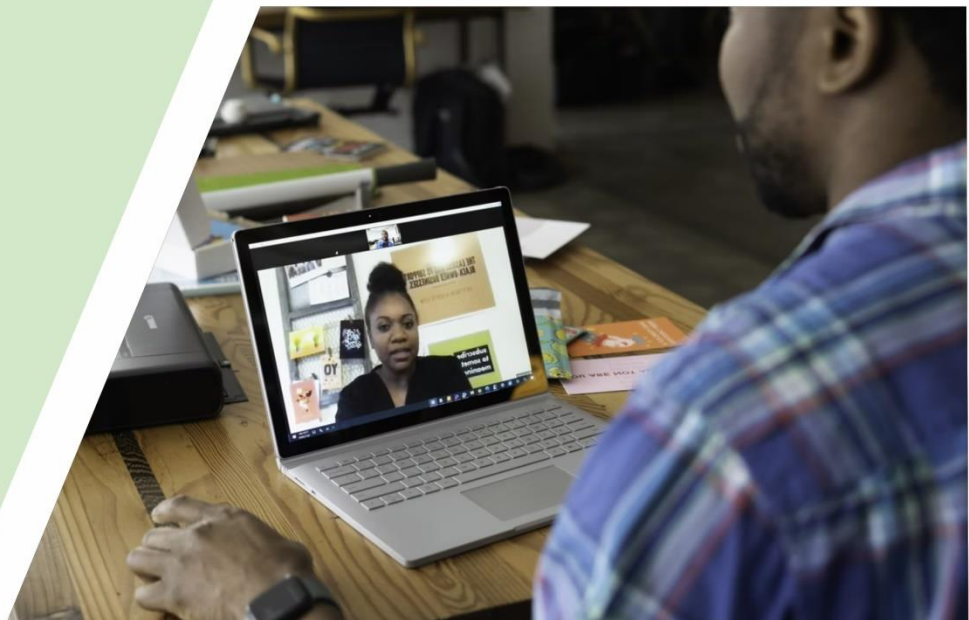


NATIONAL OPEN UNIVERSITY OF NIGERIA

BUS 840



**Global Economic
Environment
Module 5**

BUS 840 Global Economic Environment Module 5

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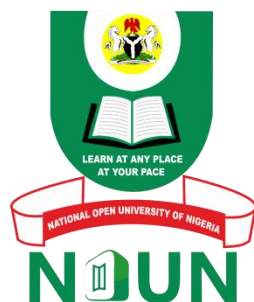
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Module 5

Unit I Lessons from Asian and Mexican Financial Crises

1.0 Introduction

Recall that the global economy refers to the economy of the world, comprising of different economies of individual countries, with each economy related with the other in one way or another. A key concept in the global economy is globalisation, which is the process that leads to individual economies around the world being closely interwoven such that an event in one country is bound to affect the state of other world economies. In the past century or so, the focus on globalisation has intensified a lot. More and more trade has been done between different countries, and restrictions on movement and business across borders have been reduced a great deal. The resulting phenomenon is what a global economy is all about.

In this Unit, we shall discuss global financial crises with particular reference to the Asian and Mexican financial crises. The lessons from those financial crises will be our focal point.

2.0 Objectives

At the end of this unit, you should be able to:

- explain global financial crises
- discuss the Asian and Mexican financial crises
- discuss the lessons from the Asian and Mexican financial crises.

3.0 Main Content

3.1 Global Financial Crises

The financial crises which peaked 2007/2008 (also known as the Global Financial Crisis) can be considered to be the worst since the Great Depression of the 1930s. It resulted in the threat of total collapse of large financial institutions, the bailout of banks by national governments, and downturns in stock markets around the world. In many cases, the housing market suffered also, resulting in evictions, foreclosures and prolonged unemployment. The crisis played a significant role in the failure of key businesses, declines in consumer wealth and a downturn in economic activity leading to the 2008 – 2012 global recession and contributing to European – debt crisis. The active phase of the crisis, which manifested as a liquidity crisis, can be dated from August 7, 2007, when BNP Paribas terminated withdrawals from three hedge funds citing ‘a complete evaporation of liquidity’.

The bursting of the United State housing bubble, which peaked in 2006, caused the values of securities tied to U.S real estate pricing to plummet, damaging financial institutions globally. The financial crisis was triggered by a complex interplay of policies that encouraged home ownership, providing easier access to loans for subprime borrowers, overvaluation of bundled sub-prime mortgages based on the theory that housing prices would continue to escalate, questionable trading practices on behalf of both buyers and sellers, compensation structures that prioritize short-term deal flow over long-term value creation, and a lack of

adequate capital holdings from banks and insurance companies to back the financial commitments they were making.

Questions regarding bank solvency, declines in credit availability and damaged investor confidence had an impact on global stock markets, where securities suffered large losses during 2008 and early 2009. Economies worldwide slowed during this period, as credit tightened and international trade declined. Governments and central banks responded with unprecedented fiscal stimulus, monetary policy expansion and institutional bailouts. For example, in the European Union, the United Kingdom responded with austerity measures of spending cuts and tax increases without export growth and it has since slid into a double-dip recession.

Several authors have defined the financial crisis in various ways. The Central Bank of Nigeria defined it as a situation where financial institutions or assets suddenly lose a large part of their value. Eichengreen and Portes (1987) defined it “as a sharp change in asset prices that leads to distress among financial markets participants”. It has been highlighted that the lack of clarity between sharp and moderate price changes or the distinction between severe financial distresses from financial pressure. The crisis can be in form of a banking crisis, speculative bubble, international financial crisis and economic crisis. The financial crisis destabilised the global financial system and led to a major economic crisis in 2008.

Antecedents show the first financial crisis to be the Great Depression of 1929-1933. The recent financial crisis which originated in the US was preceded by over a hundred episodes of financial crises (CBN, 2009). It is pertinent to note that 75 per cent of these crises had either been caused by the capital market or had affected the capital market, for example, Black Monday (1987) and the Asian Financial Crisis.

Many causes for the financial crisis have been suggested. For example, the U.S Senate's Levin-Coburn Report asserts that the crisis was the result of 'high risk, complex financial products; undisclosed conflicts of interest; the failure of regulators, the credit rating agencies, and the market itself to rein in the excesses of Wall Street.

In the immediate aftermath of the financial crisis, palliative fiscal and monetary policies were adopted to lessen the shock to the economy.

Self-Assessment Exercise

Explain what you understand by 'global financial crises'.

3.2 Asian Financial Crises

3.2.1 Diagnosing Financial Crises

Not all financial crises are alike, even though superficial appearances may deceive. Only a close historical analysis, guided by theory, can disentangle the key features of any particular financial crisis, including the Asian crisis. Let us identify five main types of financial crises, which may in fact be intertwined in any particular historical episode:

1. **Macroeconomic policy-induced crisis:** Following the canonical Krugman (1979) model, a balance of payments crisis (currency depreciation; loss of foreign exchange reserves; collapse of a pegged exchange rate) arises when domestic credit expansion by the central bank is inconsistent with the pegged exchange rate. Often, as in the Krugman model, the credit expansion results from the monetisation of budget deficits. Foreign exchange reserves fall gradually until the Central Bank is vulnerable

to a sudden run, which exhausts the remaining reserves, and pushes the economy to a floating rate.

2. **Financial panic:** Following the Dybvig-Diamond (1983) model of a bank run, a financial panic is a case of multiple equilibria in the financial markets. A panic is an adverse equilibrium outcome in which short-term creditors suddenly withdraw their loans from a solvent borrower. In general terms, a panic can occur when three conditions hold: short-term debts exceed short-term assets; no single private-market creditor is large enough to supply all of the credits necessary to pay off existing short-term debts; and there is no lender of last resort. In this case, it becomes rational for each creditor to withdraw its credits if the other creditors are also fleeing from the borrower, even though each creditor would also be prepared to lend if the other creditors were to do the same. The panic may result in large economic losses (e.g. premature suspension of investment projects, liquidation of the borrower, creditor- grab- race, etc.).
3. **Bubble collapse:** Following Blanchard and Watson (1982) and others, a stochastic financial bubble occurs when speculators purchase a financial asset at a price above its fundamental value in the expectation of a subsequent capital gain. In each period, the bubble (measured as the deviation of the asset price from its fundamental price) may continue to grow, or may collapse with a positive probability. The collapse, when it occurs, is unexpected but not completely unforeseen, since market participants are aware of the bubble and the probability distribution regarding its collapse. A considerable amount of modeling has examined the conditions in which a speculative bubble can be a rational equilibrium.
4. **Moral-hazard crisis:** Following Akerlof and Romer (1996), a moral-hazard crisis arises because banks are able to borrow funds on the basis of implicit or explicit public guarantees of bank liabilities. If banks are undercapitalized or under-regulated, they may use these funds in overly risky or even criminal ventures. Akerlof and Romer argue that the “economics of looting,” in which banks use their state backing to purloin deposits is more common than generally perceived, and played a large role in the U.S. Savings and Loan crisis. Krugman (1998) similarly argues that the Asian crisis is a reflection of excessive gambling and indeed stealing by banks that gained access to domestic and foreign deposits by virtue of state guarantees on these deposits.
5. **Disorderly workout:** Following Sachs (1995), a disorderly workout occurs when an illiquid or insolvent borrower provokes a creditor grab race and a forced liquidation even though the borrower is worth more as an ongoing enterprise. A disorderly workout occurs especially when markets operate without the benefit of creditor coordination via bankruptcy law. The problem is sometimes known as a “debt overhang.” In essence, coordination problems among creditors prevent the efficient provision of worker capital to the financially distressed borrower, and delay or prevent the eventual discharge of bad debts (e.g. via debt-equity conversions or debt reduction).

The theoretical differences among these five types of crises are significant at several levels:

- diagnosis
- underlying mechanisms
- prediction, prevention

- remediation.

For example, to the extent that panic is important, policy makers face a condition in which viable economic activities are destroyed by a sudden and essentially unnecessary withdrawal of credits. The appropriate policy response, then, is to protect the economy through lender-of-last-resort activities.

Alternatively, if the crisis results from the end of a bubble or the end of moral-hazard-based lending, it may be most efficient to avoid lender-of-last-resort operations, which simply keep the inefficient investments alive. Unfortunately, in real-life conditions, these various types of financial crisis can become intertwined, and therefore are difficult to diagnose. The end of a bubble, for example, may trigger a panic, or a panic may trigger insolvency and a disorderly workout.

3.2.2 Summary of the Asian Financial Crises

Also called the "Asian Contagion", this was a series of currency devaluations and other events that spread through many Asian markets beginning in the summer of 1997. The currency markets first failed in Thailand as the result of the government's decision to no longer peg the local currency to the U.S. dollar. Currency declines spread rapidly throughout South Asia, in turn causing stock market declines, reduced import revenues and even government upheaval. As a result of the crisis, many nations adopted protectionist measures to ensure the stability of their own currency. Often this led to heavy buying of U.S. Treasuries, which are used as a global investment by most of the world's sovereignties.

The Asian Financial Crisis was stemmed somewhat by financial intervention from the International Monetary Fund and the World Bank. However, market declines were also felt in the United States, Europe and Russia as the Asian economies slumped.

The crisis in the Asian economies (Korea, Indonesia, Malaysia, Thailand and the Philippines) resulted from vulnerability to financial panic that arose from certain emerging weaknesses in these economies (especially growing short-term debt), combined with a series of policy missteps and accidents that triggered the panic. Viewing the crisis as a case of multiple equilibrium, the hypothesis is that the worst of the crisis could have been largely avoided with relatively moderate adjustments and appropriate policy changes.

There were macroeconomic imbalances, weak financial institutions, widespread corruption, and inadequate legal foundations in each of the affected countries. These problems needed attention and correction, and they clearly contributed to the vulnerability of the Asian economies. However, most of these problems had been well-known for years, and the Asian-5 countries were able to attract \$211 billion of capital inflows between 1994 and 1996, under widely known conditions of Asian capitalism. To attribute the crisis fully to fundamental flaws in the pre-crisis system is to judge that the global financial system is prone to sheer folly, or somehow expected to avoid losses despite the fundamental flaws. Paul Krugman's explanation of the crisis — that investors knew that their investments were to weak borrowers, but felt protected by explicit and implicit guarantees — also seems to be only a partial explanation. One obvious reason is that much of the lending was directed to private firms that did not enjoy these guarantees. Approximately half of the loans by international banks and almost all of the portfolio and direct equity investments went to non-bank enterprises for which state guarantees were far from assured. This comes to around three-fifths of the total capital flows to the region.

Moreover, the actual market participants, by their statements and actions (e.g., decisions on credit ratings), while recognizing the flaws in these economies, simply did not foresee a crisis, with or without bailouts. It is difficult, therefore, to make the case that a crisis of this depth and magnitude was simply an accident waiting to happen. One may not believe that such a vicious crisis was necessary, nor that its depth should be interpreted as an indication of the extent of the underlying economic problems in the region. It has been opined that a much more moderate adjustment would have been possible had appropriate steps been taken in the early stages of the crisis.

Self-Assessment Exercise

Give a summary of the Asian financial crises.

3.3 Mexican Financial Crises

The 1994 financial/economic crisis in Mexico, widely known as the peso crises or the Tequila crises, was caused by the sudden devaluation of the Mexico peso in December, 1994. This refers to the crisis that started after Mexico's devaluation of the peso in December 1994. It precipitated the worst banking crisis in Mexican history (1995-1997), the largest depreciation of the currency in one year, from about 5.3 pesos per dollar to over 10 pesos per dollar between December 1994 and November 1995, and the most severe recession in over a decade (with GDP falling over 6% in 1995).

According to Obstfeld and Taylor (2004), there were two major waves of financial globalization in the twentieth century, one before 1914, and a second that began in the last three to four decades of the century, and peaked in the 1990s. The Mexican financial crisis was particularly important as the first global crisis of this second wave. It raised significant issues about international financial architecture and the role that international bailouts should play in the latest era of financial globalization.

Also known as 'The December mistake', the root causes of the crises is usually attributed to Salinas de Gortari's policy decisions while in office, which ultimately strained the nation's finances. As in prior election cycles, a pre-election disposition to stimulate the economy, temporarily and unsustainably, led to post-election economic instability. There were concerns about the level and quality of credit extended by banks during the preceding low-interest rate period, as well as the standards for extending credit.

The country's risk premium was affected by an armed rebellion in Chiapas, causing investors to be wary of investing their money in an unstable region. The Mexican government's finances and cash availability were further hampered by two decades of increasing spending, a period of hyperinflation from 1985 to 1993, debt loads, and low oil prices. Its ability to absorb shocks was hampered by its commitments to finance past spending.

Economists Hufbauer and Schott (2005) have commented on the macroeconomic policy mistakes that precipitated the crisis:

- 1994 was the last year of the *sexenio*, or six-year administration of Carlos Salinas de Gortari who, following the Partido Revolucionario Institucional (PRI) tradition on an election year, launched a high spending splurge and a high deficit.
- To finance the deficit (7% of GDP current account deficit), Salinas issued the *Tesobonos*; a type of debt instrument denominated in pesos but indexed to dollars.

- Mexico experienced lax banking or corrupt practices; moreover, some members of the Salinas family collected enormous illicit payoffs.
- The EZLN, an insurgent rebellion, officially declared war on the government on January 1; even though the armed conflict ended two weeks later, the grievances and petitions remained a cause of concern, especially amongst some investors.

The following can explain the country-risk issues precipitating the crisis:

- The EZLN's violent uprising in Chiapas in 1994 along with the assassination of presidential candidate Luis Donaldo Colosio made the nation's political future look less certain to investors, who then started placing a larger risk premium on Mexican assets.
- Mexico had a fixed exchange rate system that accepted pesos during the reaction of investors to a higher perceived country risk premium and paid out dollars. However, Mexico lacked sufficient foreign reserves to maintain the fixed exchange rate and was running out of dollars at the end of 1994. The peso then had to be allowed to devalue despite the government's previous assurances to the contrary, thereby scaring investors away and further raising its risk profile.
- When the government tried to roll over some of its debt that was coming due, investors were unwilling to buy the debt and default became one of few options.
- A crisis of confidence damaged the banking system, which in turn fed a vicious cycle further affecting investor confidence.

All of the above concerns, along with increasing current account deficit fostered by consumer binding and government spending, caused alarm among those who bought the *tesobonos*. The investors sold the *tesobonos* rapidly, depleting the already low central bank reserves. Given the fact that it was an election year, whose outcome might have changed as a result of a pre-election day economic downturn, Banco de México decided to buy Mexican Treasury Securities to maintain the monetary base, thus keeping the interest rates from rising.

This caused an even bigger decline in the dollar reserves. However, nothing was done during the last five months of Salinas' administration. A few days after a private meeting with major Mexican entrepreneurs, in which his administration asked them for their opinion of a planned devaluation; Zedillo announced his government would let the fixed rate band increase to 15 per cent (up to four pesos per US dollar), by stopping the previous administration's measures to keep it at the previous fixed level. The government, being unable even to hold this line, decided to let it float.

The peso crashed under a floating regime from four pesos to the dollar to 7.2 to the dollar in the space of a week. The United States intervened rapidly, first by buying pesos in the open market, and then by granting assistance in the form of \$50 billion in loan guarantees. The dollar stabilized at the rate of six pesos per dollar. By 1996, the economy was growing (peaked at 7% growth in 1999). In 1997, Mexico repaid, ahead of schedule, all US Treasury loans.

3.4 Lessons from Asian and Mexican Financial Crises

3.4.1 The Asian Lessons

The Asian crisis led to some needed financial and government reforms in countries like Thailand, South Korea, Japan and Indonesia. It also serves as a valuable case study for

economists who try to understand the interwoven markets of today, especially as it relates to currency trading and national accounts management.

There are ten lessons which can be learned from the Asian financial crisis:

1. Lawson's Rule that it is okay to run a current account deficit without a budget deficit has proven to be a fallacy
2. Foreign exchange reserves are important
3. Information and transparency are key
4. The composition of capital inflows does matter
5. Exchange rate regimes are extremely difficult to maintain
6. Financial markets are not perfectly efficient
7. Moral hazard is the central market failure
8. IMF programmes should consist of both macroeconomic and structural reforms
9. Inevitably, countries will have to raise interest rates and lower exchange rates
10. Keynesianism is alive and well in Asia.

The fallacy of Lawson's Rule is not a new discovery. We have seen this phenomenon before in Chile and the United Kingdom. On the issue of foreign exchange reserves, we have to relearn the lesson that countries with high reserves, like Taiwan, are better able to weather crises. The issue of transparency is not new either. More information must be made available, and it should be utilised properly. Perhaps the two biggest new lessons from the crisis are that the composition of capital flows matter and those exchange rate regimes are difficult to maintain.

The lesson that financial markets are not always perfectly efficient seemed to have been forgotten. Hedge funds should not be blamed for this; rather, bandwagoning presents a major challenge to emerging financial markets. Financial contagion is not new, but the Asian crisis was the first time that unrelated countries in different regions were hit by such a crisis. This implies the need for a greater role for governments in the domestic financial system, but governments are not perfect either. Capital controls must be used sparingly, as in the case of Chile.

The lesson learned about the central role of moral hazard in the crisis is both important and useful. To say that the IMF programmes cause moral hazard is wrong; domestic practices are crucial. The next lesson is equally important: There must be conditionality when the IMF makes loans. Macroeconomic policies had been fairly good in the crisis countries; the financial and corporate sectors were the problems. Latin America's experience demonstrates that reform may be easier during a crisis, and the downside risk of social unrest may not be as great as feared.

International financial institutions must also evolve, but there are three important reasons why conditions should be attached to loans. First, loan conditions must address the root causes of the crisis. Second, conditions imposed by international financial institutions (IFIs) provide great political cover for the required bitter reform medicine. Finally, IFI conditions reassure investors that positive changes are made.

Governments may have to devalue the local currency, raise interest rates, and experience a recession in order to stabilize the economy. High interest rates alone do not sufficiently reassure investors. The effect of devaluation was much greater in the first year than originally predicted. It is also important to realize that Keynesianism is alive and well. The

initial budget cuts in Korea and Thailand proved to be too severe. The governments can now play a key role in re-inflating the economy.

3.4.2 Lessons from Mexican Financial Crises

The overriding lesson is that the dynamics of financial crises in emerging market countries differ from those in industrialised countries because institutional features of their debt markets differ. Several policy lessons for emerging market countries also emerge:

- (1) pegged exchange-rate regimes are extremely dangerous,
- (2) strong prudential supervision of the banking system is critical for prevention of financial crises,
- (3) financial liberalisation must be managed extremely carefully
- (4) different policies are needed to promote recovery in emerging market countries than those that are applicable to industrialised countries.

There are two key differences from industrialised countries in the institutional structure in emerging market countries - Mexico is a clear cut example - that make a huge difference in the dynamics of banking and financial crises.

1. Private debt contracts have very short duration.
2. Many debt contracts are denominated in foreign currencies.

For example, in emerging market countries like Mexico, private debt contracts are re-priced at least once a month, so that the durations of this debt are very short. In contrast, private debt contracts in industrialised countries such as the US are much longer, with durations commonly extending to many years. An important reason why this occurs is that emerging market countries have typically experienced very high and variable inflation rates, so that the inflation risk in long-duration debt contracts is extremely high relative to that found in industrialised countries. Short-duration debt contracts then dominate because they bear much less inflation risk.

High and variable inflation is also a driving force behind the second institutional feature of financial markets in emerging market countries. High and variable inflation leads to tremendous uncertainty about the future value of the domestic currency in emerging market countries.

How does a foreign exchange crisis lead to a financial crisis? With debt contracts denominated in foreign currency, when there is a large unanticipated depreciation or devaluation of the domestic currency, the debt burden of domestic firms shoots up sharply. Since assets of these firms are typically denominated in domestic currency, there is no matching rise in the value of assets when the value of the liabilities rise, so there is a sharp deterioration of firms' balance sheets and a large decline in net worth. When firms have less net worth, asymmetric information problems in financial markets increase and can lead to a financial crisis and a sharp contraction in economic activity.

Four basic lessons can be drawn:

1. The dangers of pegged exchange-rate regimes
2. The importance of strong prudential supervision of the banking system for prevention of financial crises
3. The importance of managing financial liberalisation

4. The need for different policies to promote recovery in emerging market countries from those applicable to industrialised countries.

A speculative attack on the exchange rate that results in devaluation can have devastating effects on the economy by interfering with information flows in financial markets. With a pegged exchange rate regime, depreciation of the domestic currency when it occurs is a highly nonlinear event because it involves devaluation. The resulting dramatic increase in interest rates and rise in indebtedness which results in a sharp deterioration in firms' and banks' balance sheets then tips the developing country into a full scale financial crisis, with devastating effects on the economy.

Strong prudential supervision of the banking system is crucial to the health of emerging market economies and the prevention of financial crises. Clearly good prudential supervision is important to industrialised countries. However, because the consequences of poor prudential supervision are so disastrous in emerging market countries, good prudential supervision is even more critical in these countries.

The importance of preventing banking crises in emerging market countries, however, suggests that financial liberalisation may need to be phased gradually. If the proper bank supervisory structure is not in place when liberalisation comes, the appropriate constraints on risk-taking behaviour may be nonexistent, with the result that bank balance sheets are likely to suffer difficulties in the future. In addition, before liberalisation occurs, banks may not have the expertise to make loans wisely and so opening them up to new lending opportunities too quickly may also lead to poor quality of the loan portfolio. Indeed, financial deregulation and liberalisation often lead to lending booms; both because of increased opportunities for bank lending and also because of financial deepening in which more funds flow into the banking system. Although liberalisation and financial deepening are positive developments for the economy in the long run, in the short run, the lending boom may outstrip the available information resources in the financial system, helping to promote a financial collapse in the future. Lending booms have been a feature of financial liberalisation in many countries and have often been followed by banking crises.

Traditional measures used in industrialised countries to extirpate themselves from financial crises may be counterproductive in emerging market countries. In industrialised countries, the standard prescription for emerging from a financial crisis is for the central bank to become a lender of last resort and to pursue expansionary monetary policy.

Self-Assessment Exercise

What lessons can be learnt from the Asian and Mexican financial crises?

4.0 Conclusion

The Asian currency and financial crises in 1997 and 1998 reflected structure and policy distortions in the countries of the region, even if market overreaction and herding caused the plunge of exchange rates, asset prices and economic activity to be more severe than warranted by the weak economic condition. Relative to Mexico, in designing appropriate policies for emerging market countries, it is essential that we take account of differences in the institutional structure of financial systems in these countries from those in industrialised countries.

5.0 Summary

In this Unit, we have been able to:

- explain global financial crises, and pointed that the financial crises which peaked 2007/2008 can be considered to be the worst since the Great Depression of the 1930s;
- discuss the Asian and Mexican financial crises;
- discuss the lessons from the Asian and Mexican financial crises.

6.0 Self-Assessment Exercise

1. Distinguish between currency crisis and financial crisis.
2. Compare the Asian and Mexican financial crises.

7.0 References/Further Reading

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1.0 Introduction

In economics, inflation is a rise in the general level of prices of goods and services in an economy over a period of time. When the general price level rises, each unit of currency buys fewer goods and services. Consequently, inflation reflects a reduction in the purchasing power per unit of money – a loss of real value in the medium of exchange and unit of account within the economy. A chief measure of price inflation is the inflation rate, the annualised percentage change in a general price index (normally the consumer price index) over time.

Inflation's effects on an economy are various and can be simultaneously positive and negative. Negative effects of inflation include an increase in the opportunity cost of holding money, uncertainty over future inflation which may discourage investment and savings, and if inflation is rapid enough, shortages of goods as consumers begin hoarding out of concern that prices will increase in the future. Positive effects include ensuring that central banks can adjust real interest rates (to mitigate recessions), and encouraging investment in non-monetary capital projects.

Economists generally agree that high rates of inflation and hyperinflation are caused by an excessive growth of the money supply.

Views on which factors determine low to moderate rates of inflation are more varied. Low or moderate inflation may be attributed to fluctuations in real demand for goods and services, or changes in available supplies such as during scarcities, as well as to changes in the velocity of money supply measures; in particular the MZM ("Money Zero Maturity") supply velocity.

However, the consensus view is that a long sustained period of inflation is caused by money supply growing faster than the rate of economic growth.

Today, most economists favor a low and steady rate of inflation. Low (as opposed to zero or negative) inflation reduces the severity of economic recessions by enabling the labour market to adjust more quickly in a downturn, and reduces the risk that a liquidity trap prevents monetary policy from stabilising the economy.

The task of keeping the rate of inflation low and stable is usually given to monetary authorities. Generally, these monetary authorities are the central banks that control monetary policy through the setting of interest rates, through open market operations, and through the setting of banking reserve requirements.

2.0 Objectives

At the end of this unit, you should be able to:

- define and state what inflation is all about
 - explain the historical background and measures of inflation.

3.0 Main Content

3.1 History

Increases in the quantity of money or in the overall money supply (or debasement of the means of exchange) have occurred in many different societies throughout history, changing with different forms of money used.

For instance, when gold was used as currency, the government could collect gold coins, melt them down, mix them with other metals such as silver, copper or lead, and reissue them at the same nominal value.

By diluting the gold with other metals, the government could issue more coins without also needing to increase the amount of gold used to make them. When the cost of each coin is lowered in this way, the government profits from an increase in seigniorage.

This practice would increase the money supply but at the same time the relative value of each coin would be lowered. As the relative value of the coins becomes lower, consumers would need to give more coins in exchange for the same goods and services as before. These goods and services would experience a price increase as the value of each coin is reduced.

Song Dynasty China introduced the practice of printing paper money in order to create fiat currency during the 11th century and, according to Daniel Headrick, "paper money allowed governments to spend far more than they received in taxes... in wartime, and the Song were often at war, such deficit spending caused runaway inflation."

- The problem of paper money inflation continued after the Song Dynasty. Peter Bernholz writes that "from then on, nearly every Chinese dynasty up to the Ming began by issuing some stable and convertible paper money and ended with pronounced inflation caused by circulating ever increasing amounts of paper notes to finance budget deficits."

During the Mongol Yuan Dynasty, the government spent a great deal of money fighting costly wars, and reacted by printing more, leading to inflation.

The problem of inflation became so severe that the people stopped using paper money, which they saw as "worthless paper." Fearing the inflation that plagued the Yuan dynasty, the Ming Dynasty initially rejected the use of paper money, using only copper coins. The dynasty did not issue paper currency until 1375.

Historically, infusions of gold or silver into an economy also led to inflation. From the second half of the 15th century to the first half of the 17th, Western Europe experienced a major inflationary cycle referred to as the "price revolution", with prices on average rising perhaps six fold over 150 years.

This was largely caused by the sudden influx of gold and silver from the New World into Spain. The silver spread throughout a previously cash-starved Europe and caused widespread inflation. Demographic factors also contributed to upward pressure on prices, with European population growth after depopulation caused by the Black Death pandemic.

By the nineteenth century, economists categorized three separate factors that cause a rise or fall in the price of goods: a change in the value or production costs of the good, a change in the price of money which then was usually a fluctuation in the commodity price of the

metallic content in the currency, and *currency depreciation* resulting from an increased supply of currency relative to the quantity of redeemable metal backing the currency.

Following the proliferation of private banknote currency printed during the American Civil War, the term "inflation" started to appear as a direct reference to the *currency depreciation* that occurred as the quantity of redeemable banknotes outstripped the quantity of metal available for their redemption. At that time, the term inflation referred to the devaluation of the currency, and not to a rise in the price of goods.

This relationship between the over-supply of banknotes and a resulting depreciation in their value was noted by earlier classical economists such as David Hume and David Ricardo, who would go on to examine and debate what effect a currency devaluation (later termed monetary inflation) has on the price of goods (later termed *price inflation*, and eventually just *inflation*).

The adoption of fiat currency by many countries, from the 18th century onwards, made much larger variations in the supply of money possible. Since then, huge increases in the supply of paper money have taken place in a number of countries, producing hyperinflations – episodes of extreme inflation rates much higher than those observed in earlier periods of commodity money. The hyperinflation in the Weimar Republic of Germany is a notable example.

3.2 Definitions

The term "inflation" originally referred to increases in the amount of money in circulation, and some economists still use the word in this way. However, most economists today use the term "inflation" to refer to a rise in the price level. An increase in the money supply may be called monetary inflation, to distinguish it from rising prices, which may also for clarity be called 'price inflation'. Economists generally agree that in the long run, inflation is caused by increases in the money supply.

Other economic concepts related to inflation include: deflation – a fall in the general price level; disinflation – a decrease in the rate of inflation; hyperinflation – an out-of-control inflationary spiral; stagflation – a combination of inflation, slow economic growth and high unemployment; and reflation – an attempt to raise the general level of prices to counteract deflationary pressures.

Since there are many possible measures of the price level, there are many possible measures of price inflation. Most frequently, the term "inflation" refers to a rise in a broad price index representing the overall price level for goods and services in the economy.

The Consumer Price Index (CPI), the Personal Consumption Expenditures Price Index (PCEPI) and the GDP deflator are some examples of broad price indices. However, "inflation" may also be used to describe a rising price level within a narrower set of assets, goods or services within the economy, such as commodities (including food, fuel, metals), tangible assets (such as real estate), financial assets (such as stocks, bonds), services (such as entertainment and health care), or labour.

The Reuters-CRB Index (CCI), the Producer Price Index, and Employment Cost Index (ECI) are examples of narrow price indices used to measure price inflation in particular sectors of the economy. Core inflation is a measure of inflation for a subset of consumer prices that excludes food and energy prices, which rise and fall more than other prices in the short term.

The **Federal Reserve Board** pays particular attention to the core inflation rate to get a better estimate of long-term future inflation trends overall.

3.3 Measures

The inflation rate is widely calculated by calculating the movement or change in a price index, usually the consumer price index.

The consumer price index measures movements in prices of a fixed basket of goods and services purchased by a "typical consumer". The inflation rate is the percentage rate of change of a price index over time.

The Retail Prices Index is also a measure of inflation that is commonly used in the United Kingdom. It is broader than the CPI and contains a larger basket of goods and services.

To illustrate the method of calculation, in January 2007, the U.S. Consumer Price Index was 202.416, and in January 2008 it was 211.080. The formula for calculating the annual percentage rate inflation in the CPI over the course of 2007 is the resulting inflation rate for the CPI in this one year period is 4.28%, meaning the general level of prices for typical U.S. consumers rose by approximately four percent in 2007.

Other widely used price indices for calculating price inflation include the following:

- Producer price indices (PPIs) which measures average changes in prices received by domestic producers for their output. This differs from the CPI in that price subsidisation, profits, and taxes may cause the amount received by the producer to differ from what the consumer paid. There is also typically a delay between an increase in the PPI and any eventual increase in the CPI. Producer price index measures the pressure being put on producers by the costs of their raw materials. This could be "passed on" to consumers, or it could be absorbed by profits, or offset by increasing productivity. In India and the United States, an earlier version of the PPI was called the Wholesale Price Index.
- Commodity price indices, which measure the price of a selection of commodities. In the present commodity price indices are weighted by the relative importance of the components to the "all in" cost of an employee.
- Core price indices: because food and oil prices can change quickly due to changes in supply and demand conditions in the food and oil markets, it can be difficult to detect the long run trend in price levels when those prices are included. Therefore most statistical agencies also report a measure of 'core inflation', which removes the most volatile components (such as food and oil) from a broad price index like the CPI. Because core inflation is less affected by short run supply and demand conditions in specific markets, central banks rely on it to better measure the inflationary impact of current monetary policy.

Other common measures of inflation are:

- GDP deflator is a measure of the price of all the goods and services included in gross domestic product (GDP). The US Commerce Department publishes a deflator series for US GDP, defined as its nominal GDP measure divided by its real GDP measure.
- Regional inflation The Bureau of Labour Statistics breaks down CPI-U calculations down to different regions of the US.
- Historical inflation before collecting consistent econometric data became standard for governments, and for the purpose of comparing absolute, rather than relative standards

of living, various economists have calculated imputed inflation figures. Most inflation data before the early 20th century is imputed based on the known costs of goods, rather than compiled at the time. It is also used to adjust for the differences in real standard of living for the presence of technology.

- Asset price inflation is an undue increase in the prices of real or financial assets, such as stock (equity) and real estate. While there is no widely accepted index of this type, some central bankers have suggested that it would be better to aim at stabilizing a wider general price level inflation measure that includes some asset prices, instead of stabilising CPI or core inflation only. The reason is that by raising interest rates when stock prices or real estate prices rise, and lowering them when these asset prices fall, central banks might be more successful in avoiding bubbles and crashes in asset prices.

3.4 Issues in Measuring

Measuring inflation in an economy requires objective means of differentiating changes in nominal prices on a common set of goods and services, and distinguishing them from those price shifts resulting from changes in value such as volume, quality, or performance. For example, if the price of a 10 oz. can of corn changes from \$0.90 to \$1.00 over the course of a year, with no change in quality, then this price difference represents inflation.

This single price change would not, however, represent general inflation in an overall economy. To measure overall inflation, the price change of a large "basket" of representative goods and services is measured. This is the purpose of a price index, which is the combined price of a "basket" of many goods and services.

The combined price is the sum of the weighted prices of items in the "basket". A weighted price is calculated by multiplying the unit prices of an item by the number of that item the average consumer purchases. Weighted pricing is a necessary means to measuring the impact of individual unit price changes on the economy's overall inflation.

The Consumer Price Index, for example, uses data collected by surveying households to determine what proportion of the typical consumer's overall spending is spent on specific goods and services, and weights the average prices of those items accordingly. Those weighted average prices are combined to calculate the overall price.

To better relate price changes over time, indexes typically choose a "base year" price and assign it a value of 100. Index prices in subsequent years are then expressed in relation to the base year price. While comparing inflation measures for various periods one has to take into consideration the base effect as well.

Inflation measures are often modified over time, either for the relative weight of goods in the basket, or in the way in which goods and services from the present are compared with goods and services from the past. Over time, adjustments are made to the type of goods and services selected in order to reflect changes in the sorts of goods and services purchased by 'typical consumers'.

New products may be introduced, older products disappear, the quality of existing products may change, and consumer preferences can shift. Both the sorts of goods and services which are included in the "basket" and the weighted price used in inflation measures will be changed over time in order to keep pace with the changing marketplace.

Inflation numbers are often seasonally adjusted in order to differentiate expected cyclical cost shifts. For example, home heating costs are expected to rise in colder months, and

seasonal adjustments are often used when measuring for inflation to compensate for cyclical spikes in energy or fuel demand. Inflation numbers may be averaged or otherwise subjected to statistical techniques in order to remove statistical noise and volatility of individual prices.

When looking at inflation, economic institutions may focus only on certain kinds of prices, or *special indices*, such as the core inflation index which is used by central banks to formulate monetary policy.

Most inflation indices are calculated from weighted averages of selected price changes. This necessarily introduces distortion, and can lead to legitimate disputes about what the true inflation rate is. This problem can be overcome by including all available price changes in the calculation, and then choosing the median value. In some other cases, governments may intentionally report false inflation rates; for instance, the government of Argentina has been criticised for manipulating economic data, such as inflation and GDP figures, for political gain and to reduce payments on its inflation-indexed debt.

3.5 Effects

General Effects

An increase in the general level of prices implies a decrease in the purchasing power of the currency. That is, when the general level of prices rises, each monetary unit buys fewer goods and services.

The effect of inflation is not distributed evenly in the economy, and as a consequence there are hidden costs to some and benefits to others from this decrease in the purchasing power of money.

For example, with inflation, those segments in society which own physical assets, such as property, stock etc., benefit from the price/value of their holdings going up, while those who seek to acquire them will need to pay more for them.

Their ability to do so will depend on the degree to which their income is fixed. For example, increases in payments to workers and pensioners often lag behind inflation, and for some people income is fixed. Also, individuals or institutions with cash assets will experience a decline in the purchasing power of the cash.

Increases in the price level (inflation) erode the real value of money (the functional currency) and other items with an underlying monetary nature.

Debtors who have debts with a fixed nominal rate of interest will see a reduction in the "real" interest rate as the inflation rate rises. The real interest on a loan is the nominal rate minus the inflation rate.

The formula $R = N - I$ approximates the correct answer as long as both the nominal interest rate and the inflation rate are small. The correct equation is $r = n/i$ where r , n and i are expressed as ratios (e.g. 1.2 for +20%, 0.8 for -20%). As an example, when the inflation rate is 3%, a loan with a nominal interest rate of 5% would have a real interest rate of approximately 2%.

Any unexpected increase in the inflation rate would decrease the real interest rate. Banks and other lenders adjust for this inflation risk either by including an inflation risk premium to fixed interest rate loans, or lending at an adjustable rate.

Negative Effects

High or unpredictable inflation rates are regarded as harmful to an overall economy. They add inefficiencies in the market, and make it difficult for companies to budget or plan long-term.

Inflation can act as a drag on productivity as companies are forced to shift resources away from products and services in order to focus on profit and losses from currency inflation. Uncertainty about the future purchasing power of money discourages investment and saving.

And inflation can impose hidden tax increases, as inflated earnings push taxpayers into higher income tax rates unless the tax brackets are indexed to inflation.

With high inflation, purchasing power is redistributed from those on fixed nominal incomes, such as some pensioners whose pensions are not indexed to the price level, towards those with variable incomes whose earnings may better keep pace with the inflation.

This redistribution of purchasing power will also occur between international trading partners. Where fixed exchange rates are imposed, higher inflation in one economy than another will cause the first economy's exports to become more expensive and affect the balance of trade. There can also be negative impacts to trade from an increased instability in currency exchange prices caused by unpredictable inflation.

Cost-push inflation

High inflation can prompt employees to demand rapid wage increases, to keep up with consumer prices. In the cost-push theory of inflation, rising wages in turn can help fuel inflation. In the case of collective bargaining, wage growth will be set as a function of inflationary expectations, which will be higher when inflation is high. This can cause a wage spiral. In a sense, inflation begets further inflationary expectations, which beget further inflation.

Hoarding

People buy durable and/or non-perishable commodities and other goods as stores of wealth, to avoid the losses expected from the declining purchasing power of money, creating shortages of the hoarded goods.

Social unrest and revolts

Inflation can lead to massive demonstrations and revolutions. For example, inflation and in particular food inflation is considered as one of the main reasons that caused the 2010–2011 Tunisian revolution and the 2011 Egyptian revolution,^[40] according to many observers including Robert Zoellick, president of the World Bank. Tunisian president Zine El Abidine Ben Ali was ousted, Egyptian President Hosni Mubarak was also ousted after only 18 days of demonstrations, and protests soon spread in many countries of North Africa and Middle East.

Hyperinflation

If inflation gets totally out of control (in the upward direction), it can grossly interfere with the normal workings of the economy, hurting its ability to supply goods. Hyperinflation can lead to the abandonment of the use of the country's currency, leading to the inefficiencies of barter.

Allocative efficiency

A change in the supply or demand for a good will normally cause its relative price to change, signaling to buyers and sellers that they should re-allocate resources in response to the new market conditions. But when prices are constantly changing due to inflation, price changes due to genuine relative price signals are difficult to distinguish from price changes due to general inflation, so agents are slow to respond to them. The result is a loss of allocative efficiency.

Shoe leather cost

High inflation increases the opportunity cost of holding cash balances and can induce people to hold a greater portion of their assets in interest paying accounts. However, since cash is still needed in order to carry out transactions this means that more "trips to the bank" are necessary in order to make withdrawals, proverbially wearing out the "shoe leather" with each trip.

Menu costs

With high inflation, firms must change their prices often in order to keep up with economy-wide changes. But often changing prices is itself a costly activity whether explicitly, as with the need to print new menus, or implicitly, as with the extra time and effort needed to change prices constantly.

Business cycles

According to the Austrian Business Cycle Theory, inflation sets off the business cycle. Austrian economists hold this to be the most damaging effect of inflation. According to Austrian theory, artificially low interest rates and the associated increase in the money supply lead to reckless, speculative borrowing, resulting in clusters of mal-investments, which eventually have to be liquidated as they become unsustainable.

Positive Effects

Labour-market adjustments

Nominal wages are slow to adjust downwards. This can lead to prolonged disequilibrium and high unemployment in the labour market. Since inflation allows real wages to fall even if nominal wages are kept constant, moderate inflation enables labour markets to reach equilibrium faster.

Room to maneuver

The primary tools for controlling the money supply are the ability to set the discount rate, the rate at which banks can borrow from the central bank, and open market operations, which are the central bank's interventions into the bonds market with the aim of affecting the nominal interest rate. If an economy finds itself in a recession with already low, or even zero, nominal interest rates, then the bank cannot cut these rates further (since negative nominal interest rates are impossible) in order to stimulate the economy – this situation is known as a liquidity trap. A moderate level of inflation tends to ensure that nominal interest rates stay sufficiently above zero so that if the need arises the bank can cut the nominal interest rate.

Mundell–Tobin effect

The Nobel laureate Robert Mundell noted that moderate inflation would induce savers to substitute lending for some money holding as a means to finance future spending. That substitution would cause market clearing real interest rates to fall. The lower real rate of interest would induce more borrowing to finance investment. In a similar vein, Nobel laureate James Tobin noted that such inflation would cause businesses to substitute investment in physical capital (plant, equipment, and inventories) for money balances in their asset portfolios. That substitution would mean choosing the making of investments with lower rates of real return. (The rates of return are lower because the investments with higher rates of return were already being made before.) The two related effects are known as the Mundell–Tobin effect. Unless the economy is already overinvesting according to models of economic growth theory, that extra investment resulting from the effect would be seen as positive.

Instability with deflation

Economist S.C. Tsai noted that once substantial deflation is expected, two important effects will appear; both a result of money holding substituting for lending as a vehicle for saving. The first was that continually falling prices and the resulting incentive to hoard money will cause instability resulting from the likely increasing fear, while money hoards grow in value, that the value of those hoards are at risk, as people realise that a movement to trade those money hoards for real goods and assets will quickly drive those prices up. Any movement to spend those hoards "once started would become a tremendous avalanche, which could rampage for a long time before it would spend itself. "Thus, a regime of long-term deflation is likely to be interrupted by periodic spikes of rapid inflation and consequent real economic disruptions. Moderate and stable inflation would avoid such a seesawing of price movements.

Financial market inefficiency with deflation

The second effect noted by Tsai is that when savers have substituted money holding for lending on financial markets, the role of those markets in channeling savings into investment is undermined. With nominal interest rates driven to zero, or near zero, from the competition with a high return money asset, there would be no price mechanism in whatever is left of those markets. With financial markets effectively euthanized, the remaining goods and physical asset prices would move in perverse directions. For example, an increased desire to save could not push interest rates further down (and thereby stimulate investment) but would instead cause additional money hoarding, driving consumer prices further down and making investment in consumer goods production thereby less attractive. Moderate inflation, once its expectation is incorporated into nominal interest rates, would give those interest rates room to go both up and down in response to shifting investment opportunities, or savers' preferences, and thus allow financial markets to function in a more normal fashion.

3.6 Causes of Inflation

Historically, a great deal of economic literature was concerned with the question of what causes inflation and what effect it has. There were different schools of thought as to the causes of inflation. Most can be divided into two broad areas: quality theories of inflation and quantity theories of inflation.

The quality theory of inflation rests on the expectation of a seller accepting currency to be able to exchange that currency at a later time for goods that are desirable as a buyer.

The quantity theory of inflation rests on the quantity equation of money that relates the money supply, its velocity, and the nominal value of exchanges. Adam Smith and David Hume proposed a quantity theory of inflation for money, and a quality theory of inflation for production.

Currently, the quantity theory of money is widely accepted as an accurate model of inflation in the long run. Consequently, there is now broad agreement among economists that in the long run, the inflation rate is essentially dependent on the growth rate of money supply relative to the growth of the economy.

However, in the short and medium term inflation may be affected by supply and demand pressures in the economy, and influenced by the relative elasticity of wages, prices and interest rates.

The question of whether the short-term effects last long enough to be important is the central topic of debate between monetarist and Keynesian economists. In monetarism prices and wages adjust quickly enough to make other factors merely marginal behavior on a general trend-line. In the Keynesian view, prices and wages adjust at different rates, and these differences have enough effects on real output to be "long term" in the view of people in an economy.

Keynesian view

Keynesian economics proposes that changes in money supply do not directly affect prices, and that visible inflation is the result of pressures in the economy expressing themselves in prices.

There are three major types of inflation, as part of what Robert J. Gordon calls the "triangle model":

- Demand-pull inflation is caused by increases in aggregate demand due to increased private and government spending, etc. Demand inflation encourages economic growth since the excess demand and favourable market conditions will stimulate investment and expansion.
- Cost-push inflation, also called "supply shock inflation," is caused by a drop in aggregate supply (potential output). This may be due to natural disasters, or increased prices of inputs. For example, a sudden decrease in the supply of oil, leading to increased oil prices, can cause cost-push inflation. Producers for whom oil is a part of their costs could then pass this on to consumers in the form of increased prices. Another example stems from unexpectedly high Insured Losses, either legitimate (catastrophes) or fraudulent (which might be particularly prevalent in times of recession)
- Built-in inflation is induced by adaptive expectations, and is often linked to the "price/wage spiral". It involves workers trying to keep their wages up with prices (above the rate of inflation), and firms passing these higher labour costs on to their customers as higher prices, leading to a 'vicious circle'. Built-in inflation reflects events in the past, and so might be seen as hangover inflation.
- Demand-pull theory states that inflation accelerates when aggregate demand increases beyond the ability of the economy to produce (its potential output). Hence, any factor that increases aggregate demand can cause inflation. However, in the long run, aggregate

demand can be held above productive capacity only by increasing the quantity of money in circulation faster than the real growth rate of the economy. Another (although much less common) cause can be a rapid decline in the *demand* for money, as happened in Europe during the Black Death, or in the Japanese occupied territories just before the defeat of Japan in 1945.

The effect of money on inflation is most obvious when governments finance spending in a crisis, such as a civil war, by printing money excessively. This sometimes leads to hyperinflation, a condition where prices can double in a month or less. Money supply is also thought to play a major role in determining moderate levels of inflation, although there are differences of opinion on how important it is. For example, Monetarist economists believe that the link is very strong; Keynesian economists, by contrast, typically emphasize the role of aggregate demand in the economy rather than the money supply in determining inflation. That is, for Keynesians, the money supply is only one determinant of aggregate demand.

Some Keynesian economists also disagree with the notion that central banks fully control the money supply, arguing that central banks have little control, since the money supply adapts to the demand for bank credit issued by commercial banks. This is known as the theory of endogenous money, and has been advocated strongly by post-Keynesians as far back as the 1960s. It has today become a central focus of Taylor rule advocates. This position is not universally accepted – banks create money by making loans, but the aggregate volume of these loans diminishes as real interest rates increase. Thus, central banks can influence the money supply by making money cheaper or more expensive, thus increasing or decreasing its production.

A fundamental concept in inflation analysis is the relationship between inflation and unemployment, called the Phillips curve. This model suggests that there is a trade-off between price stability and employment. Therefore, some level of inflation could be considered desirable in order to minimize unemployment. The Phillips curve model described the U.S. experience well in the 1960s but failed to describe the combination of rising inflation and economic stagnation (sometimes referred to as stagflation) experienced in the 1970s.

Thus, modern macroeconomics describes inflation using a Phillips curve that *shifts* (so the trade-off between inflation and unemployment changes) because of such matters as supply shocks and inflation becoming built into the normal workings of the economy. The former refers to such events as the oil shocks of the 1970s, while the latter refers to the price/wage spiral and inflationary expectations implying that the economy "normally" suffers from inflation. Thus, the Phillips curve represents only the demand-pull component of the triangle model.

Another concept of note is the potential output (sometimes called the "natural gross domestic product"), a level of GDP, where the economy is at its optimal level of production given institutional and natural constraints. (This level of output corresponds to the Non-Accelerating Inflation Rate of Unemployment, NAIRU, or the "natural" rate of unemployment or the full-employment unemployment rate.) If GDP exceeds its potential (and unemployment is below the NAIRU), the theory says that inflation will *accelerate* as suppliers increase their prices and built-in inflation worsens. If GDP falls below its potential level (and unemployment is above the NAIRU), inflation will *decelerate* as suppliers attempt to fill excess capacity, cutting prices and undermining built-in inflation.

However, one problem with this theory for policy-making purposes is that the exact level of potential output (and of the NAIRU) is generally unknown and tends to change over time. Inflation also seems to act in an asymmetric way, rising more quickly than it falls. Worse, it can change because of policy: for example, high unemployment under British Prime Minister Margaret Thatcher might have led to a rise in the NAIRU (and a fall in potential) because many of the unemployed found themselves as structurally unemployed (also see unemployment), unable to find jobs that fit their skills. A rise in structural unemployment implies that a smaller percentage of the labour force can find jobs at the NAIRU, where the economy avoids crossing the threshold into the realm of accelerating inflation.

Unemployment

A connection between inflation and unemployment has been drawn since the emergence of large scale unemployment in the 19th century, and connections continue to be drawn today. However, the unemployment rate generally only affects inflation in the short-term but not the long-term. In the long term, the velocity of money supply measures such as the MZM ("Money Zero Maturity," representing cash and equivalent demand deposits) velocity is far more predictive of inflation than low unemployment.

In Marxian economics, the unemployed serve as a reserve army of labour, which restrain wage inflation. In the 20th century, similar concepts in Keynesian economics include the NAIRU (Non-Accelerating Inflation Rate of Unemployment) and the Phillips curve.

Monetarist view

Monetarists believe the most significant factor influencing inflation or deflation is how fast the money supply grows or shrinks. They consider fiscal policy, or government spending and taxation, as ineffective in controlling inflation. According to the famous monetarist economist Milton Friedman, "*Inflation is always and everywhere a monetary phenomenon.*" Some monetarists, however, will qualify this by making an exception for very short-term circumstances.

Monetarists assert that the empirical study of monetary history shows that inflation has always been a monetary phenomenon. The quantity theory of money, simply stated, says that any change in the amount of money in a system will change the price level. This theory begins with the equation of exchange: where M is the nominal quantity of money, V is the velocity of money in final expenditures; P is the general price level; Y is an index of the real value of final expenditures;

In this formula, the general price level is related to the level of real economic activity (Q), the quantity of money (M) and the velocity of money (V). The formula is an identity because the velocity of money (V) is defined to be the ratio of final nominal expenditure (PY) to the quantity of money (M).

Monetarists assume that the velocity of money is unaffected by monetary policy (at least in the long run), and the real value of output is determined in the long run by the productive capacity of the economy. Under these assumptions, the primary driver of the change in the general price level is changes in the quantity of money. With exogenous velocity (that is, velocity being determined externally and not being influenced by monetary policy), the money supply determines the value of nominal output (which equals final expenditure) in the short run. In practice, velocity is not exogenous in the short run, and so the formula does not necessarily imply a stable short-run relationship between the money supply and nominal output. However, in the long run, changes in velocity are assumed to be

determined by the evolution of the payments mechanism. If velocity is relatively unaffected by monetary policy, the long-run rate of increase in prices (the inflation rate) is equal to the long-run growth rate of the money supply plus the exogenous long-run rate of velocity growth minus the long run growth rate of real output.

Rational expectations theory

Rational expectations theory holds that economic actors look rationally into the future when trying to maximise their well-being, and do not respond solely to immediate opportunity costs and pressures. In this view, while generally grounded in monetarism, future expectations and strategies are important for inflation as well.

A core assertion of rational expectations theory is that actors will seek to "head off" central-bank decisions by acting in ways that fulfill predictions of higher inflation. This means that central banks must establish their credibility in fighting inflation, or economic actors will make bets that the central bank will expand the money supply rapidly enough to prevent recession, even at the expense of exacerbating inflation. Thus, if a central bank has a reputation as being "soft" on inflation, when it announces a new policy of fighting inflation with restrictive monetary growth economic agents will not believe that the policy will persist; their inflationary expectations will remain high, and so will inflation. On the other hand, if the central bank has a reputation of being "tough" on inflation, then such a policy announcement will be believed and inflationary expectations will come down rapidly, thus allowing inflation itself to come down rapidly with minimal economic disruption.

Heterodox views

There are also various heterodox theories that downplay or reject the views of the Keynesians and monetarists.

Austrian view

The Austrian School asserts that inflation is an increase in the money supply, rising prices are merely consequences and this semantic difference is important in defining inflation.^[54] Austrians stress that inflation affects prices to various degrees (i.e., that prices rise more sharply in some sectors than in other sectors of the economy). The reason for the disparity is that excess money will be concentrated to certain sectors, such as housing, stocks or health care. Because of this disparity, Austrians argue that the aggregate price level can be very misleading when observing the effects of inflation. Austrian economists measure inflation by calculating the growth of new units of money that are available for immediate use in exchange, that have been created over time.

Critics of the Austrian view point out that their preferred alternative to fiat currency intended to prevent inflation, commodity-backed money, is likely to grow in supply at a different rate than economic growth. Thus it has proven to be highly deflationary and destabilising, including in instances where it has caused and prolonged depressions.

Real bills doctrine

Within the context of a fixed specie basis for money, one important controversy was between the quantity theory of money and the real bills doctrine (RBD). Within this context, quantity theory applies to the level of fractional reserve accounting allowed against specie, generally gold, held by a bank. Currency and banking schools of economics argue the

RBD, that banks should also be able to issue currency against bills of trading, which is "real bills" that they buy from merchants. This theory was important in the 19th century in debates between "Banking" and "Currency" schools of monetary soundness, and in the formation of the Federal Reserve. In the wake of the collapse of the international gold standard post 1913, and the move towards deficit financing of government, RBD has remained a minor topic, primarily of interest in limited contexts, such as currency boards. It is generally held in ill repute today, with Frederic Mishkin, a governor of the Federal Reserve going so far as to say it had been "completely discredited."

The debate between currency, or quantity theory, and banking schools in Britain during the 19th century prefigures current questions about the credibility of money in the present. In the 19th century the banking school had greater influence in policy in the United States and Great Britain, while the currency school had more influence "on the continent", that is in non-British countries, particularly in the Latin Monetary Union and the earlier Scandinavia monetary union.

Anti-classical or backing theory

Another issue associated with classical political economy is the anti-classical hypothesis of money, or "backing theory". The backing theory argues that the value of money is determined by the assets and liabilities of the issuing agency. Unlike the Quantity Theory of classical political economy, the backing theory argues that issuing authorities can issue money without causing inflation so long as the money issuer has sufficient assets to cover redemptions. There are very few backing theorists, making quantity theory the dominant theory explaining inflation.

3.7 Controlling Inflation

A variety of methods and policies have been used to control inflation.

Stimulating economic growth

If economic growth matches the growth of the money supply, inflation should not occur when all else is equal. A large variety of factors can affect the rate of both. For example, investment in market production, infrastructure, education, and preventative health care can all grow an economy in greater amounts than the investment spending.

Monetary policy

Today the primary tool for controlling inflation is monetary policy. Most central banks are tasked with keeping their inter-bank lending rates at low levels; normally to a target rate around 2% to 3% per annum, and within a targeted low inflation range, somewhere from about 2% to 6% per annum. A low positive inflation is usually targeted, as deflationary conditions are seen as dangerous for the health of the economy.

There are a number of methods that have been suggested to control inflation. Central banks such as the U.S. Federal Reserve can affect inflation to a significant extent through setting interest rates and through other operations. High interest rates and slow growth of the money supply are the traditional ways through which central banks fight or prevent inflation, though they have different approaches. For instance, some follow a symmetrical inflation target while others only control inflation when it rises above a target, whether express or implied.

Monetarists emphasize keeping the growth rate of money steady, and using monetary policy to control inflation (increasing interest rates, slowing the rise in the money supply). Keynesians emphasize reducing aggregate demand during economic expansions and increasing demand during recessions to keep inflation stable. Control of aggregate demand can be achieved using both monetary policy and fiscal policy (increased taxation or reduced government spending to reduce demand).

Fixed exchange rates

Under a fixed exchange rate currency regime, a country's currency is tied in value to another single currency or to a basket of other currencies (or sometimes to another measure of value, such as gold). A fixed exchange rate is usually used to stabilize the value of a currency, vis-a-vis the currency it is pegged to. It can also be used as a means to control inflation. However, as the value of the reference currency rises and falls, so does the currency pegged to it. This essentially means that the inflation rate in the fixed exchange rate country is determined by the inflation rate of the country the currency is pegged to. In addition, a fixed exchange rate prevents a government from using domestic monetary policy in order to achieve macroeconomic stability.

Under the Bretton Woods agreement, most countries around the world had currencies that were fixed to the US dollar. This limited inflation in those countries, but also exposed them to the danger of speculative attacks. After the Bretton Woods agreement broke down in the early 1970s, countries gradually turned to floating exchange rates. However, in the later part of the 20th century, some countries reverted to a fixed exchange rate as part of an attempt to control inflation. This policy of using a fixed exchange rate to control inflation was used in many countries in South America in the later part of the 20th century (e.g. Argentina (1991–2002), Bolivia, Brazil, and Chile).

Gold standard

The gold standard is a monetary system in which a region's common media of exchange are paper notes that are normally freely convertible into pre-set, fixed quantities of gold. The standard specifies how the gold backing would be implemented, including the amount of specie per currency unit. The currency itself has no *innate value*, but is accepted by traders because it can be redeemed for the equivalent specie. A U.S. silver certificate, for example, could be redeemed for an actual piece of silver.

The gold standard was partially abandoned via the international adoption of the Bretton Woods System. Under this system all other major currencies were tied at fixed rates to the dollar, which itself was tied to gold at the rate of \$35 per ounce. The Bretton Woods system broke down in 1971, causing most countries to switch to fiat money – money backed only by the laws of the country.

According to Lawrence H. White, an F. A. Hayek Professor of Economic History "who values the Austrian tradition", economies based on the gold standard rarely experience inflation above 2 percent annually. However, historically, the U.S. saw inflation over 2% several times and a higher peak of inflation under the gold standard when compared to inflation after the gold standard. Under a gold standard, the long term rate of inflation (or deflation) would be determined by the growth rate of the supply of gold relative to total output. Critics argue that this will cause arbitrary fluctuations in the inflation rate, and that monetary policy would essentially be determined by gold mining.

Wage and price controls

Another method attempted in the past has been wage and price controls ("incomes policies"). Wage and price controls have been successful in wartime environments in combination with rationing. However, their use in other contexts is far more mixed. Notable failures of their use include the 1972 imposition of wage and price controls by Richard Nixon. More successful examples include the Prices and Incomes Accord in Australia and the Wassenaar Agreement in the Netherlands.

In general, wage and price controls are regarded as a temporary and exceptional measure, only effective when coupled with policies designed to reduce the underlying causes of inflation during the wage and price control regime, for example, winning the war being fought. They often have perverse effects, due to the distorted signals they send to the market. Artificially low prices often cause rationing and shortages and discourage future investment, resulting in yet further shortages. The usual economic analysis is that any product or service that is under-priced is overconsumed. For example, if the official price of bread is too low, there will be too little bread at official prices, and too little investment in bread making by the market to satisfy future needs, thereby exacerbating the problem in the long term.

Temporary controls may *complement* a recession as a way to fight inflation: the controls make the recession more efficient as a way to fight inflation (reducing the need to increase unemployment), while the recession prevents the kinds of distortions that controls cause when demand is high. However, in general the advice of economists is not to impose price controls but to liberalise prices by assuming that the economy will adjust and abandon unprofitable economic activity. The lower activity will place fewer demands on whatever commodities were driving inflation, whether labour or resources, and inflation will fall with total economic output. This often produces a severe recession, as productive capacity is reallocated and is thus often very unpopular with the people whose livelihoods are destroyed (see creative destruction).

Cost-of-living allowance

The real purchasing-power of fixed payments is eroded by inflation unless they are inflation-adjusted to keep their real values constant. In many countries, employment contracts, pension benefits, and government entitlements (such as social security) are tied to a cost-of-living index, typically to the consumer price index. A *cost-of-living allowance* (COLA) adjusts salaries based on changes in a cost-of-living index. Salaries are typically adjusted annually in low inflation economies. During hyperinflation they are adjusted more often. They may also be tied to a cost-of-living index that varies by geographic location if the employee moves.

Annual escalation clauses in employment contracts can specify retroactive or future percentage increases in worker pay which are not tied to any index. These negotiated increases in pay are colloquially referred to as cost-of-living adjustments ("COLAs") or cost-of-living increases because of their similarity to increases tied to externally determined indexes.

4.0 Conclusion

Inflation reflects a reduction in the purchasing power per unit of money – a loss of real value in the medium of exchange and unit of account within the economy. A chief measure of price inflation is the inflation rate, the annualised percentage change in a general price index (normally the consumer price index) over time.

Inflation's effects on an economy are various and can be simultaneously positive and negative. Negative effects of inflation include an increase in the opportunity cost of holding money, uncertainty over future inflation which may discourage investment and savings, and if inflation is rapid enough, shortages of goods as consumers begin hoarding out of concern that prices will increase in the future. Positive effects include ensuring that central banks can adjust real interest rates (to mitigate recessions), and encouraging investment in non-monetary capital projects.

5.0 Summary

Inflation is a rise in the general level of prices of goods and services in an economy over a period of time. When the general price level rises, each unit of currency buys fewer goods and services. Consequently, inflation reflects a reduction in the purchasing power per unit of money – a loss of real value in the medium of exchange and unit of account within the economy. A chief measure of price inflation is the inflation rate, the annualised percentage change in a general price index (normally the consumer price index) over time.

Inflation's effects on an economy are various and can be simultaneously positive and negative. Negative effects of inflation include an increase in the opportunity cost of holding money, uncertainty over future inflation which may discourage investment and savings, and if inflation is rapid enough, shortages of goods as consumers begin hoarding out of concern that prices will increase in the future. Positive effects include ensuring that central banks can adjust real interest rates (to mitigate recessions), and encouraging investment in non-monetary capital projects.

6.0 Self-Assessment exercise

What are three major types of inflation, according to what Robert J. Gordon calls the "triangle model"?

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Unit 3 Interest Rates

1.0 Introduction

Interest refers to the fee charged by a lender to a borrower for the use of borrowed money, usually expressed as an annual percentage of the principal; the rate is dependent upon the time value of money, the credit risk of the borrower, and the inflation rate. It can also mean a return earned on an investment. In this Unit, we shall explore the definition of interest (rate) as well as discuss the theories. We shall also highlight interest rate as a monetary policy instrument or intermediate policy target in Nigeria. Furthermore, we shall discuss Nigeria's interest rate structure and its relationship to both investment decision and the balance of payment. Lastly, a look will be made at the United State's response to the prevailing global low interest level.

2.0 Objectives

At the end of this Unit, you should be able to:

- define interest and interest rate
- discuss the theories of interest rate, pointing out the various arguments of the economists
- highlight interest rate as a monetary policy instrument in Nigeria
- discuss Nigeria's interest rate structure and its relationship to both investment decision and the balance of payment
- explain the United States' response to the prevailing global low interest level.

3.0 Main Content

3.1 Definition of Interest

The rate of interest is the price of loan capital or the price paid for the use of money. Interest is expressed as a rate. It can be defined as 'a reward for lending and a cost of borrowing what may best be described as loanable funds.' Classical economists treated interest as a reward for saving or the reward for waiting. The neo-classical economists treated it as the return from capital (which is equal to the marginal product of capital) or the price that has to be paid for the use of loan capital. Keynes considered this as the reward for parting with liquidity (cash).

Knut Wicksell has defined interest as 'the payment made by the borrower of capital, by virtue of its productivity, as a reward for his abstinence.' Meyer has defined it as the price paid for the use of loanable funds. To some economists, notably Craver, it is 'the income that goes to the owner of capital.' A. C. Cairncross defines this as 'the price for the hire of loan.' Keynes treats interest as 'a purely monetary phenomenon and defines it as the premium which has to be offered to induce people to hold their wealth in some forms

other than hoarded money.’ All these definitions make one thing clear at least: interest is the payment that is made for the use of money (loan) capital.

Therefore, the interest rate is the percent charged, or paid, for the use of money. It is charged when the money is being borrowed, and paid when it is being loaned. The interest rate that the lender charges is a percent of the total amount loaned. Similarly, the interest rate that an institution, such as a bank, pays to hold your money is a percent of the total amount deposited.

Anyone can lend money and charge interest, or hold deposits and pay interest. However, it is usually the function of bank to make loans or hold deposits. How do banks get the money to make loans? Banks use the deposits made by people who keep their savings or checking accounts with them. Banks convince people to make deposits by paying interest rates. Banks are paying depositors for the right of using their money.

Banks then use that money to make loans. Banks charge borrowers a little higher interest rate than they pay depositors for that same money so they can profit for providing these services. Banks want to charge as much interest as possible on loans, and pay as little as possible on deposits, so they can be more profitable.

Interest rates are charged not only for loans, but also for mortgages, credit cards and unpaid bills. The interest rate is applied to the total unpaid portion of your loan or bill. It is important to know what your interest rate is (even as an individual), and how much it adds to your outstanding debt. If your interest rate adds more to your debt than the amount you are paying, your debt could actually increase even though you are making payments.

Interest rate is applicable on all types of lending all over the world. The factors/determinants include:

- Gross Domestic Product (GDP)
- Consumer Price Index
- Budget Deficit
- Money Supply
- Remittance
- Foreign Direct Investment

3.2 Theories of Interest Rates

Theories of interest rates have a long history, and its determination has been a controversial issue among economists. The core of the controversy is on the factors that influence interest rate determination. Many theories have been propounded on interest rate determination. Some of these can be highlighted.

I. The Classical Theory

The classical economists attempted to explain the determination of the rate of interest by the interaction of the market forces, that is, by the demand for capital (or investment) and the supply of capital (or savings). The capital theory lays stress on such real factors as thrift, time preference and productivity of capital. This is why it is called the real theory of interest.

The classical economists considered that the long-run interest rates were determined by the real forces – savings and productivity of capital. Thus, a higher interest rate should induce more savings. The reason could be seen in the fact people would tend to save more to derive more income in the future as a result of interest payment. The decision to save more and consume less could be considered as a choice between immediate consumption and deferred satisfaction. This could be on the opportunity cost of each alternative which could be measured by the real rate of interest. The real interest rate could therefore be taken to mean a price of deferred consumption.

2. The Loanable Funds Theory

The classical time preference –cum – marginal productivity theory attempted to explain interest in ‘real’ terms and it focused on the consumer goods or additional capital bought with borrowed money. But during the 1930s, some economists shifted attention to the monetary aspects of interest and maintained that the interest rate is determined by the supply of and demand for loanable funds.

The supply schedule, according to this theory, depends not only upon the amount of savings but also on the new additions to the money supply. The demand schedule is based largely on business needs for investment funds and cash balances to conduct everyday transactions. These schedules behave like any other demand and supply schedules, and their interaction determines the exchange rate.

Economists like D. Robertson and others who developed the loanable funds theory treated this theory as a monetary theory. They did not discard the earlier notions of time preference and the marginal productivity of capital. Instead, they supplemented the ‘real’ influences on the rate of interest by the monetary determinants. In other words, according to the loanable funds theory, the rate of interest is determined by both monetary forces such as money creation by commercial banks and non-banking financial institutions, hoarding and dishoarding of money, consumption loan given by banks, etc., as also by real forces such as thriftiness (which refers to an increased desire to save), waiting, time preference and productivity of capital.

3. The Liquidity Preference (or Monetary) Theory

A break with earlier theories occurred in 1936 with the publication of Keynes’ “General Theory of Employment, Interest and Money.” Keynes was skeptical about the importance of time and ‘real’ determinants of interest such as productivity of capital and also saving and investment. He developed a new concept, liquidity preference, and looked interest from a different angle. According to Keynes, the rate of interest is purely monetary phenomenon and is the reward not for saving but for parting with liquidity for a specific time period. And it is determined by the demand for and supply of money.

Keynes argued that people do not save because they want to defer consumption or because of the thrift motive. The amount of money that

4. Expectations Theory of Interest Rates

This is a theory that purports to explain the shape of the yield curve, or the term structure of interest rates. The forces that determine the shape of the yield curve have been widely debated among academic economists for a number of years. The American economist Irving Fisher advanced the expectations theory of interest rates to explain the shape of the

curve. According to this theory, longer-term rates are determined by investor expectations of future short-term rates.

In mathematical terms, the theory suggests that:

$$(1 + R_2)^2 = (1 + R_1) \times (1 + E(R_1))$$

Where

R_2 = the rate on two-year securities,

R_1 = the rate on one-year securities,

$E(R_1)$ = the rate expected on one-year securities one year from now.

The left side of this equation is the amount per dollar invested that the investor would have after two years if he invested in two-year securities. The right side shows the amount he can expect to have after two years if he invests in one-year obligations. Competition is assumed to make the left side equal to the right side.

The theory is easily generalized to cover any number of maturity classes. And however many maturity classes there may be, the theory always explains the existence of longer-term rates in terms of expected future shorter-term rates.

The expectations theory of interest rates provides the theoretical basis for the use of the yield curve as an analytical tool by economic and financial analysts. For example, an upward-sloping yield curve is explained as an indication that the market expects rising short-term rates in the future. Since rising rates normally occur during economic expansions, an upward-sloping yield curve is a sign that the market expects continued expansion in the level of economic activity.

Financial analysts sometimes use this equation to obtain a market-related forecast of future interest rates. It can be rewritten as follows:

$$E(R_1) = [(1 + R_2)^2 / (1 + R_1)] - 1$$

The equation suggests that the short-term rate expected by the market next period can be obtained from knowledge of rates today.

Self-Assessment Exercise

Discuss the liquidity preference theory of Keynes.

3.3 Interest Rate as a Monetary Policy Instrument or Intermediate Policy Target

Interest rate could be used as a monetary policy instrument in a regulated economic environment. This was the case in Nigeria up to 1986. When it was an instrument, the main target was that of influencing the immediate policy targets – credit availability – which in turn would produce the desired effects within the economy. Since interest rate represents the cost of borrowing, its increase in general tends to decrease the volume of credit available and implicitly the demand for loanable funds, all things being equal.

In the industrialised western countries however, interest rates are considered as immediate monetary targets and are therefore supposed to vary accordingly with the forces of the market. Interest rate fluctuation should not however be allowed to continue wildly as this could be detrimental to the economic progress of the society. Unstable interest rates create uncertainty in the assessment of future investment yields which may involve higher risk premiums in determining the levels of long-term interest rates. This implicitly means that unstable interest rates may further induce a higher average level of interest rates than would have otherwise been the case in a stable rate. It should therefore imply that a higher interest rate would hamper the rate of growth in economic development through the discouragement of the demand for loanable funds which is negatively related to the level of interest rates.

When the demand for loanable funds decreases, the growth rate in money stock also decreases and therefore, any excess supply of money over output potential may be contained. The excess of money stock over the output potential is what invariably leads to a rise in the general level of prices.

3.4 Interest Rate Structure in Nigeria and Its Relationship to both Investment Decisions and the Balance of Payments

Interest rates in Nigeria were generally low up to 1986 and the structure was more or less being administered by the Central Bank. Nigeria is a developing country and as such, like others, is in need of financial resources to execute various development programmes. Before funds are used, it is a precondition that they must be mobilized. The funds, which must be mobilised, consist of the savings of different units which must be utilised at a cost as represented by the interest rate. If the market information system is efficient and the cost of funds is relatively at a desirable level, more savings would likely be attracted both internally and externally. Households can even reduce their consumption in order to set aside an adequate part of their income for the purpose of acquiring income earning assets (debt instruments) with their savings.

The main point of interest is that higher interest rates attract more savings. In a developing nation like Nigeria, though the level of income is low, people still save for 'a rainy day.' Those who are aware of the existence of investment opportunities invest their savings properly. Borrowers, on the other hand, borrow money because of their operating deficits. Even though borrowers want money, they normally want it at a reduced cost. This depends more on the expected profitability of investment. Investors normally use the rate of return in deciding at what rate to borrow. The economic limit to any expansion of investment opportunities is where the internal rate of return is equal to the average interest rate on borrowed funds. In as much as the internal rate of return is higher than the interest rate, it is economically advisable to increase investment until the marginal efficiency of capital is equal to the cost of capital.

For reasons of accelerated economic development, interest rates have to be maintained at low levels for the following reasons:

To encourage the demand for loanable funds for increased economic activities by both private and public sector borrowers;

To minimise the debt servicing cost on the part of the government.

However, a low interest rate structure may have an undesirable impact on the balance of payments. The inward and outward flow of capital funds depends on the interest rate differentials between two countries or a group of countries with trade and financial relationships. Low levels of short-term interest rates discourage any form of inflow of short-term foreign capital. This could increase the level of funds in the money market and at the same time increase the volume of foreign exchange reserves. The positive effect of this is that of the stability of balance of payments, especially, the above-the-line section, which would be subjected to forces of instability due to the movements of short-term foreign capital.

Moreover, an average low level of interest rates could deny an economy much of this form of needed short-term capital. The implication is that since the low levels of short-term interest rates discourage any form of inflow of short-term foreign capital and also fail to attract private sector savers (especially on government securities), the Central Bank has to be forced to fill the gap. This in itself means inflationary monetary stance.

The inward movement of long-term foreign private capital is a reflection of direct foreign investment in industrial concerns more than that of portfolio investment in marketable fixed interest securities. This is because the purchase of fixed interest securities (portfolio investment) is different from direct foreign investment in promising companies. The former is limited to interest which is low. In addition, there are limited possibilities, if any, of having additional income from positive price differentials. The latter is subject to payment of dividends. The level of dividends, however, depends on the rate of return on invested capital and the dividend policy of the company.

Self-Assessment Exercise

Discuss interest rate as a monetary policy instrument in Nigeria.

3.5 The United States' Response to the Low Interest Level

The financial crisis that began in 2007 was the most intense period of global financial strains since the Great Depression, and it led to a deep and prolonged global economic downturn. The Federal Reserve took extraordinary actions in response to the financial crisis to help stabilize the U.S. economy and financial system. These actions included reducing the level of short-term interest rates to near zero. In addition, to reduce longer-term interest rates and thus provide further support for the U.S. economy, the Federal Reserve has purchased large quantities of longer-term Treasury securities and longer-term securities issued or guaranteed by government-sponsored agencies such as Fannie Mae or Freddie Mac. Low interest rates help households and businesses finance new spending and help support the prices of many other assets, such as stocks and houses.

By law, the Federal Reserve conducts monetary policy to achieve maximum employment, stable prices, and moderate long-term interest rates. The economy is recovering, but progress toward maximum employment has been slow and the unemployment rate remains elevated. At the same time, inflation has remained subdued, apart from temporary variations associated with fluctuations in prices of energy and other commodities. To support continued progress toward maximum employment and price stability, the Federal Open Market Committee expects that a highly accommodative stance of monetary policy will remain appropriate for a considerable time after the economic recovery strengthens. In its December 2012 statement, the Committee indicated that it currently anticipates that a target range for the federal funds rate of 0 to 1/4 per cent will be appropriate at least as long as the unemployment rate remains above 6-1/2 per cent, inflation between one and

two years ahead is projected to be no more than half a percentage point above the Committee's 2 per cent longer-run goal, and longer-term inflation expectations continue to be well anchored.

4.0 Conclusion

The real long-term interest rate, which matters for the macroeconomic effect of monetary policy, is about zero in some countries, but not very low in others, especially in the euro area crisis countries. Thus monetary policy is not universally accommodative. Low nominal short-term rates can disrupt financial markets. There are good reasons to be concerned about excessively high stock prices in some countries. Pension funds are under pressure from low returns; even though the situation may remain difficult for a while, this is the time for them to draw on their reserves.

5.0 Summary

In this Unit, we have been able to:

- define interest and interest rate
- discuss the theories of interest rate, pointing out the various arguments of the economists
- highlight interest rate as a monetary policy instrument in Nigeria or intermediate policy target
- discuss Nigeria's interest rate structure and its relationship to both investment decision and the balance of payment
- explain the United States' response to the prevailing global low interest level.

6.0 Self-Assessment exercise

1. Why is the prevailing global interest rate low?
2. How can Nigeria respond to the low interest rate?

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Unit 4 Exchange Rates

1.0 Introduction

If you asked a layman what the exchange rate is, he would probably tell you "it's the amount of dollars (or Euros, for example) you get to the naira". Whilst not the perfect definition, he is technically correct. Like most other rates in economics, the exchange rate is essentially a price and can be analysed in the same way we would a price. Take a typical supermarket price; say lemons are selling at the price of 3 for a naira or 33 kobo each. Then we can think of the naira-to-lemon exchange rate as being 3 lemons because if we give up one naira, we can get three lemons in return. Similarly, the lemon-to-dollar exchange rate is 1/3 of a naira or 33 kobo, because if you sell a lemon, you will get 33 kobo in return. Of course, most people would only need to understand exchanges rates when they go on holiday. But as an economist, one needs to understand how they affect the balance of payments, the inflation rate and many other important macroeconomic objectives. Unfortunately, the layman's definition of the exchange rate is not the only one.

2.0 Objectives

At the end of this unit, you should be able to:

- explain the meaning and application of exchange rates
- identify the various types of exchange rate systems
- discuss the difference between real and nominal exchange rates
- describe the different exchange rate models.

3.0 Main Content

3.1 Meaning of Exchange Rate

Exchange rate between two different national currencies is the rate at which one currency will be exchanged for another, that is, the value of one country's currency in terms of another. It is also known as foreign-exchange rate, forex rate or FX rate. Exchange rates are determined in the foreign exchange market, which is open to a wide range of different types of buyers and sellers where currency trading is continuous: 24 hours a day except weekends, i.e. trading from 20:15 GMT on Sunday until 22:00 GMT Friday. For example, an interbank exchange rate of 158 Nigerian Naira (NGN, ₦) to the United States dollar (US\$) means that ₦158 will be exchanged for each US\$1 or that US\$1 will be exchanged for each ₦158. Spot exchange rate refers to the current exchange rate. Forward exchange rate refers to an exchange rate that is quoted and traded today but for delivery and payment on a specific future date.

3.2 Currency Pairs

A currency pair is the quotation of the relative value of a currency unit against the unit of another currency in the foreign exchange market. The quotation EUR/USD 1.2500 means that 1 Euro is exchanged for 1.2500 US dollars. Here, EUR is called the "base currency" or "unit currency", while USD is called the "term currency" or "price currency". There is a market convention that determines which is the base currency and which is the term currency. In most parts of the world, the order is: EUR – GBP – AUD – NZD – USD – others. Quotes using a country's home currency as the price currency (e.g., EUR 0.735342 = USD 1.00) are known as direct quotation or price quotation (from that country's perspective) and are used by most countries. Quotes using a country's home currency as the unit currency (e.g., EUR 1.00 = USD 1.35991) are known as indirect quotation or quantity quotation and are used in British newspapers and are also common in Australia, New Zealand and the Eurozone.

3.3 Types of Exchange Rate Systems

Each country, through varying mechanisms, manages the value of its currency. As part of this function, it determines the exchange rate regime that will apply to its currency. The currency may be based on a free-floating or flexible, pegged or fixed, or a hybrid exchange rate system.

1. **Fixed exchange rate system:** Fixed exchange rate system is a system where the rate of exchange between two or more countries does not vary or varies only within narrow limits. Under the fixed or stable exchange rate system, the government of a country adjusts its economic policies in such a manner that a stable exchange rate is maintained; it is a system of changing lock to the key.

In the strict sense, fixed exchange rate system refers to the international gold standard (as existed before 1914) under which the countries define their currencies in gold at a ratio assumed to be fixed indefinitely. But, in modern times, the fixed exchange rate system is identified with adjustable peg system of the International Monetary Fund (IMF) under which the exchange rate is determined by the government and enforced through pegging operations or through some exchange controls.

2. **Flexible Exchange Rate System:** Flexible or free exchange rate system, on the other hand, is a system where the value of one currency in terms of another is free to fluctuate and establish its equilibrium level in the exchange market through the forces of demand and supply.

Under the flexible exchange rate system, the rate of exchange is allowed to vary to suit the economic policies of the government; it is a system of changing key to the lock. The flexible exchange rates are determined by the forces of demand and supply in the exchange market.

3. **Hybrid Exchange Rate Systems:** The current state of foreign exchange markets does not allow for the rigid system of fixed exchange rates. At the same time, freely floating exchange rates expose a country to volatility in exchange rates. Hybrid exchange rate systems have evolved in order to combine the characteristics features of fixed and flexible exchange rate systems. They allow fluctuation of the exchange rates without completely exposing the currency to the flexibility of a free float. Common examples are

the basket of currencies, crawling pegs, pegged with a band, currency boards and dollarisation.

3.4 Buying and Selling Rate

In retail currency exchange market, a different buying rate and selling rate will be quoted by money dealers. Most trades are to or from the local currency. The buying rate is the rate at which money dealers will buy foreign currency, and the selling rate is the rate at which they will sell the currency. The quoted rates will incorporate an allowance for a dealer's margin (or profit) in trading, or else the margin may be recovered in the form of a "commission" or in some other way. Different rates may also be quoted for cash (usually notes only), a documentary form (such as traveler's cheques) or electronically (such as a credit card purchase). The higher rate on documentary transactions is due to the additional time and cost of clearing the document, while the cash is available for resale immediately. Some dealers on the other hand prefer documentary transactions because of the security concerns with cash.

Table 1.1: US Foreign Exchange Rates

	Instrument	Rate	Sell	Buy	High	Low	Change	Chg %
 	USDJPY	82.152	82.152	82.182	82.202	82.023	-0.213	-0.26%
 	USDCHE	0.92840	0.92840	0.92880	0.93019	0.92872	0.00112	0.12%
 	USDHUF	215.63	215.63	216.38	216.87	216.38	-1.10	-0.51%
 	USDMXN	12.9548	12.9548	12.9648	12.9728	12.9637	0.0048	0.04%
 	USDPLN	3.1599	3.1599	3.1644	3.1702	3.1630	-0.0058	-0.18%
 	USDSEK	6.6462	6.6462	6.6512	6.6541	6.6448	0.0275	0.42%
 	USDSGD	1.22076	1.22076	1.22157	1.22248	1.22154	-0.00059	-0.05%
 	USDZAR	8.7875	8.7875	8.7995	8.8305	8.7920	-0.0737	-0.83%
 	USDDKK	5.7534	5.7534	5.7554	5.7644	5.7546	0.0075	0.13%
 	USDCAD	0.99164	0.99164	0.99204	0.99261	0.99181	-0.00080	-0.08%
 	USDNOK	5.6638	5.6638	5.6688	5.6695	5.6651	0.0088	0.16%
 	USDILS	3.8283	3.8283	3.8343	3.8396	3.8290	-0.0458	-1.18%
 	USDTRY	1.7878	1.7878	1.7898	1.7907	1.7897	-0.0050	-0.28%

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3.5 Real Exchange Rate

The real exchange rate (RER) is the purchasing power of a currency relative to another. It is the exchange rate after being adjusted for the effects of inflation. Exchange rate before inflation adjustment is usually called nominal exchange rate. The equation follows: real exchange rate = (nominal exchange rate X domestic price) / (foreign price). The RER is based on the Gross Domestic Product (GDP) deflator measurement of the price level in the domestic and foreign countries, which is arbitrarily set equal to 1 in a given base year. Therefore, the level of the RER is arbitrarily set depending on which year is chosen as the base year for the GDP deflator of two countries. The changes of the RER are instead informative on the evolution over time of the relative price of a unit of GDP in the foreign country in terms of GDP units of the domestic country. If all goods were freely tradable, and foreign and domestic residents purchased identical baskets of goods, purchasing power parity (PPP) would hold for the GDP deflators of the two countries, and the RER would be constant and equal to one.

An important relationship therefore exists between net exports and the real exchange rate within a country. When the real exchange rate is high, the relative price of goods at home is higher than the relative price of goods abroad. In this case, import is likely because foreign goods are cheaper, in real terms, than domestic goods. Thus, when the real exchange rate is high, net exports decrease as imports rise. Alternatively, when the real exchange rate is low, net exports increase as exports rise. This relationship helps to show the effects of changes in the real exchange rate.

3.6 Models of Foreign Exchange

Models predicting foreign exchange rate behavior have been developed. Some of these models include the balance of payments and the asset market approach and are expatiated thus.

The balance of payments model holds that foreign exchange rates are at an equilibrium level if they produce a stable current account balance. A nation with a trade deficit will experience a reduction in its foreign exchange reserves, which ultimately lowers (depreciates) the value of its currency. A cheaper (undervalued) currency renders the nation's goods (exports) more affordable in the global market while making imports more expensive. After an intermediate period, imports will be forced down and exports to rise, thus stabilising the trade balance and bring the currency towards equilibrium. Like purchasing power parity, the balance of payments model focuses largely on trade-able goods and services, ignoring the increasing role of global capital flows. In other words, money is not only chasing goods and services, but to a larger extent, financial assets such as stocks and bonds. Their flows go into the capital account item of the balance of payments, thus balancing the deficit in the current account. The increase in capital flows has given rise to the asset market model.

The asset market approach views currencies as asset prices traded in an efficient financial market. Consequently, currencies are increasingly demonstrating a strong correlation with other markets, particularly equities. Like the stock exchange, money can be made (or lost) on trading by investors and speculators in the foreign exchange market. Currencies can be traded at spot and foreign exchange options markets. The spot market represents current exchange rates, whereas options are derivatives of exchange rates.

3.7 Manipulation of Foreign Exchange Rate

A country may gain an advantage in international trade if it manipulates the market for its currency to artificially keep its value low, typically by the national central bank engaging in open market operations. It has been argued by US legislators that the People's Republic of China has been acting in that way over a long period of time. In 2010, other nations, including Japan and Brazil, attempted to devalue their currency in the hopes of reducing the cost of exports and thus bolstering their ailing economies. A low (undervalued) exchange rate lowers the price of a country's goods for consumers in other countries but raises the price of goods, especially imported goods, for consumers in the manipulating country.

4.0 Conclusion

Exchange rate (nominal exchange rate) between two different national currencies is the rate at which one currency will be exchanged for another, that is, the value of one country's

currency in terms of another. Currencies may be based on a free-floating or flexible, pegged or fixed, or a hybrid exchange rate system. The real exchange rate is the exchange rate after being adjusted for the effects of inflation.

Other technical exchange rate terms are mentioned as follows. A bilateral exchange rate involves a currency pair, while an effective exchange rate is a weighted average of a basket of foreign currencies, and it can be viewed as an overall measure of the country's external competitiveness. A nominal effective exchange rate (NEER) is weighted with the inverse of the asymptotic trade weights. A real effective exchange rate (REER) adjusts NEER by appropriate foreign price level and deflates by the home country price level. Compared to NEER, a GDP weighted effective exchange rate might be more appropriate considering the global investment phenomenon.

5.0 Summary

An exchange rate is the value of one currency expressed in terms of another. So £1 may be worth \$1.55 and €1.33. A currency that is getting stronger or appreciating is a currency that is going up in value against another. So £1:\$1.5 moving to £1:\$1.8 means the pound is getting stronger. A currency that is becoming weaker or depreciating is a currency that is going down in value against another. So £1:\$1.8 moving to £1:\$1.5 means the pound is getting weaker. Currencies change in value against each other all the time. This is because most currencies are based on flexible exchange rates (as against fixed exchange rates). Currencies change in value because there is a change in demand for holding that currency. Households, governments and businesses need other countries currencies to buy their goods and services (e.g. holiday makers for purchasing wine or a business buying spare parts for machinery from France will need Euros).

A change in exchange rates might affect a business in the following ways: Exchange rates changes can increase or lower the price of a product sold abroad, the price of imported raw materials may change and the price of competitors' products may change in the home market. For example an increase in the exchange rate will mean that price abroad goes up, lowering sales; price of imported raw materials falls, either leading to a fall in price and more sales, or an increase in profits; competitors' prices fall, meaning lower sales.

6.0 Self-Assessment exercise

1. What is the definition of exchange rate?
2. Explain the various types of exchange rate systems.
3. What is the difference between nominal and real exchange rate?

7.0 References/Further Reading

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