aggregate demand central bank use expansionary and contractionary monetary policy.

Monetary policy is used to maintain the equilibrium between the money demand and money supply in the economy. In the case of disequilibrium between money demand and money supply, it results in inflationary or deflationary tendencies in the economy. More specifically, in times of recession monetary policy used its tools in such a manner that an adequate amount of credit should be available to the household and business sector. On the other hand, in times of inflation monetary policy is used to contract the money supply or increase the interest rate by which the excess credit will be squeezed from the economy. It uses different instruments like open market operations and interest rate to curtail and increase money demand and money supply and accordingly the aggregate demand is managed in the economy.

Now we see the effect of expansionary and contractionary monetary policy on the equilibrium in IS-LM model. From Figure 4.9 we see the economy is in equilibrium at point-A where IS and LM_1 curve intersect.



Let the central bank increase the money supply with the given level of money demand in the economy, this excess money supply will bring down the interest rate, and at this reduced interest rate people demand more money for investment and accordingly the demand for consumption also increases. So due to the increase in interest rate, people demand more money for investment as well as for consumption until the excess supply of money is matched with an equal amount of money demand in the economy and the new equilibrium will be reached with the higher level of income (Y_2) and lower interest rate r_2 at point B, where the LM_2 curve intersects the IS curve. A decrease in money supply has the opposite effect on the equilibrium, the LM curve shifts leftward and the interest rate rises and the new equilibrium will be reached with a lower level of income.

The second factor responsible for a shift in the LM curve is the money demand or liquidity preference. If the demand for money increases with the given level of money supply, it will shift the LM curve towards the left and the new equilibrium is reached with a higher interest rate and with a lower level of income. Any decrease in money demand with the given supply of money will shift the LM curve rightward, and the new equilibrium will be reached with a lower interest rate with a higher level of income.

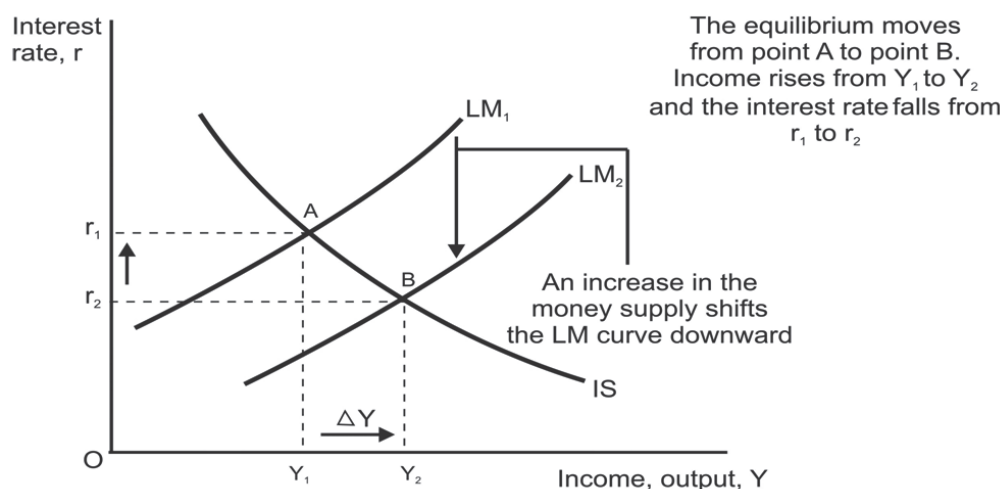


Figure 4.9: Effect of expansionary monetary policy in IS-LM Model

**IN-TEXT QUESTIONS**

1. The IS - LM model represent the _____ equilibrium of the economy
 - (a) General
 - (b) Partial
 - (c) Money market only
 - (d) Goods market only
2. The IS - LM model shows the _____ of the goods and money market
 - (a) Separation
 - (b) Integration
 - (c) Closure
 - (d) None of the above
3. _____ depends on the rate of interest and it is inversely related to interest rate
 - (a) Demand for money
 - (b) Investment
 - (c) Supply of money
 - (d) Production
4. The IS curve illustrates that when income increases, the:
 - (a) Interest rate must rise to restore equilibrium in the asset market
 - (b) Interest rate must fall to restore equilibrium in the goods market
 - (c) Interest rate must rise to restore equilibrium in the goods market
 - (d) Interest rate must fall to restore equilibrium in the asset market
5. The LM curve:
 - (a) Is vertical
 - (b) Slopes upward



(c) Is horizontal

(d) Slopes downward

6. The LM curve will shift down when the is vertical:

(a) Expected inflation declines

(b) Real money demand declines

(c) Nominal money supply declines

(d) Price level rises

7. A decrease in the nominal interest rate on money causes:

(a) The short run aggregate supply curve to shift up

(b) The aggregate demand curve to shift down and to the left

(c) The aggregate demand curve to shift up and to the right

(d) The short run aggregate supply curve to shift down

4.6 Summary

1. The IS curve shows the combinations of interest rates and levels of income at which the goods market in the economy is in equilibrium, and the LM curve shows the combination of interest rates and levels of income at which the money market is in equilibrium.
2. The integration of goods and money market in the short run is shown by the integration of IS and LM curves. The equilibrium in the economy is the point where both curves intersect at the given interest rate with the given level of income.
3. The effect of increase or decrease in money supply by the central bank affects the LM curve and it shifts the LM curve downward or upward accordingly. By this central bank affects interest rate and the level of income in the economy.
4. The change in fiscal policy affects the IS curve and the level of income and the interest rate in the economy. Increase and decrease in government expenditure shifts the IS curve rightward or leftward accordingly.



4.7 Answers to In-Text Questions

1. (a) General
2. (b) Integration
3. (b) Investment
4. (a) Interest rate must rise to restore equilibrium in the asset market
5. (b) Slopes upward
6. (c) Nominal money supply declines
7. (c) The aggregate demand curve to shift up and to the right

4.8 Self-Assessment Questions

1. What makes the demand for the economy's output of goods and services equal the supply?
2. Explain what happens to consumption, investment, and the interest rate when the government increases taxes.
3. Explain the difference between government purchases and transfer payments. Give two examples of each.
4. What determines consumption and investment demand?
5. Explain the roles of monetary and fiscal policy in causing and ending hyperinflations.

4.9 References

- ◆ N. Gregory Mankiw (2005), *Macroeconomics*, Worth Publisher, 41, Madison Avenue, New York.
- ◆ McConnel, C. R. & H. C. Gupta (1984), *Introduction to Macro Economics*, Tata McGraw-Hill Publishing Company Ltd., New Delhi.
- ◆ Ahuja H.L. (2008), *Macroeconomics Theory & Policy*, S. Chand & Company Ltd., Ram Nagar, New Delhi.
- ◆ Dwivedi D.N. (2007), *Macroeconomics Theory & Policy*, Tata McGraw-Hill Publication Company Ltd., Delhi.



4.10 Suggested Readings

Notes

- ◆ Mankiw, N. G. (2012). Principles of Macroeconomics (6th ed.). Cengage India.
- ◆ Moorthy, V. (2017). Applied Macroeconomics: Employment, Growth and Inflation. I K International Publishing House Pvt. Ltd.
- ◆ Moss, D. A. (2015). A Concise Guide to Macroeconomics: What Managers, Executives, and Students Need to Know (2nd ed.). Harvard Business School Press.
- ◆ Roy, S. (2017). Macroeconomic Policy Environment: An Analytical Guide for Managers (2nd ed.). McGraw Hill Education.



Inflation

Dr. Minesh Kumar Srivastava

Assistant Professor

School of Business Studies

Vivekananda Institute of Professional Studies –

Technical Campus, New Delhi

Email-Id: minesh.srivastava@gmail.com

STRUCTURE

- 5.1 *Learning Objectives*
- 5.2 *Introduction*
- 5.3 *Monetary Policy Committee (MPC)*
- 5.4 *Inflation*
- 5.5 *The Natural Rate Theory*
- 5.6 *Monetary Policy, Output and Inflation: Monetarist View*
- 5.7 *Output-Inflation Trade-off: Keynesian View*
- 5.8 *Evolution of the Natural Rate Concept*
- 5.9 *Summary*
- 5.10 *Answers to In-Text Questions*
- 5.11 *Self-Assessment Questions*
- 5.12 *References*
- 5.13 *Suggested Readings*

5.1 Learning Objectives

- ◆ Understand the meaning and types of Inflation.
- ◆ Establish the relationship between output, employment and inflation.
- ◆ Understand the monetarist view of economic growth.
- ◆ Determine the Phillips curve in the short-run and long-run.



5.2 Introduction

In this chapter, we will examine the different views on the connection between the levels of output and unemployment and the inflation rate. We will begin with the Monetary Policy Committee (MPC) followed by the meaning and types of inflation. We will understand how inflation is measured with the help of Consumer Price Index (CPI) and Wholesale Price Index (WPI). Then we will understand the theory of the natural rate of unemployment. Here, we will see the different shapes of the Phillips curve in the short-run and long-run. We will also study about the Keynesian views on the output-inflation trade-off.

5.3 Monetary Policy Committee (MPC)

Monetary policy is the central bank's (Reserve Bank of India) policy regarding the use of monetary instruments under its control to achieve specific goals. Price stability is critical for sustaining long-term growth, and the RBI's primary goal in monetary policy is to maintain price stability while keeping growth in mind. The MPC is established by the Government of India under section 45ZB of the RBI Act, 1934, as amended in 2016. The policy rate required to achieve the inflation target is determined by a six-member committee. The RBI Governor serves as the committee's ex-officio chairperson, while the deputy governor is in charge of monetary policy. In general, the government appoints members of this committee who have ability, integrity and standing, as well as knowledge and experience in economics, banking, finance or monetary policy.

The committee determines the benchmark interest rate, also known as the base or reference rate, which is used to determine other interest rates in India. Once every five years, the Central Government, in consultation with the RBI, sets the inflation target. The current inflation target that is to be maintained by the MPC is (4% + 2%). The committee's primary goal is to set the policy (repo) rate based on an assessment of the current and evolving macroeconomic situation, as well as to modulate liquidity conditions in order to anchor money market rates at or near the repo rate. Changes in the repo rate ripple through the money market to the



entire financial system, influencing aggregate demand. Please note that the decision of the MPC is binding on the Bank.

Policy Stances of the RBI

Generally, there are three policy stances that is used by the RBI in order to keep the price level stable.

Accommodative Stance: Under an accommodative stance the RBI expand the money supply in the economy to boost economic growth. MPC under an accommodative stance reduces the interest rates.

Neutral Stance: During a neutral stance the RBI can either cut the rate or increase the rate.

Hawkish Stance: This stance is adopted when the RBI's top priority is to keep inflation low. Under a hawkish stance, the RBI increases the interest rates to limit the money supply in the economy and thus reduce the aggregate demand.

5.4 Inflation

Inflation is defined as a long-term increase in an economy's general price level of goods and services. It is computed as the average change in the price of a basket of goods and services over time. It is calculated yearly, monthly and weekly. In an economy, inflation can occur for a variety of reasons. For example, when the supply of money exceeds the demand for it, a decrease in the production of goods and services in an economy, high expenditures on consumer goods, and so on can lead to inflation if they are not matched with their demand.

Types of Inflation and Causes of Inflation

Depending on the reason, inflation can be classed as Demand-Pull Inflation or Cost-Push Inflation.

Demand-Pull Inflation

Demand-pull Inflation occurs when total demand for goods and services grows faster than the economy's capacity to produce them. It causes a demand-supply mismatch, with increased demand and decreased supply, leading to higher prices. The reasons behind such type of inflation can be increased money supply, higher government spending or reduced taxes.



Cost-Push Inflation

Cost-Push Inflation is defined as an increase in the cost of manufacturing components such as labour, raw materials, and so on. Inflation occurs when the cost of production rises, forcing firms to raise the prices of goods and services in order to maintain profit margins.

Depending on the rate of price rise, inflation can be classified as low inflation, galloping inflation, hyperinflation and so on:

- ◆ Low inflation is a term that refers to a period of time when prices are rising slowly. It is also called creeping inflation.
- ◆ Crawling inflation is the situation when prices rise by less than 3% each year.
- ◆ Galloping inflation occurs when the economy's price level grows at double-digit each year. Galloping inflation is also known as jumping inflation or running inflation.
- ◆ Hyperinflation is the situation when the price rise is remarkably high and occurs over a short period of time. Germany witnessed such type of inflation after the First World War in the 1920s. Some recent examples of hyperinflation are Zimbabwe and Venezuela.

Measures of Inflation

The primary indicators used to measure the inflation rates in India are Consumer Price Index (CPI) and Wholesale Price Index (WPI).

Consumer Price Index (CPI)

The Consumer Price Index (CPI) measures the retail prices of a fixed "basket" of several thousand goods and services purchased by households. The CPI is an explicit price index in the sense that it directly measures movements in the weighted average of the prices of the goods and services in the market basket through time.

Wholesale Price Index (WPI)

The wholesale Price Index (WPI) is another widely used price index that measures the wholesale prices of approximately 3,000 items such as raw materials and semi-finished goods.



5.5 The Natural Rate Theory

As part of the monetarist system, Milton Friedman developed the theory of natural rates of unemployment and output. According to the natural rate theory, there is an equilibrium level of output and an accompanying rate of unemployment that is determined by the supply of production factors, technology and economic institutions (i.e., determined by real factors). Changes in aggregate demand cause the economy to temporarily deviate from its natural rate. For example, expansionary monetary policies temporarily raise output above the natural rate while temporarily lowering the unemployment rate below the natural rate. Prices would rise as a result of increased demand caused by such an expansionary policy. In the short run, the price adjustment would be incomplete, as opposed to the classical theory, in which increases in demand cause price increases but have no effect on output. Friedman did believe that in the long-run, equilibrating forces cause output and employment to return to their natural rates.

The government cannot use monetary policy to keep the economy permanently at a level of output that keeps the unemployment rate below the natural rate. It is not possible, at least not unless policymakers are willing to accept an ever-increasing rate of inflation. Friedman defined the natural rate of unemployment as the rate “*which has the property that it is consistent with equilibrium in the structure of real wage rates*”. As a result, the natural rate of unemployment will be such that labour demand equals labour supply at an equilibrium real wage, as shown in Figure 5.1. (a). The labour demand schedule in figure part (a) is the well-known marginal product of labour (MPN) schedule. At N^* , the natural rate of employment, labour demand is equated with labour supply, where we stipulate that the price level expected by labour suppliers is equal to the actual price level ($P^e = P$) when drawing the labour supply schedule, $N^s [W/(P^e = P)]$. Only at this level of employment does the real wage have no tendency to fluctuate. Labour supply and demand are equated. Furthermore, labour suppliers have a reasonable expectation of the price level. If this were not the case, labour supply would shift as workers realised their expectations were incorrect. The natural rate of unemployment can be found simply by subtracting those employed from the total labour force to find the number unemployed and then expressing this number



as a percentage of the total labour force. We can calculate the level of output that will result from an employment level N^* using the production function in Figure 5.1 (b). Y^* represents the natural level of output.

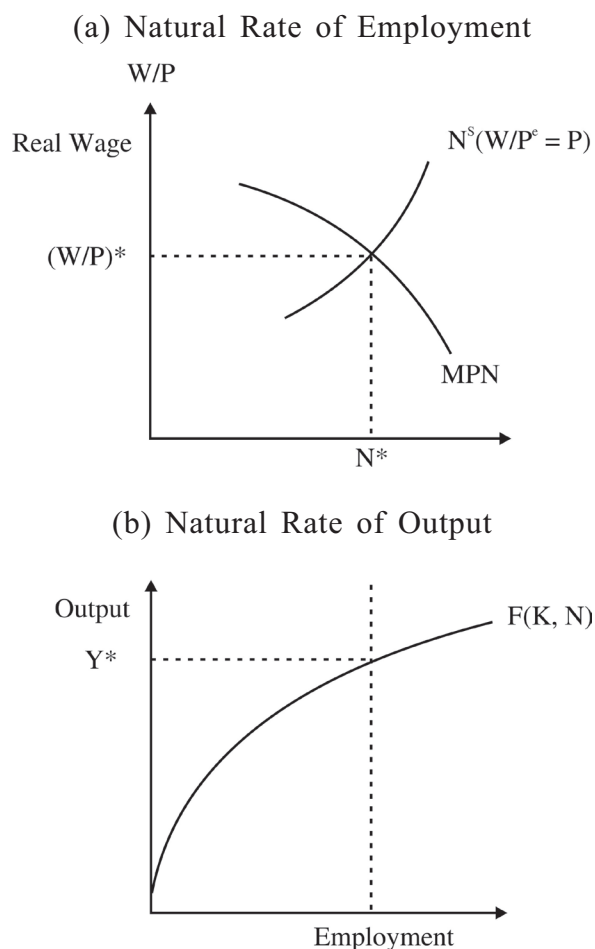


Figure 5.1: Natural Rates of Employment and Output

Figure 5.1 shows how the natural rates of output and employment are affected by the supply of production factors and technology (*i.e.*, supply-side factors). In monetarist theory, as in classical economics, the natural rates of output and employment are unaffected by aggregate demand. The difference between monetarist and classical theories is that the monetarist proposition holds that the economy is not necessarily operating at natural levels of employment and output in the short-run. Similarly, to the Keynesian model, labour suppliers in Friedman's model are unaware of the real wage. Their labour supply decisions must be based on the expected real wage (W/P^e). As a result, in the short-run,



the supply schedule in Figure 5.1 (a) may not provide labour supply, and P^e may not equal P . Employment and output will not be at their natural rates in this case.

IN-TEXT QUESTIONS

1. Monetary Policy Committee (MPC) decides the RBI's benchmark interest rates. (True/False)
2. Monetary Policy Committee (MPC) is a 9-member body including the Governor of RBI and is reconstituted every year. (True/False)
3. Monetary Policy Committee (MPC) functions under the chairmanship of the Union Finance Minister. (True/False)
4. _____ in the Marginal Standing Facility Rate is not counted as an expansionist monetary policy.
5. Which of the following is/are component/components of Monetary Policy?
 - (i) Bank rate
 - (ii) Open market operations
 - (iii) Public debt
 - (iv) Public revenue
 - (a) 1 only
 - (b) 2, 3 and 4
 - (c) 1 and 2
 - (d) 1, 3 and 4

5.6 Monetary Policy, Output and Inflation: Monetarist View

In this section, we will examine the monetarist view of the short-run and long-run effects of an expansionary monetary policy. Here, we will try to determine why in the short-run output and employment diverge from their natural rates, but will eventually return to these rates in the long-run.



Monetary Policy in the Short-Run

We begin with the economy operating at its natural rate of unemployment and output. Also, suppose that the money supply (and thus nominal income) has been growing at the same rate as real output. As a result, it is assumed that the price level has been stable for some time. Assume that the money supply rate is raised above the rate consistent with price stability. For example, the rate of money supply increases from 3% to 5%. Increases in the rate of growth of the money supply will push aggregate demand and as a result, nominal income.

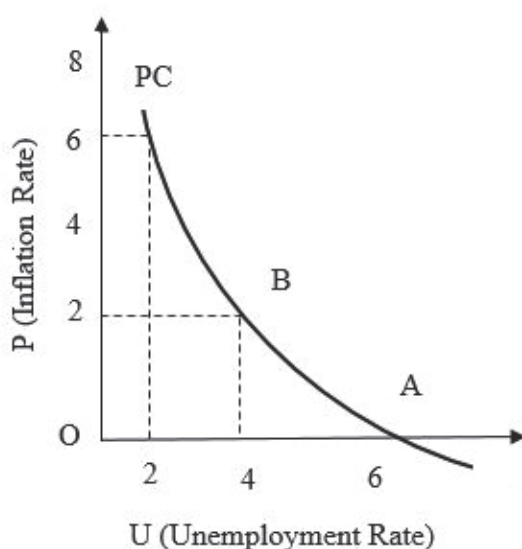


Figure 5.2: The Phillips Curve

Friedman describes the short-run consequences of this increase in aggregate demand as follows: To begin with, much or all of the increase in income will be in the form of increased output and employment rather than price increases. People have been anticipating price stability and prices and wages have been set to reflect that expectation for some time in the future. People need time to adjust to a new level of demand. Producers will tend to increase output in response to the initial increase in aggregate demand, employees will work longer hours, and the unemployed will take jobs now offered at former nominal wages. The Phillips curve is the standard doctrine to which Friedman refers.

The Phillips curve, as shown in Figure 5.2, is a negative relationship between the unemployment rate (U) and the inflation rate (P). High rates



of aggregate demand growth stimulate output, lowering the unemployment rate. Such rapid increases in demand cause an increase in the rate at which prices rise (*i.e.*, raise the inflation rate). As a result, the Phillips curve suggests a trade-off between inflation and unemployment. That is, lower unemployment rates are possible, but only at the expense of higher inflation rates. In the short-run, Friedman agrees that there is a trade-off between inflation and unemployment.

Monetary Policy in the Long-Run

The natural rate of unemployment is a distinguishing feature of Friedman's analysis of the long-run effects of monetary policy. In the preceding section, we examined the short-run effects of increasing the rate of growth of the money supply from 3% to 5%. According to Figure 5.2, the initial equilibrium had stable prices ($P = 0$) and unemployment equal to the natural rate, which was assumed to be 6%. (point A in Figure 5.2).

We assume that as the rate of growth in the money supply increases, the economy enters a new short-run equilibrium with unemployment reduced to 4% and inflation at 2% (point B). The policy of expansionary aggregate demand reduces unemployment below the natural rate. Friedman accepts this result, but it only describes the initial effects. Because product prices typically respond to an unexpected rise in nominal demand faster than factor of production prices. Real wages received have decreased while real wages anticipated by employees have increased because employees implicitly evaluated the wages offered at the earlier price level.

Indeed, the simultaneous fall ex-post in real wages for employers and rise ex-ante in wages for employees is what allowed employment to grow. However, the ex-post decline in real wages will soon have an impact on expectations. Employees will begin to consider rising goods and service prices and demand higher nominal wages in the future. Market unemployment is lower than the natural rate. Because there is an excess of labour, real wages will tend to rise towards their initial level.

Friedman observes that, in the short-run, product prices rise faster than factor prices, with the money wage being the most important factor price. As a result, the real wage (W/P) falls. This is required for output to increase because firms must adhere to the labour demand schedule depicted in Figure 5.1. Firms increase employment and output only when the real wage falls. Friedman does not contend that workers always follow the



labour supply schedule depicted in Figure 5.1. That schedule expresses labour supply as a function of the actual real wage, and Friedman makes no assumptions about workers' knowledge of the real wage.

Workers are assumed to evaluate nominal wage offers at the earlier price level in the short-run, following a period of stable prices. Prices have risen, but workers have not yet seen this rise, and if offered a higher money wage, they will increase labour supply, even if the increase in the money wage is less than the increase in the price level, (*i.e.*, even if the real wage is lower). In the short-run, labour supply expands because the ex-ante (or expected) real wage is higher due to the higher nominal wage and unchanged view of price behaviour. The fall in the ex-post (actual) real wage paid by the employer raises labour demand.

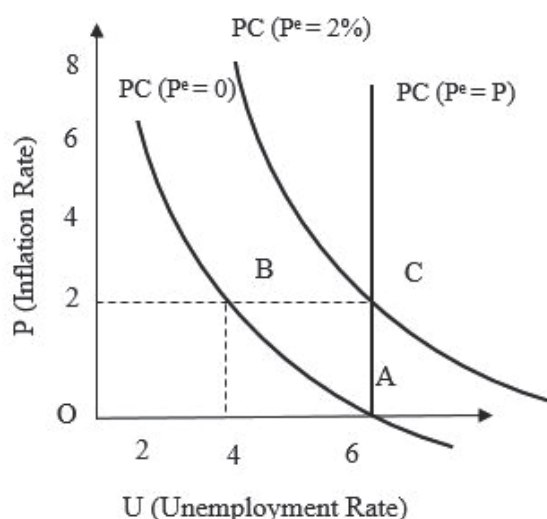


Figure 5.3: Short-run and Long-run Phillips Curve

As a result, unemployment may fall below its natural rate. This is a temporary situation, as workers will eventually notice the higher price level and demand higher money wages. According to Figure 5.1, the real wage has been pushed below $(W/P)^*$, the wage that clears the labour market once labour suppliers correctly perceive the price level and, thus, the real wage. At a lower real wage, an excess demand for labour pushes the real wage back up to its equilibrium level, and this rise in the real wage causes employment to return to the natural rate shown in Figure 5.1. Figure 5.3 depicts the implications of this long-run adjustment back to the natural rate for the Phillips curve. The short-run Phillips curve



Notes

from Figure 5.2 is represented by the schedule labelled PC ($P^e = 0$). The schedule is drawn explicitly for a given expected rate of inflation among labour suppliers, in this case stable prices ($P^e = 0$, where P^e is the expected rate of inflation).

We have already examined how an increase in the rate of growth of the money supply from 3% to 5% moves the economy from point A to point B in the short-run. As labour suppliers anticipate rising prices, the Phillips curve will shift to the right. Labour suppliers will demand a faster rate of increase in monetary wages, and as a result, a faster rate of inflation will now correspond to any given unemployment rate. If money growth remains at 5%, the economy will return to its natural 6% unemployment rate, but with a 2% inflation rate instead of the initial stable price level.

According to Figure 5.3, this long-run adjustment moves the economy from B to C. A policymaker who is dissatisfied with the return to 6% unemployment (the natural rate) may still pursue a target unemployment rate below the natural rate by increasing the rate of money supply growth. Assume that the policymaker raises the money supply growth rate from 5% to 7% this time. Figure 5.4 depicts the effects of this additional expansion of aggregate demand. Employment will grow until labour suppliers anticipate further increases in the inflation rate. The economy will reach a point, such as D in Figure 5.4, where unemployment is lower than the natural rate. After a while, labour suppliers will begin to anticipate higher inflation, which corresponds to a 7% increase in the money supply.

The short-run Phillips curve will shift to the PC ($P^e = 4\%$) schedule, and the economy will return to its natural rate of unemployment, with inflation rising to 4%. (7 per cent money growth minus 3 per cent growth in real income). We move from point D to point E in Figure 5.4. If policymakers continue to try to “peg” the unemployment rate, money supply growth will accelerate, perhaps to 9%. This increase will move the economy to point F in the short-run, but to point G in the long-run, with even higher inflation. Eventually, policymakers will conclude that inflation has become a more serious problem than unemployment (or that unemployment will be replaced by inflation).



However, when inflation persists for a long period of time, inflationary expectations become embedded in the system. Expansionary aggregate demand policies, such as point G in Figure 5.4, have raised the expected (and actual) inflation rate to 6%. (9 per cent money growth minus 3 per cent growth in real income). An attempt to reduce inflation by slowing the rate of growth in the money supply, say, all the way back to the initial non-inflationary 3 per cent, will not immediately return the economy to the initial point A.

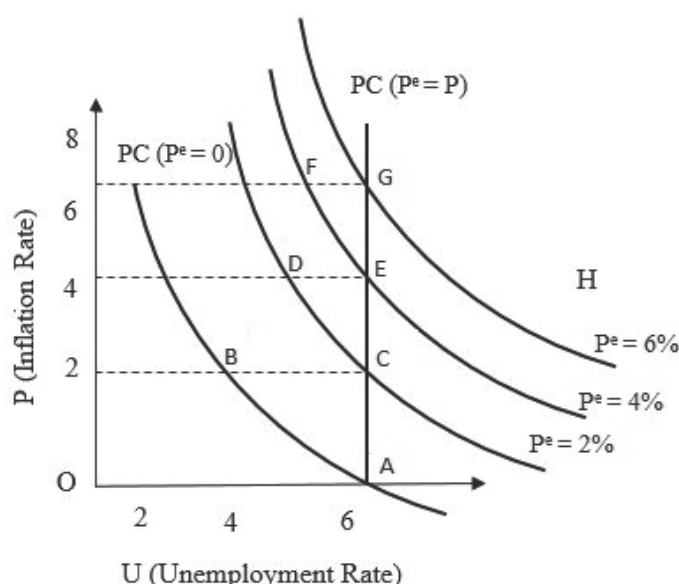


Figure 5.4: Effect of an Attempt to Peg the Unemployment Rate

In the short-run, we would move along the short-run Phillips curve, which corresponds to an expected inflation rate of 6%, to a point like H in Figure 5.4, where inflation is high and unemployment is above the natural rate. It took time for labour suppliers to recognise that the rate of inflation had increased and, as a result, to demand a faster rate of growth in money wages, and it will take time for them to recognise that the rate of inflation has slowed and to modify their money wage demands to a level compatible with price stability. Meanwhile, according to monetarists, the economy must suffer from high inflation and high unemployment.

Friedman believed that expansionary monetary policy could only temporarily reduce unemployment below the natural rate. Only in the short-run is there a trade-off between unemployment and inflation. The



downward-sloping short-run Phillips curves drawn for given expected inflation rates in Figures 5.3 and 5.4 illustrate the short-run trade-off between unemployment and inflation. Figures 5.3 and 5.4 show that the long-run Phillips curve, which depicts the relationship between inflation and unemployment when expected inflation has had time to adjust to the actual inflation rate ($P = P^e$) (i.e., when inflation is fully anticipated), is vertical.

5.7 Output-Inflation Trade-Off: Keynesian View

The natural rate of unemployment theory of Friedman explains both the short-run and long-run relationship between inflation and unemployment. In this section, we will look at how the Keynesian view of the Phillips curve differs from the natural rate view. We'll see how Keynesian economists defend activist policies that affect output and employment if the natural rate theory is correct and such policies only have a short-term effect on output and employment.

The Phillips Curve: Keynesian View

The Keynesians' view of the relationship between the rate of inflation and the levels of employment and output is directly related to their theory of how prices and output are determined.

The Short-Run Phillips Curve

Figure 5.5 depicts the impact of expansionary monetary policy actions on price, output, and employment. The money wage is flexible, and labour supply is assumed to be determined by the expected real wage (W/P^e), which is calculated by dividing the money wage by the expected price level. An expansionary aggregate demand policy in the Keynesian system could be a monetary policy action, such as an increase in the rate of growth in the money supply, as discussed in the preceding section, or it could be a fiscal policy action, such as an increase in government spending. In either case, the policy will cause a series of shifts in aggregate demand, as illustrated in Figure 5.5 (a). It can be seen that these increases in aggregate demand will increase output (from Y_0 to Y_1 , to Y_2 , then to Y_3) and employment (from N_0 to N_1 , to N_2 , then to N_3), and the price level (from P_0 to P_1 , to P_2 , then to P_3).



The unemployment rate will fall as employment rises. The level of money wage will rise. These findings can be explained using the Phillips curve relationship. The faster aggregate demand grows, the larger the rightward shifts in the aggregate demand schedule, and the faster the rate of growth in output and employment. For a given increase in labour force, this implies a lower unemployment rate and a faster rate of aggregate demand growth. As shown in Figure 5.5 (a), increases in aggregate demand cause the price level to rise.

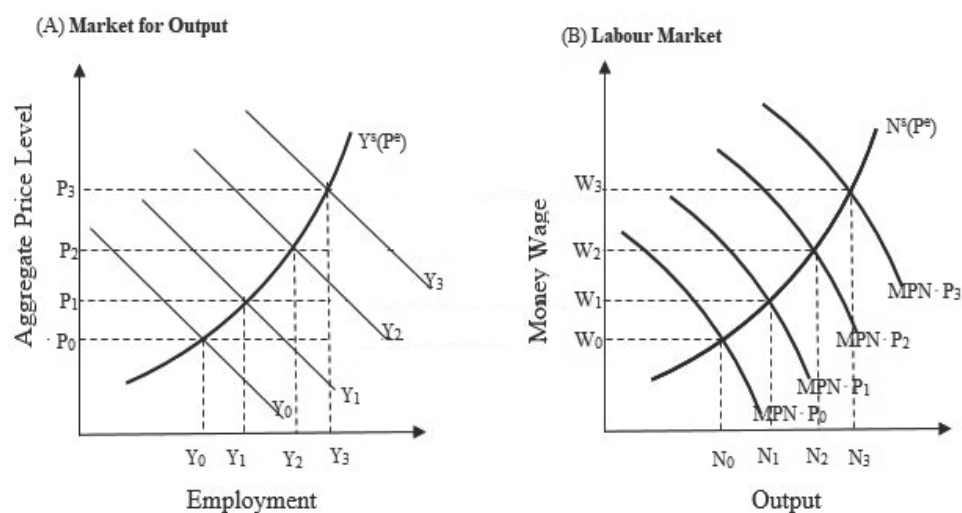


Figure 5.5: Short-run effects of Expansionary Policy in the Keynesian Model

The Keynesian model suggest a trade-off between inflation and unemployment. High rates of growth in aggregate demand correspond to low levels of unemployment and high rates of inflation. Slower growth in aggregate demand implies a lower inflation rate but a higher rate of unemployment. The Phillips curve in the Keynesian model is downward sloping. It is to be noted that so far we have held the expected price level constant. We are considering the effects of increases in demand in the short-run.

We know that Keynesians believe that the expected price level is primarily determined by past price behaviour. As a result, as the actual price level rises in successive periods, so will the expected price level. We must account for the effects of such increases in the expected price level in the long-run. Because we did not do so in Figure 5.5, our results and



Notes

the resulting Phillips curve relationship are limited to the short-run. To emphasize their relevance in the short-run, we have labelled the labour supply schedule $N^s(P_0^e)$ and the aggregate supply schedule $Y^s(P_0^e)$ with the initial value of the expected price level. In Figure 5.6, we marked the Phillips curve implied from Figure 5.5 as the short-run Phillips curve, $PC_{\text{Short-run}}$.

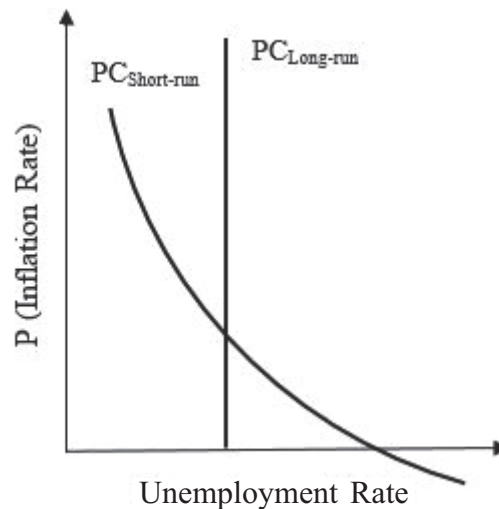


Figure 5.6: The Phillips Curve: Keynesian Approach

The Long-Run Phillips Curve

The expected price eventually adjusts to the actual price in the long-run. Labour suppliers perceive inflation as a result of the expansionary aggregate demand policy. Figure 5.7 depicts the long-run adjustment of output and employment in response to an increase in aggregate demand. We've already established that in the Keynesian system, labour supply is determined by the expected real wage:

$$N^s = t(W/P^e)$$

Where the effect of the monetary wage on labour supply is positive and the effect of an increase in expected price is negative. The labour supply schedule in Figure 5.5 (b) shifts to the left as the expected price rises. Because a given money wage (W) corresponds to a lower expected real wage (W/P^e) after an increase in the expected price level, less labour will be supplied at any money wage (W). Figure 5.7 (b) depicts this shift in the labour supply schedule (b). The labour supply schedule shifts to N^s



(P_1^e), to $N^s(P_2^e)$, then to $N^s(P_3^e = P_3)$ as the expected price level rises to P_1^e , to P_2^e , and then to P_3^e .

The level of employment for any given price level decreases as the labour supply schedule shifts to the left. On a given labour demand schedule, we move back up (which is drawn for a given price level). Any increase in expected price reduces employment at any price level and, as a result, reduces output supplied at any price level. With each increase in expected price, the aggregate supply schedule shifts upward to the left, reflecting the decrease in output supplied at a given price level. Figure 5.7 (a) depicts these changes in the supply schedule. The labour supply and aggregate supply schedules continue to shift to the left until the expected and actual prices match. Figure 5.7 depicts the long-run equilibrium position, where the labour supply schedule is $N^s(P_3^e = P_3)$ and the aggregate supply schedule is $Y^s(P_3^e = P_3)$.

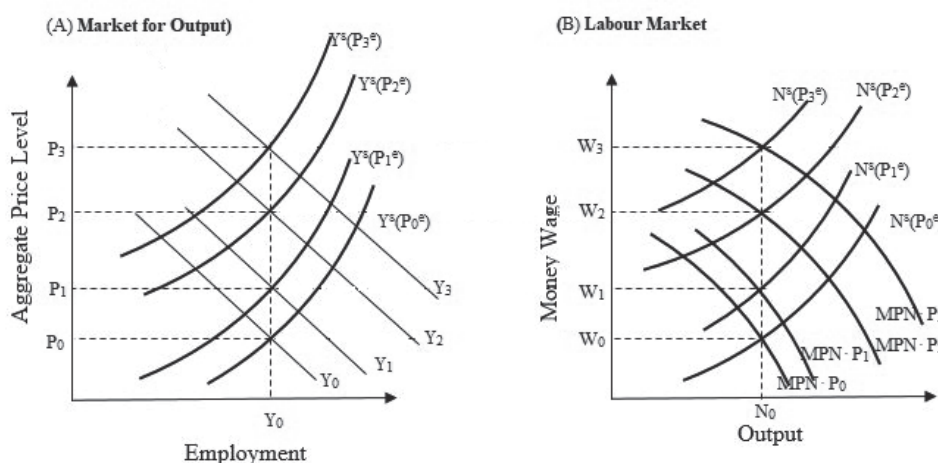


Figure 5.7: Long-run effects of Expansionary Policy in the Keynesian Model

At this point, income and employment have returned to their initial levels, Y_0 and N_0 , respectively. This must be the case because output and employment can be maintained above Y_0 and N_0 only if the expected price is less than the actual price—that is, if labour suppliers underestimate inflation. When labour suppliers correctly perceive price increases, they will demand wage increases proportionate to the price increase. The real wage will have returned to its initial level ($W_3/P_3 = W_0/P_0$) at this point. Both labour supply and labour demand will have returned to their initial



levels. As a result, employment and output will remain at their initial N_0 and Y_0 levels. An increase in aggregate demand boosts output and employment, lowering the unemployment rate only in the short-run. The long-run Phillips curve is vertical in both the Keynesian and Friedman views, as illustrated in Figure 5.6.

5.8 Evolution of the Natural Rate Concept

Milton Friedman developed the concept of natural rates of output and unemployment to highlight the limitation of monetary policy. Monetary policy could not permanently reduce unemployment below the natural rate without causing an ever-increasing rate of inflation. Since Friedman proposed the concept, much has been written about what determines the natural rate and what that value is for different countries.

Determinants of the Natural Rate of Unemployment

Friedman addressed the question of what determines the natural rate of unemployment. As previously stated, the natural rate is the rate that is consistent with an equilibrium real wage. Within our labour market model, this is simply an equilibrium between labour supply and demand, assuming that labour suppliers correctly estimate the price level. Friedman contended that in the real world, the natural rate would be the rate “ground out” by an equilibrating process that would also be influenced by “*the actual structural characteristics of labour and commodity markets, including market imperfections, stochastic variability in demands and supplies, the cost of gathering information about job vacancies and labour availabilities, the cost of mobility, and so on.*”

These additional characteristics are thought to influence the levels of frictional and structural unemployment. Low labour mobility in a country, for example, might be expected to lead to a higher natural rate of unemployment because workers would be slow to follow as demand shifted from one region of the country to another. Poor job-vacancy information may also lead to a higher natural rate of unemployment, as workers take longer to find initial jobs or move between jobs. According to Friedman, the natural rate in each country is determined by the structural characteristics of its commodity and labour markets.



5.9 Summary

Inflation is defined as the continuous rise in the prices of goods and services over time. Inflation reduces the value of money, it encourages people to spend and stock up on commodities that depreciate more slowly. It lowers borrowing costs and lowers unemployment. Inflation can be classified into several types depending on the pace of price rise such as, hyperinflation, galloping inflation, cost-push inflation, demand-pull inflation, stagflation and so on. The Consumer Price Index and the Wholesale Price Index are the two most commonly used measures of inflation in India.

The natural rates of unemployment and output developed by Milton Friedman has been highly influential. It shows the trade-off between unemployment and the rate of inflation. It also provides a useful framework for policy measures even if there is considerable uncertainty about its exact magnitude. It is crucial to understanding the long-term connections between output, unemployment and inflation. In this chapter, we have examined the monetarist claim that fluctuations in output and employment are primarily caused by short-term changes in the money supply. However, the monetarists place a limitation on the real effects of changes in the money supply. In the long-run, the influence of money supply is primarily on the price level and other nominal magnitudes. In the long-run, real factors, not monetary ones, determine real variables like real output and employment.

5.10 Answers to In-Text Questions

1. True
2. False
3. False
4. Increase
5. (c) 1 and 2



5.11 Self-Assessment Questions

1. Explain the difference between Friedman's views on monetary policy in the short-run and in the long-run.
2. What is a Phillips curve? Explain with the help of a diagram the different shapes of Phillips curve in the short-run and in the long-run.
3. What is a monetary policy? List the various instruments used by the central bank to bring stability in the money market.
4. Why Monetary Policy Committee (MPC) is essential for Indian economy?
5. What are the various policy stances used by the RBI?
6. Explain how Monetarist view is different from the Keynesian view on the relationship between real output (or employment) and aggregate demand.

5.12 Reference

- ◆ Friedman, Milton (1971) *The Role of Monetary Policy*, p. 11.

5.13 Suggested Readings

- ◆ Froyen, R. P. (2011): *Macroeconomics-theories and policies* (8th Edition). Pearson.
- ◆ Dornbusch and Fischer (2010): *Macroeconomics* (9th Edition). Tata McGraw Hill.
- ◆ Gregory Mankiw (2010). *Macroeconomics* (7th Edition). Worth Publishers.



Balance of Payment and International Trade

Dr. Manju Kumari
Assistant Professor
Amity University, Noida
Email-Id: drtyagimanju@gmail.com

STRUCTURE

- 6.1 *Learning Objectives*
- 6.2 *Introduction*
- 6.3 *Balance of Payment*
- 6.4 *Market for Foreign Exchange and Exchange Rate*
- 6.5 *Monetary and Fiscal Policy in Open Economy*
- 6.6 *Mundell Fleming Model*
- 6.7 *Summary*
- 6.8 *Answers to In-Text Questions*
- 6.9 *Self-Assessment Questions*
- 6.10 *References*
- 6.11 *Suggested Readings*

6.1 Learning Objectives

- ◆ Students are able to understand the meaning of balance of payment and different accounts in the balance of payment.
- ◆ Students are able to understand the difference between the balance of trade and the balance of payment.
- ◆ Students are able to understand the concept of the foreign exchange market and various types of exchange rates in the foreign trade market.



- ◆ Students are able to understand the open economy and various types of monetary and fiscal tools an open economy.
- ◆ After studying Mundell flaming model students are able to understand the relationship between an economy's nominal exchange rate, interest rate, and output.

6.2 Introduction

In today's modern world, there is hardly any nation that is able to produce all goods and services it require. Every nation imports those goods from another nation which are not produced in its nation or production cost is much more as compared to the other country and export all those goods to another country which the other country is not able to produce or production cost is high in the other country.

The exchange rate is also important in international trade. In international trade currency of one country is exchanged for another country by using an exchange rate. There are various types of exchange rates used in international trade.

6.3 Balance of Payment

Balance of payment is one of the essential indicators of the international trade of a nation, which has a direct impact on the economic policy of the government. Every country prefers to have a favourable balance of payment. Different types of regulation of import and export are determined by the balance of payment position of a nation. Balance of payment is the statement which keeps a systematic record of economic and financial transactions of a nation with the rest of the world over a given period.

6.3.1 *Meaning of Balance of Payment*

Balance of payment statement is a systematic record of the financial and economic transactions between residents of one country with other countries during a specific period of time. It keeps the record of various external economic transactions of an economy.



According to Kindle Berger, “The balance of payment of country is a systematic record of all economic transactions between the residents of the reporting country and residents of foreign countries during a given period of time.”

According to Reserve Bank of India, “The balance of payment of a country is a systematic record of all economic transactions between the residents of the reporting country and residents of foreign countries during a given period. It presents the classified record of all receipts on account of goods exported, services rendered, and capital received by residents and payments made by them on account of goods imported and services received from the capital transferred to non-residents or foreigners.”

6.3.2 Features of Balance of Payments

- (a) It is a systematic record of the financial and economic transactions between one nation with rest of the world.
- (b) All visible and invisible transactions are recorded in balance of payment.
- (c) It is an annual statement.
- (d) This statement is based on double entry book keeping. It records all receipts on credit side and all payments on debit side.

6.3.3 Structure of Balance of Payments

The followings are the components of balance of payment:

- (a) Current Account
- (b) Capital Account
- (c) Reserve Account
- (d) Errors & Omission

(a) Current Account

- ◆ All visible and invisible imports and exports of goods are recorded in current account of balance of payment. The result of transaction recorded in current account of balance of payment can be deficit or surplus.



Notes

- ◆ Imports and exports of goods and services, profit, interest, dividend and unilateral payments/receipts are recorded in balance of payment.

(b) Capital Account

- ◆ Capital account is the account which record all the transaction related to short-term and long-term inflow and outflow of funds.
- ◆ It records data related to outflow and inflow of short-term lending or borrowing, portfolio investment, other short term and long-term investments.
- ◆ It reflects the overall change in the stock of liabilities and assets among members of one country and rest of the world.
- ◆ The result of transaction recorded in capital account of balance of payment can be deficit or surplus.

(c) The Reserve Account

- ◆ Reserve account includes International Monetary Fund (IMF), Special Drawings Right (SDR), Monetary gold etc.
- ◆ IMF includes purchase and re-purchase from International Monetary Fund.
- ◆ Special Drawing Right also called paper gold issued by IMF to its member country. SDR used to make payment between two different countries.

(d) Error & Omissions

- ◆ It includes lag and leads in reporting of transactions.
- ◆ It is used to balance the understated and overstated components.

Format of Balance of Payment

Receipt (Credits)	Payments (Credits)
1. (a) Exports of Goods	1. (b) Imports of Goods
Trade Account Balance	
2. (a) Export of Services	2. (b) Import of Services
3. (a) Interest, Profits and Dividend Received	3. (b) Interest, Profits and Dividend Paid
4. (a) Unilateral Receipts	4. (b) Unilateral Payments
Current Account Balance = (1a +2a+3a+4a) – (1b+2b+3b+4b)	



Receipt (Credits)	Payments (Credits)
5. (a) Foreign Investments	5. (b) Investment Abroad
6. (a) Short-Term Borrowing	6. (b) Short-Term Lending
7. (a) Medium and Long-Term Borrowing	7. (b) Medium and Long-Term Lending
Statistical Discrepancy (Errors and Omissions)	
Capital Account Balance = (5a +6a+7a) – (5b +6b+7b+8)	
9. Change in Reserves (+)	9. Change in Reserves (-)
Total Receipts = Total Payments	

6.3.4 Key features of Indian Balance Payment

- ◆ India's current account of balance of payment showed deficit of 3.3 % of Gross Domestic product in H1: 2022-23.
- ◆ In H1: 2022-23 Net invisible receipts were higher on a y-o-y basis on account of higher private transfer and services.
- ◆ Foreign exchange reserve depleted by USD 25.8 billion in H1: 2022-23.

Data Source: RBI Press Release 2022-23/1453

6.3.5 Difference between Balance of Payment and Balance of Trade

Balance of Payment	Balance of Trade
1. Balance of trade is a part of balance of payment. Therefore, it is broader as compared to balance of payment.	1. It is a narrow term as compared to balance of payment.
2. It take into consideration invisible, visible and capital transfer.	2. It takes into consideration only visible items.
3. It is theoretically always in balance <i>i.e.</i> , both debit and credit side are equal.	3. Its balance can be unfavourable and favourable.
4. Foreign lender condition, government policy for economic transactions etc. affect balance of payment.	4. Raw material availability, cost of production, exchange rate etc. affect balance of trade



6.3.6 Disequilibrium in Balance of Payment

- (i) **Cyclical Fluctuation:** The faces and amplitude of balance of payment will create disequilibrium in balance of payment.
- (ii) **Decrease/Increase in Export:** An increase in the domestic production of raw material, food stuff, substitute goods etc. will increase the export of all such goods because country has sufficient production to fulfil domestic demand as well as international demand. This situation creates a positive impact on balance of payment. But if domestic production of raw material, food stuff, substitute goods etc. is decreasing then it decreases the export and create negative impact on balance of payment. So, both the situation create disequilibrium in balance of payment.
- (iii) **Economic Development:** A developing country like India need foreign investment for development purpose. This also creates disequilibrium in balance of payment because for industrialisation the import of country increases.
- (iv) **Rapid increase in population:** If the population of country increases and production of country increase less than the rate of increase in population then that country will import goods from other counties to fulfil the basic needs of resident of country. This creates disequilibrium in balance of payment due to excess import.
- (v) **Huge external borrowings:** If a country is borrowing from another country to meet the financial requirement for country, then there is heavy outflow in the form of interest of that particulars borrowing. It also creates disequilibrium in balance of payment.

IN-TEXT QUESTIONS

1. If the import of goods is more than the export of goods then the difference between import and export is called _____.
2. In the calculation of the balance of trade import and export of goods and services is used. (True/False)
3. Special Drawings rights are issued by _____.
4. Current account of the balance of payment record payment of interest on international debt and receipt of interest on international debt. (True/False)



6.4 Market for Foreign Exchange and Exchange Rate

The first foreign exchange market was set up at Amsterdam 500 years ago. Through foreign exchange market people try to stabilised foreign exchange rate in international market. Bretton wooden system was used by all the countries of the world after Bretton wooden system. According to this system all the currencies are pegged with respect to USD and later it is backed by gold reserve. Gold standard is completely abolished in 1973 and stop backed USD in gold reserve. After this foreign exchange become free floating system. Now it is country wish to pegged or unpegged its currency with respect to other country currency.

Due to globalisation most modern economies are open economies. In case of international business investment and trading is done in the currency of different countries. So, it is necessary to understand the foreign exchange market.

6.4.1 Definition of Foreign Exchange Market

Foreign exchange market is the market where buying and selling of foreign currency takes place. Exchange rate is the price of one currency in term of another currency in foreign exchange market. Brokers, central bank and commercial bank are the participants in foreign exchange market. It is the duty of the central bank to monitor the sentiments and movements in the market and intervene through government policy accordingly. In India Reserve Bank of India (RBI) does this job. Singapore, Paris, Tokyo, London, New York, Hong Kong etc. are major commercial centre. Foreign Exchange department of most of the banks are connected 24-hour basis with other countries.

6.4.2 Function of Foreign Exchange Market

- ◆ It transfers the purchasing power across different countries which facilitate international investment and trade.
- ◆ The prices of various currencies with respect to other currencies are determined here.



- ◆ It gives facility to investors to minimise or hedge their risk in international transactions.
- ◆ Due to foreign exchange market trades are able to arbitrage inequalities in international market.

6.4.3 Types of Exchange Market

- (i) **Spot Market:** Spot market is the market in which all the transactions taken place immediately. In this type of market all the receipts and payments are done immediately. It covers the large portion of the foreign exchange market which include individuals and financial institutions who deal in foreign exchange. The exchange rate in this market is called spot exchange rate or current exchange rate.
- (ii) **Forward Market:** It is the market in which buying and selling of foreign currency is done at a rate that is agreed upon for future date. The exchange rate decided in this market is called forward market rate. In case of international business, the exchange rate is decided at the time of contract of sale/purchase and exchange is done on the future date when goods are delivered to the buyer. It is very useful rate for all the parties involved in international trade. Forward market is used for hedging the risk in foreign trade.
- (iii) **Future Market:** Forward market and future market are similar because in both the market future date exchange rate is decided at present. The only difference is that future market is regulated market and all the trade conducted on stock exchange. On the other hand, forward market is not regulated.

6.4.4 Types of Foreign Exchange Rate

- (a) Fixed exchange rate or Pegged exchange rate system
 - (b) Flexible exchange rate system
 - (c) Managed Floating Exchange rate
- (a) Fixed exchange rate or Pegged exchange rate system**
- ◆ Fixed exchange rate or Pegged exchange rate system is the system in which two or more-weak currency is pegged with strong currency.



- ◆ This rate is not depended on market forces.
- ◆ It is decided by the central bank or government of country.
- ◆ To maintain a stable exchange rate central bank or government of country purchases and sells foreign exchange. Both purchase foreign exchange when there is increase in foreign exchange and sell foreign exchange when there is excess demand for foreign exchange.

Advantage of Fixed exchange rate

The followings are the advantage of foreign exchange rate:

1. It creates stability in foreign exchange markets and provides a favourable situation to do foreign trade.
2. It protects the market from fluctuations and creates stability in the value of currency.
3. Stability in foreign exchange rate promote foreign investment in country.
4. It controls inflation rate in an economy.

Disadvantage of Fixed exchange rate

The followings are the disadvantage of foreign exchange rate:

1. It is necessary to maintain foreign reserves to create stability in an economy.
2. There is lack of flexibility in the market that is needed to bounce back in case of economic shock.

(b) Flexible exchange rate system

Flexible exchange rate systems depends on the market demand and supply of various currencies. It is also called floating exchange rate. In this system there is no role of central bank of country and Government to create stability in the market. Demand and supply of various currencies automatically create balance in the international market.

Advantage of Flexible exchange rate

The followings are the advantage of flexible exchange rate:

1. It is not necessary to maintain foreign reserves.
2. Deficit and surplus in balance of payment are automatically corrected in this system.

**Disadvantage of Flexible exchange rate**

The followings are the disadvantage of flexible exchange rate:

1. It leads to Speculation in the international market.
2. Sometime the fluctuation in exchange rate is very high which creates issues in the movement of capital between countries and it also affect the foreign trade.
3. There is no motivation for foreign investment and trade due to frequent fluctuation in the exchange rate.

(c) Managed Floating Exchange rate:

Managed Floating Exchange rate is the system in which combination of fixed exchange rate and flexible exchange rate is used. Under this system central bank of a country intervenes to create stability in foreign exchange market by selling and purchasing foreign exchange.

6.4.5 Determinant of Foreign Exchange Rate

- (i) Purchasing power parity:** Inflation rate in two different countries affect the exchange rate. If in domestic country inflation rate is high the we can say that domestic good is costly as compared to foreign goods. This will increase the imports of country, which in turn will increase the demand for foreign currency. Excess demand for foreign currency will increase the exchange rate and hence will decrease the value of foreign currency.
- (ii) Balance of payment position:** Balance of payment of a country will impact the foreign exchange rate. If there is deficit in the balance of payment of any country it will decrease the value of domestic country because more foreign currency is required to make payment to other country and if balance of payment represent surplus, then it enhances the value of domestic currency. Therefore, appreciation and depreciation of currency and exchange rate also depend on balance of payment of any country.
- (iii) Government intervention:** Exchange rate also depend on government and central bank of country intervention. If government and central bank purchase foreign exchange, exchange rate will not fall and if they sell foreign exchange then exchange rate will not rise and



there is stability in foreign exchange market. However if government does not intervene the exchange rate is decided by the demand and supply of various currencies in the market.

- (iv) **Market expectation:** The future expectation about inflation, taxes, inflation, balance of payment also affect the exchange rate in international market.

IN-TEXT QUESTIONS

5. In international trade government is able to manage fixed exchange rates. (True/False)
6. _____ is the market in which all the transactions take place immediately.
7. The first foreign exchange market was set up at _____ 500 years ago.
8. In India, _____ appointed money changers and authorized dealers who perform the function of buying and selling foreign currency.
9. Future Market is the regulated market. (True/False)

6.5 Monetary and Fiscal Policy in Open Economy

There are two types of economy *i.e.*, open economy and close economy. Close economy is the economy which does not have any relation with other countries and open economy is the economy which has relation with other countries. Almost every country of world has open economy system, if there is close economy then there is no problem of deficit and surplus in balance of payment because balance of payment only record transaction between home country with rest of the world. But in today scenario each and every country has trade with rest of the world therefore each country has to create balance in its balance of payment and try to create surplus for creating favourable situation for their economy.

Each and every economy want to create stability in its economy. For this purpose, various types of tools and techniques are used like the fiscal and monetary policy.



6.5.1 Monetary Policy

It is related to money supply and credit in the economy. The methods used by centre bank of India to expand credit and contract credit in the economy is called monetary policy. In India Reserve Bank of India is called the Central Bank of India which formulates monetary policy. In international business, monetary policy plays an important role. If RBI change interest rate by using monetary policy, then it also will affect demand and supply in the foreign exchange market. It will also change import and export of goods and services. The change in monetary policy in one country will also have positive or negative effect on another country. For example, change in monetary policy of United States also have effect on India.

Tools of monetary Policy

Tools of monetary policy classified into two categories:

- I. Quantitative Tools
- II. Qualitative Tools

I. Quantitative Tools

- (a) **Cash Reserve Ratio (CRR):** Cash reserve ratio is the percentage of commercial bank deposit which they keep with RBI. When RBI wants to increase the money supply in the market then it will decrease the cash reserve ratio and if it wants to decrease the money supply in the economy then increase the cash reserve ratio.
- (b) **Statutory Liquidity Ratio (SLR):** Statutory liquidity ratio is the percentage of deposit that the commercial banks maintain in the form of cash, gold and other securities. When RBI want to increase the money supply in the market then it will decrease the Statutory liquidity ratio and if it wants to decrease the money supply in the economy the increase the Statutory liquidity ratio.
- (c) **Repo Rate:** Repo rate is the rate at which Reserve Bank of India provide credit to various commercial banks. When RBI want to increase the money supply in the market then it will decrease the Repo rate and if it wants to decrease the money supply in the economy then increase the Repo rate.



- (d) **Reverse Repo Rate:** Reverse Repo Rate is the rate at which Reserve Bank of India takes loan from commercial bank. When RBI want to increase the money supply in the market then it will increase the Repo rate and if it wants to decrease the money supply in the economy then decrease the Repo rate.
- (e) **Open market operation:** Open market operation is the process by which Reserve Bank of India sells government and other approved security to commercial bank and purchasing the same from commercial bank. When RBI wants to decrease the money supply in the market then it will start selling securities and if it wants to increase the money supply in the economy it will start purchasing security.

II. Qualitative Tools

- (a) **Regulation of marginal requirement:** Various commercial bank provide loan through mortgage. The difference between the mortgaged asset and loan amount is called margin. If Reserve Bank want to increase the money supply, then it reduces the marginal requirement and if want to decrease the money supply then increase the marginal requirement.
- (b) **Credit rationing:** Credit rationing is also one of the ways to control money supply by RBI. Some time to control money supply RBI give instruction to commercial bank to provide credit for some specific purposes only and also decides the ceiling of loan to one person or some specific work. If Reserve Bank want to increase the money supply, then increase the credit ceiling or remove the credit ceiling and if it wants to decrease the money supply then it imposes credit ceiling.
- (c) **Moral suasion:** This method involves request or permission to commercial banks by RBI to control money supply in the economy.
- (d) **Direct action:** RBI issues various directives to commercial banks to regulate their investment and lending activities. If any bank does not follow the directives issued by RBI, then RBI takes direct action against all those banks.



6.5.2 Fiscal Policy

Fiscal policy is the policy which is adopted by government to create stability in the economy. The followings are the tools of fiscal policy:

- (a) **Taxes:** Taxes are one of the sources of revenue for the government. If government want to decrease the disposable income in economy, then it increases the taxes and if want to increase the disposable income in the economy then decrease the taxes.
- (b) **Government Expenditure:** Government spends on various types of development and non-development activities. Increase in government expenditure leads to increase in aggregate demand and hence increase in income.
- (c) **Public Debt:** Government can borrow from public through various schemes. If government want to reduce money supply, then it borrows from the public by issuing bonds and postponing the payment of principal and interest amount for future. On the other hand if government want to increase money supply then stop taking more public debt as well pay principal and interest of already taken loan from public.
- (d) **Deficit Financing:** Some time expenditures of government is more than receipts of that particular time period. The difference between the receipts and payment of government is called deficit. For financing deficit government can sell government securities and print new currency. This process of financing is called deficit financing. Government can use this method for short period of time. Long-run use of this tool is creating instability in the economy.

Monetary and fiscal policies affect the import and export of goods and services. Exchange rate is also affected by the monetary transmission mechanism. Increase or decrease in exchange rate by adopting monetary and fiscal policy also affect the net export of an economy.

6.5.3 Measures to Correct Disequilibrium in Balance of Payment

The following measures are used by the government to correct disequilibrium in balance of payment.



- (a) **Exchange Rate Depreciation:** Government reduces the value of home currency temporary to correct disequilibrium in balance of payment. Decline in the value of home currency make the import of goods and services costly and therefore reduces imports. On the other hand, it makes export of goods and services cheaper and hence increases exports. Therefore, this action of government creates equilibrium in balance of payment.
- (b) **Deflation:** Government and Reserve Bank of India use their tools and techniques to reduce price of goods and services as well as the income of the consumer. Reduction in prices of domestic goods increases exports and reduction in income reduces imports. This creates a balance in balance of payment.
- (c) **Exchange control:** Government and Reserve Bank of India create stability in the exchange rate by keeping foreign reserves. In case of disequilibrium in the balance of payment government direct all importers to keep their foreign exchange reserves with the monetary authority. The government allows only some specific companies to import goods and services but the exchange rate is fixed by the monetary authority.
- (d) **Export promotion:** To correct disequilibrium in the balance of payment government reduce export duties, and gives subsidies and various types of relief. So the export increase and foreign currency in our country also increases and it creates a balance in the balance of payment.
- (e) **Import Substitution:** The main reason for the disequilibrium in the balance of payment is excess imports. That is why creating various substitute for imported goods in the domestic country also help in creating balance in the balance of payment. So, government provide subsidies and various types of support to industrialist so that they are able to produce goods which can act as substitute for imports. Import substitutes will create a balance in the balance of payment by stopping outflow from the country.
- (f) **Import Controls:** By applying quotas and tariff tools government can control imports of goods and services. By setting quotas, the government set a limit on the quantity of a particular commodity that can be imported from other countries. Tariff are the duties and



taxes imposed on the import of goods. To correct the balance of payment equilibrium government set quotas and increase the tariff to make import costly. This reduces the imports and improves the balance of payment situation.

IN-TEXT QUESTIONS

10. The policy used by the Centre Bank of India to create stability in the economy is called _____.
11. The rate at which various commercial banks borrow from Centre Bank is called _____.
12. Exchange rate depreciation by the government of the domestic country will _____ imports.
13. To decrease imports and increase export government will _____ the domestic currency.

6.6 Mundell Fleming Model

Mundell Fleming Model describe the framework for the analysis of monetary and fiscal policy. The other name of Mundell Fleming Model is IS-LM BOP model. It is propounded by Robert Mundell and Marcus Fleming. This model depicted the relation of various macro variables (inflation, GDP, exchange rate, the balance of payment, interest rate etc.) in international trade. It is applied in an open economy with perfect mobility of capital. Perfect mobility means the country can lend and borrow from the international market without any restriction. Like IS-LM model it is also based on some assumptions. According to Mundell Fleming Model the national policy of any country depend on the exchange rate system in international market because in open market change in exchange rate will impact export and imports of that country.

Assumption of Mundell Fleming Model

The followings are assumptions of the Mundell Fleming Model:

- (a) International rate of interest is equal to the domestic rate of interest.
- (b) There is perfect mobility in the small open economy.
- (c) Forward and spot exchange are almost the same.
- (d) It is based on a fixed price level.



Mundell Fleming's Model is based on crucial predictions about the exchange rate system. The exchange rate may be fixed exchange rate and flexible exchange rate. For understanding Mundell Fleming's Model first understanding the IS-LM model is necessary.

LM curve of Open curve:

The money market equilibrium condition of Mundell Fleming's Model is represent by the following equations:

$$M = L (r^*, Y)$$

In the above equation demand for money is equal to the supply of money. r^* and demand for money has an inverse relation. Demand for money and Y have positive relationships. M is fixed by the central bank.

$$Y = C(Y-T) + I(r^*) + G + NX(e)$$

Here,

Y = Aggregate income,

C = Consumption which totally depends on disposable income,

T = Taxes,

I = Investment which is indirectly related to the international rate of interest i^* ,

$NX = (X-M)$ is Net Exports [Imports is +ve function of national income (Y) so that 'net exports' is a -ve function of Y].

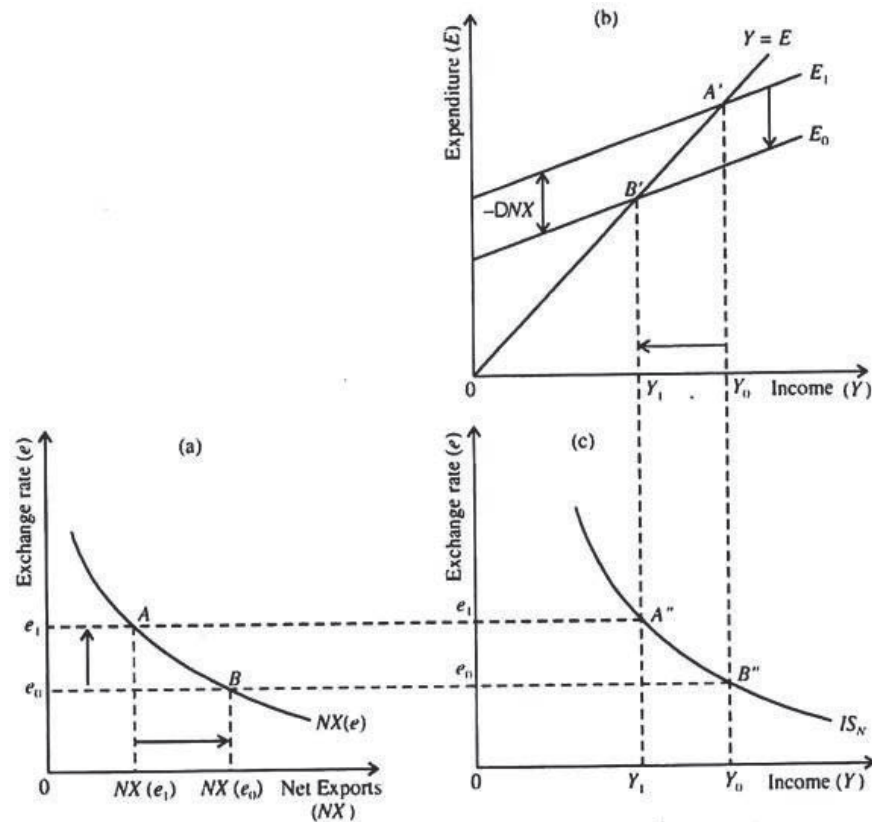
NX = however positively related to changes in nominal exchange rate (e).

An increase in the nominal exchange rate (*i.e.*, depreciation) will increase exports and decrease imports thus expanding net exports.

The rate of interest in the international market will impact investment in the international market. NX depend on the exchange rate in the international market.



General Equilibrium:



Source: Macro Economics Book by H.L. Ahuja

6.6.1 Perfect Capital Mobility and Imperfect Capital Mobility Under Fixed and Flexible Exchange Rate

Fixed Exchange Rate: This is the system in which central bank keeps stability in foreign exchange market by buying and selling foreign currency. It keeps the exchange rate fixed in international market. Sometime government devalues and revalues national currency to decrease import and increase export.

Flexible exchange rate: Flexible exchange rate is the system in which exchange rate in international market is decided by the demand and supply of currency in international market.

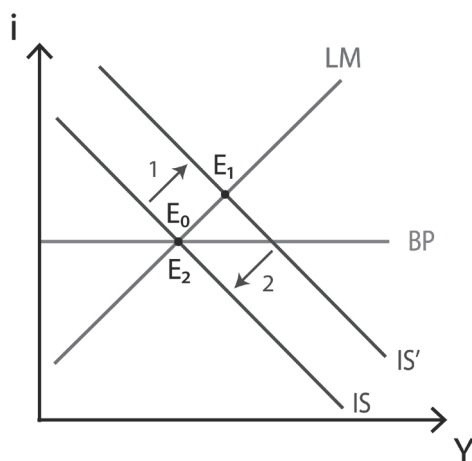


Perfect Capital Mobility: Perfect capital mobility is the situation when capital moves from one country to another country without any cost for the purpose of getting higher return.

Imperfect Capital Mobility: Imperfect capital mobility is the situation when capital moves from one country to another country by incurring some cost for the purpose of getting higher return.

Fiscal Policy under Flexible Exchange Rate and Perfect Capital Mobility

When the government adopt an expansionary fiscal policy interest rate in domestic country becomes higher than international interest rate. It will increase the inflow of capital in the economy. It will create surplus in balance of payment and there will be appreciation of the domestic currency. It can be understood with the help of following diagram.



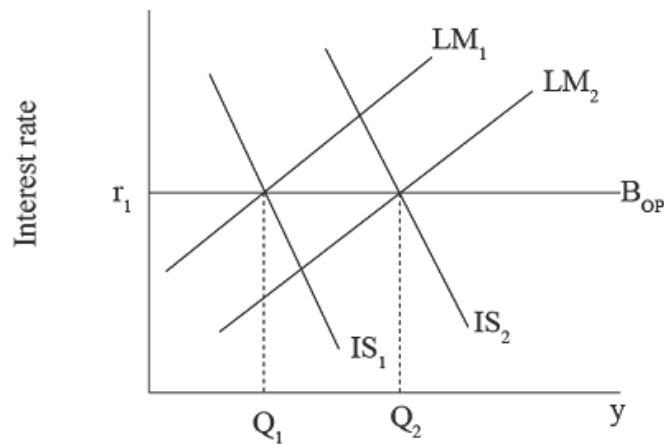
Source: *Macro Economics* by H.L. Ahuja

Monetary Policy under Flexible Exchange Rate and Perfect Capital Mobility

If RBI adopted expansionary monetary policy, then there is increase in income and decrease in interest rate. Due to expansionary monetary policy, there is outflow of capital from the country. It will depreciate the domestic currency and create the situation of deficit in balance of payment. The deficit will result in depreciation of domestic currency and shift in IS_1 to IS_2 . After changing in IS the new equilibrium remain the same. Conclusion is that the fiscal policy is not effective as per Mundell Fleming'



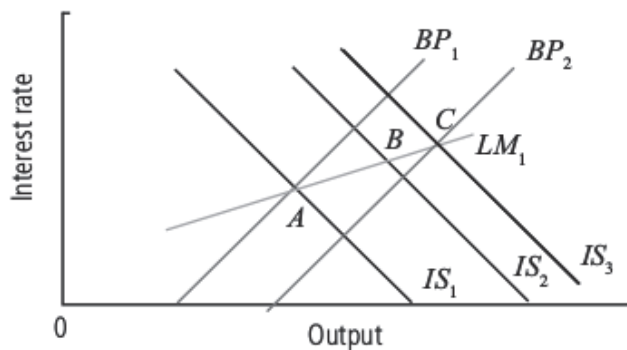
Notes



Source: Macro Economics by H.L. Ahuja

Fiscal Policy under Flexible Exchange Rate and Imperfect Capital Mobility

When RBI adopts an expansionary fiscal policy then inflow of capital in the country increases and it create surplus in balance of payment. This can be understood from the following diagram.



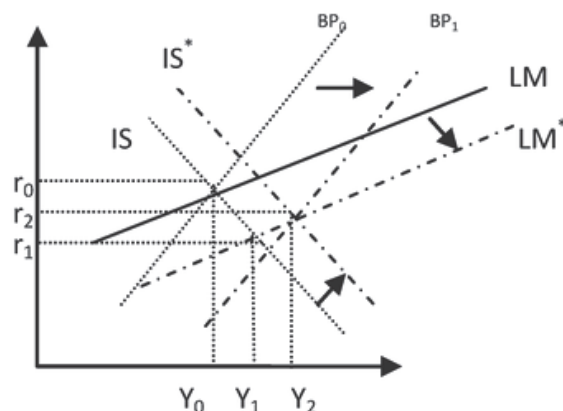
Source: Macro Economics by H.L. Ahuja

Expansionary fiscal policy will shift IS curve from IS_1 to IS_2 that leads to increase in income and interest rate. It will leads to appreciation of domestic currency which creates an upward shift in balance of payment from BP_2 to BP_1 . But it will affect net export and shift IS_3 to IS_2 .



Monetary Policy under Flexible Exchange Rate and Imperfect Capital Mobility

If RBI adopts an expansionary monetary policy, then there is increase in income and decrease in interest rate. Due to expansionary monetary policy, there is outflow of capital from the country. It will depreciate the domestic currency and create a situation of deficit in balance of payment.



Source: *Macro Economics by H.L. Ahuja*

RBI expansionary monetary policy will shift LM to right. It will increase income and decrease in interest rate. It creates outflow of currency from one country to another country. Outflow of currency create depreciation of domestic currency and balance of payment shift from BP_0 to BP_1 . Due to this shift, there is deficit in balance of payment of a currency. Thus, Mundell Fleming's Model analyses effect of fiscal and monetary policy of country by taking in to consideration fixed and flexible exchange rate. The effect of various monetary and fiscal policies on the balance of payment depends on the fixed and flexible exchange rate adopted by domestic country.

IN-TEXT QUESTIONS

14. _____ is the situation when capital is moved from one country to another country without any cost for the purpose of getting a higher return.
15. When the government is adopting _____ fiscal policy interest rate in the domestic country is higher than the international interest rate



6.7 Summary

- ◆ Balance of payment is one of the essential indicators of the international trade of a nation, which has a direct impact on the economic policy of the government. Each country prefers to have a favourable balance of payment. The balance of payment is prepared on the basis of the double-entry system. It has four components *i.e.*, current account, capital account, Reserve Account, and Errors and omission. Balance of payment is the broader statement as compared to the balance of trade because in the balance of trade, we record only the export and import of goods but in the balance of payment we keep the record of all transactions of one country with the rest of the world. Cyclical fluctuation, decrease and increase in export, economic development, rapid increase in population, huge external borrowings etc. are the reason of disequilibrium in balance of payment.
- ◆ The first foreign exchange market was set up at Amsterdam 500 years ago. Through the foreign exchange market people try to stabilise the foreign exchange rate in international market. Exchange rate of one country currency is determined with respect to another country currency in foreign exchange market. In India Reserve Bank of India (RBI) appoints moneychangers and authorised dealers who perform the function of buying and selling of foreign currency. Spot market, future market and forward market are the three types of foreign exchange market. There are three types of exchange rate available in international market *i.e.*, fixed exchange rate, flexible exchange rate, and manage floating exchange rate. Purchasing power parity, balance of payment, government intervention, market expectations are the various determinants of foreign exchange rate.
- ◆ Every country adopts various types of monetary and fiscal policy to create stability in the economy. The policy which is adopted by the central bank of an economy is called monetary policy and the measures adopted by country government is called fiscal policy. There are various monetary and non-monetary measures are adopted by any country to correct disequilibrium in the balance of payment of country like Exchange rate depreciation, devaluation, exchange rate control, import substitution, export promotion.



- ◆ Mundell Fleming Model describes the framework for the analysis of monetary and fiscal policy in an open economy. It is based on some assumptions like international rate of interest is equal to the domestic rate of interest, perfect mobility in the small open economy, Forward and spot exchange are almost the same, based on a fixed price level etc.

6.8 Answers to In-Text Questions

1. Deficit
2. False
3. International Monetary Fund (IMF)
4. True
5. True
6. Spot Market
7. Amsterdam
8. Reserve Bank of India (RBI)
9. True
10. Monetary Policy
11. Repo Rate
12. Decrease
13. Depreciate
14. Perfect Capital Mobility
15. Expansionary

6.9 Self-Assessment Questions

1. Explain various assumptions of Mundell Fleming's Model?
2. Explain the situation with diagram in which Balance of payment curve shifts downwards? Also explain the reason of downward shift in balance of payment.
3. Explain five differences between balance of trade and balance of payment?



Notes

4. Explain various component of balance of payment in detail.
5. How fiscal and monetary policy of a country will affect the balance of payment of that country?
6. What are the various monetary and non-monetary measures to correct disequilibrium in balance of payment?
7. Write a short note on Mundell Fleming Model.
8. What is the difference between fixed exchange rate and flexible exchange rate?
9. How does an expansionary fiscal policy and monetary policy affects the interest rate, income, and exchange rate in a small open economy with flexible exchange rate.
10. How does an expansionary fiscal policy and monetary policy affects the interest rate, income, and exchange rate in a small open economy with fixed exchange rate.
11. Explain various advantage and disadvantage of fixed exchange rate?
12. Explain the situation of general equilibrium in money market and goods market in Mundell Fleming Model?
13. What is the role of devaluation of domestic currency in the correction of balance of payment of a country?

6.10 References

- ◆ Samuelson, W.F. & Marks, S.G. (2021). Managerial Economics, 7e, John Wiley & Sons.
- ◆ Mankiw, N. G. (2021). Principles of Macroeconomics 9e. Cengage Learning Asia Pte Limited.
- ◆ Case Karl E., Fair Ray C. and Oster, Sharon E. (2020) Principles of Macroeconomics, Pearson Education Limited, Twelfth Edition.
- ◆ Blanchard, Olivier, 2020, Macroeconomics, Seventh Edition, Pearson Education.



6.11 Suggested Readings

Notes

- ◆ Abel Andrew B, Ben Bernanke, and Dean Croushore, 2017, Macroeconomics, Ninth Edition, Pearson Education.
- ◆ Suliman, O. (2005). “Interest Rate Volatility, Exchange Rates, and External Contagion”. Applied Financial Economics, 15(12), pp. 883-894.
- ◆ Reserve Bank of India (2022), Handbook of Statistical on Indian Economy, Mumbai.



Glossary

Accommodating Policy: It is a policy used by central banks to keep the interest rate low in order to supply more cash to boost the economic growth and reduce the unemployment.

Accommodative Stance: Under an accommodative stance the RBI expand the money supply and cut interest rates.

AD and AS Approach: Equilibrium is achieved when planned expenditure of the economy (AD) is equal to the planned availability of goods and services (AS) *i.e.* when $AD = AS$.

Aggregate Demand: Aggregate demand is the total demand for all finished goods including consumer goods, services, and capital goods produced in an economy.

Aggregate Supply: Money value of final goods and services that all the producers are willing to supply in an economy in a given time period.

Autonomous Investment: Investment not affected by changes in the level of income and is not induced solely by profit motive.

Balance of Payment: Balance of Payment is the statement of a systematic record of the financial and economic transactions between residents of one country with other countries during a specific period of time.

Balance of Trade: Balance of trade is the difference between the exports and imports of a country. If imports are more than export then the difference is called a deficit and in exports are more than imports the difference is called a surplus.

Cash Reserve Ratio (CRR): Cash Reserve Ratio is the percentage of commercial bank deposit which are kept by each commercial bank with RBI.

Consumption: Goods and Services purchased by consumers.

Consumption Function: It shows a functional relationship between consumption and the factors determining it.

Deficient Demand: When there is full employment and total demand is less than total supply.

Equilibrium: It is a condition or state of balance between opposing forces, such as the balance of supply and demand in a market.

Equilibrium Level of Employment: Employment level at which supply and demand are balanced.



Ex-ante Investment: Ex-ante investments are those that investors intend to make in an economy at various income levels. It is often referred to as an intended or planned investment.

Ex-ante Saving: Ex-ante saving is the amount of money that savers in a given economy plan (or intend) to set aside at various income levels. It is often referred to as planned or intentional saving.

Ex-post Investment: It speaks of actual or realised investment made in an economy over the course of a year.

Ex-post Saving: In economics, it alludes to actual or realised saving over the course of a year.

Excess Demand: When there is full employment and aggregate demand exceeds aggregate supply.

Forward Market: It is an irregular market in which buying and selling of foreign currency is done at rate agreed upon today for future decided date.

Full Employment Equilibrium: Situation achieved when aggregate demand is equal to the aggregate supply at full employment level.

Full Employment Level: The degree of employment at which all of the labour pool is being used for payment.

Future Market: It is a regulated market in which buy and sell of foreign currency is done at a rate agreed upon today for future decided date.

Government Expenditure: Total expenditure incurred by government on consumer goods and capital goods to satisfy the common needs of the economy.

Hawkish Stance: Under this, the RBI tightens the monetary policy by increasing interest rates.

Hysteresis: Is the situation when a variable is shocked away from an initial position shows no sign of return, even when the shock is over.

Inflation: Is the increase in the general price level of goods and services in an economy.

Investment Expenditure: Total expenditure incurred by all private companies on capital goods.



IS Curve: The negative relationship between the interest rate and the level of income that arises in the market for goods and services.

IS–LM Model: A model of aggregate demand that shows what determines aggregate income for a given price level by analyzing the interaction between the goods market and the money market.

Keynesian Cross: The Keynesian cross simply shows how national income is determined and is considered an important block for understanding the more complex and realistic *IS–LM* model.

Liquidity-preference Theory: A simple model of the interest rate, based on the ideas in Keynes's *General Theory*, which says that the interest rate adjusts to equilibrate the supply and demand for real money balances.

LM Curve: The positive relationship between the interest rate and the level of income (while holding the price level fixed) that arises in the market for real money balances.

Marginal Product of Labour: Is the increase in the total output due to a unit increase in labour.

Marginal Propensity to Consume (MPC): It is the rate at which consumption (C) increases in response to a given increase in income (Y).

Marginal Propensity to Save (MPS): It is the rate at which Saving (S) increase in response to a given increase in income (Y).

Monetary Policy: Is the policy framed by the central bank to control money supply and rate of interests to achieve macroeconomic targets like inflation, consumption, growth and liquidity.

Multiplier (k): Ratio of change in income (ΔY) to a change in investment (ΔI). $k = \Delta Y / \Delta I$

Net Exports: Difference between exports and imports.

Open Market Operation: Open market operation is the process by which Reserve Bank of India sells government and other approved security to commercial bank and purchases the same from commercial bank.

Phillips Curve: Is a curve that shows the relationship between unemployment and the rate of inflation.

Repo Rate: Repo rate is the rate at which Reserve Bank of India provide credit to various commercial banks.



Notes

Reverse Repo Rate: Reverse Repo Rate is the rate at which Reserve Bank of India takes loan from commercial bank.

Spot Market: The spot market is the market in which all the transactions take place immediately.

Statutory Liquidity Ratio (SLR): Statutory liquidity ratio is the percentage of remaining amount after CRR which kept by each commercial bank at its bank.

Unemployment: Unemployment is the situation when one is capable of working, actively seeking work, but unable to find any work.

978-81-96217-78-5



9 788196 217785

**Department of Distance and Continuing Education
University of Delhi**