**TOPIC 2: MONEY AND THE PAYMENTS SYSTEM**

**Do we need money?**

Economists define **money** very broadly as *anything* that is generally accepted as payment for goods and services or in the settlement of debts. Do we need money? In the discussions of supply and demand, production, competition, and other microeconomic topics, money may not have been mentioned. There was an unstated understanding that money is involved in facilitating all of the buying and selling.

**Barter**

Economies *can* function without money. In the early stages of an economy’s development, individuals often exchange goods and services by trading output directly with each other. This type of exchange is called **barter**. For example, on the frontier in pre-colonial Africa, a farmer whose cow died might trade several pigs to a neighbouring farmer in exchange for one of the neighbour’s cows. In principle, people in a barter economy could satisfy all their needs by trading for goods and services, in which case they would not need money. In practice, though, barter economies are inefficient. There are four main sources of inefficiency in a barter economy. First, a buyer or seller must spend time and effort searching for trading partners. The first neighbour the farmer approaches may not want to trade a cow for pigs. In a barter system, each party to a trade must want what the other party has available to trade. That is, there must be a *double coincidence of wants*. Because of the time and effort spent searching for trading partners in a barter economy, the **transactions costs**, or the costs in time or other resources of making a trade or exchange, will be high. A second source of inefficiency is that under barter, each good has many prices. The farmer might be able to exchange three pigs for a cow, 10 Kilos of wheat for a Kilo of Beans, or a table for a wagon. So, what is the price of a cow, Beans, or a wagon? The answer is that each good will have many prices—one for every other good it might be exchanged for. A cow will have a price in terms of pigs, a price in terms of wheat, a price in terms of wagons, and so forth. A barter economy with only 100 goods would have 4,950 prices; one with 10,000 goods would have 49,995,000 prices! A third source of inefficiency arises from a lack of standardization: All pigs and cows are not the same, so the price of cows in terms of pigs would have to specify the size and other characteristics of the animals. Finally, imagine the difficulty of accumulating wealth. The only way to do so in a barter system would be by having piles of different goods stored away.

**The Invention of Money**

The inefficiencies of barter force most people to be self-sufficient. Returning to the pre-colonial Africa, people grew their own food, built their own homes, and made their own clothes and tools. Such economies have trouble growing because, in doing everything, an individual does some tasks well and does others poorly. To improve on barter, people had an incentive to identify a specific product that most people will generally accept in an exchange. In other words, they had a strong incentive to invent money. For example, in colonial times, animal skins were very useful in making clothing. A good used as money that also has value independent of its use as money is called **commodity money**. Historically, once a good became widely accepted as money, people who did not have an immediate use for it were still willing to accept it. A pre-colonial farmer might not want a skin, but as long as he knew he could use it to buy other goods and services, he would be willing to accept it in exchange for what he had to sell.

Once money is invented—as it has been many times and in many places around the world—transactions costs are greatly reduced, as are the other inefficiencies of barter. People can take advantage of **specialization**, producing the good or service for which they have relatively the best ability. Most people in modern economies are highly specialized. They do only one thing—work as an accountant, a teacher, or an engineer—and use the money they earn to buy everything else they need. By specializing, people are far more productive than they would be if they tried to produce all the goods and services they consume themselves. The high income levels in modern economies are based on the specialization that money makes possible.

So, the answer to the question “Do we need money?” is: “Yes, because money allows for specialization, higher productivity, and higher incomes.”

**KEY FUNCTIONS OF MONEY**

Money serves four key functions in the economy:

**1.** It acts as a medium of exchange.

**2.** It is a unit of account.

**3.** It is a store of value.

**4.** It offers a standard of deferred payment.

**Medium of Exchange**

If you are an employee, you are paid money for your services. You then use that money to buy goods and services. You essentially exchange your employment services for food, clothing, rent, and other goods and services. But unlike with barter, where goods and services are exchanged directly for other goods and services, the exchanges you participate in involve money. Money is providing the service of a **medium of exchange**. That is, money is the *medium* through which exchange takes place. Because, by definition, money is generally accepted as payment for goods and services or as payment for debts, you know that the money your employer pays you will be accepted at the stores where you purchase food, clothing, and other goods and services. In other words, you can specialize in your career without having to worry about directly producing the other goods and services you require to meet your needs, as you would in a barter economy.

**Unit of Account**

Using a good as a medium of exchange provides another benefit: Instead of having to quote the price of a single good in terms of many other goods—as is the case with barter—each good has a single price quoted in terms of the medium of exchange. This function of money gives households and firms a **unit of account**, or a way of measuring value in the economy in terms of money. For instance, in the current Kenya economy, each good or service has a price in terms of shillings.

**Store of Value**

Money allows value to be stored easily, thereby providing the service of a **store of value**. If you do not use all your accumulated cash to buy goods and services today, you can hold the rest for future use. Note, though, that if prices in an economy rise rapidly over time, the amount of goods and services a given amount of money can purchase declines, and money’s usefulness as a store of value is reduced.Of course, money is only one of many *assets* that can be used to store value. In fact, any asset—shares of stock, Treasury bonds, real estate, for example—represents a store of value. Indeed, financial assets, such as stocks and bonds, offer an important benefit relative to holding money because they generally pay interest or offer the possibility of increasing in value. Other assets also have advantages relative to money because they provide services. For instance, a house provides its owner with a place to sleep. Why, then, does anyone bother to hold money? The answer goes back to *liquidity*, or the ease with which an asset can be exchanged for money. Money itself is, of course, perfectly liquid, while you incur transactions costs when you exchange other assets for money. When you sell bonds or shares of stock to buy a car, for example, you pay a fee, or commission, online or to your broker. If you have to sell your house on short notice because you have been transferred to a job in another part of the country, you will have to pay a commission to a real estate agent and probably have to accept a lower price to exchange the house for money quickly. To avoid such transactions costs, people are willing to hold some money, even though other assets offer a greater return as a store of value.

**Standard of Deferred Payment**

Money is also useful because of its ability to serve as a **standard of deferred payment** in credit transactions. Money can facilitate exchange at a *given point in time* by providinga medium of exchange and unit of account. It can facilitate exchange *over time* byproviding a store of value and standard of deferred payment. For example, a furniturestore may order 25 dining room tables from a furniture manufacture by promising tomake full payment in 60 days.

**Distinguishing Among Money, Income, and Wealth**

It’s important to keep straight the differences between *money*, *income*, and *wealth.* We often say that individuals in *Forbes* magazine’s list of richest Africans have a lot of money (Uhuru Kenyatta was in the list). We don’t really mean that they have a lot of paper currency and coins in their pockets (or hidden away in their mansions); instead, we mean that they own valuable assets, such as stocks, bonds, or houses. Money, like other assets, is a component of **wealth**, which is the sum of the value of a person’s assets minus the value of the person’s liabilities. However, only if an asset serves as a medium of exchange can we call it *money*. A person’s *income* is equal to his or her earnings over a period of time. So, a person typically has considerably less money than income or wealth.

**What Can Serve as Money?**

Having a medium of exchange makes transactions easier and thus allows the economy to work more efficiently. The next logical question is: What can serve as money? That is, which assets should be used as the medium of exchange? We noted earlier that any asset can be used as money, provided that it is generally accepted as payment. In practical terms, an asset is suitable to use as a medium of exchange if it is:

● *Acceptable* to (that is, usable by) most people.

● *Standardized in terms of quality*, so that any two units are identical.

● *Valuable* relative to its weight, so that amounts large enough to be useful in trade can be easily transported.

● *Divisible*, because prices of goods and services vary.

**The Mystery of Fiat Money**

Notice that paper currency has no intrinsic value (unlike **commodity money**, where we said the commodity used as money has value independent of its use as money). You can use a Ksh. 200 bill to buy goods and services, but beyond that it has no value to you—except, perhaps, as a bookmark or souvenir (the way people keep rare currencies to show off). The Central Bank issues the paper currency of Kenya, but is under no obligation to redeem it for gold or any other commodity. Money, such as paper currency or coins, that have no value apart from its use as money is called **fiat money**. People accept paper currency in exchange for goods and services partly because the government has designated it to be **legal tender**, which means the government accepts paper currency in payment of taxes and requires that individuals and firms accept it in payment of debts. In reality, though, the more important reason paper currency circulates as a medium of exchange is the confidence of consumers and firms that if they accept paper currency they will be able to pass it along when they need to buy goods and services. Basically, it is a case of self-fulfilling expectations: You value something as money only if you believe that others will accept it from you as payment. Our society’s willingness to use pieces of paper issued by the Central Bank as money makes them an acceptable medium of exchange.

If consumers and firms ever lose confidence that they will be able to pass currency along in buying goods and services, then the currency will cease to be a medium of exchange. Again, during periods of hyperinflation, the value of money as a store of value is highly eroded, and consumers may lose confidence in the cash- this result or exacerbates currency crisis.

**THE PAYMENTS SYSTEM**

Money facilitates transactions in the economy. The mechanism for conducting such transactions is known as a payments system (that includes money and other modes of conducting transactions). The payments system has evolved over time from relying on payments made in gold and silver coins, to payments made with paper currency and checks written on deposits in banks, to payments made by electronic funds transfers.

**The Transition from Commodity Money to Fiat Money**

Although historians disagree about precisely when metallic coins first came into use, examples have survived from China from around the year 1000 B.C. and from Greece from around the year 700 B.C. For centuries thereafter, buyers and sellers used coins minted from precious metals, such as gold, silver, and copper, as money. Gold and silver coins suffer from some drawbacks, however. For instance, from the days of the

Roman Empire, to gain additional funds, governments would sometimes *debase* the currency, melting down coins and re-minting them with a greater amount of less valuable metals mixed in with the gold and silver. An economy’s reliance on gold and silver coins alone makes for a cumbersome payments system. People had difficulty transporting large numbers of gold coins to settle transactions and also ran the risk of being robbed. To get around this problem, beginning around the year A.D.1500 in Europe, governments and private firms—early banks—began to store gold coins in safe places and issue paper certificates of ownership of the gold. Anyone receiving a paper certificate could claim the equivalent amount of gold. As long as people had confidence that the gold was available if they demanded it, the paper certificates would circulate as a medium of exchange. In effect, paper currency had been invented.

In modern economies, the central banks issues paper currency. The modern payments system is a fiat money system because the Central Bank does not exchange paper currency for gold or any other commodity money. The central bank issues paper currency and holds deposits from banks and the government. Banks can use these deposits to settle transactions with one another. Today, the Central Bank has a legal monopoly on the right to issue currency. Although in the nineteenth century private banks issued their own currency, they can no longer do so.

**The Importance of Checks**

Paper money has drawbacks. For instance, it can be expensive to transport paper money to settle large commercial or financial transactions. Imagine going to buy a car with a suitcase full of notes! Another major innovation in the payments system came in the early twentieth century, with the increasing use of *checks*. **Checks** are promises to pay on demand money deposited with a bank or other financial institution. They can be written for any amount, and using them is a convenient way to settle transactions. Settling transactions with checks does, however, require more steps than settling transactions with currency. Suppose that your friend owes you Ksh. 5000. If she gives you Ksh. 5000 in cash, the transaction is settled. Suppose, however, that she writes you a check for Ksh. 5000. You first take the check to your bank. Your bank, in turn, must present the check for payment to your friend’s bank, which must then collect the money from her account. Processing the enormous flow of checks is costly. There are also information costs to using checks—the time and effort required for the seller to verify whether the check writer (the buyer) has a sufficient amount of money in her checking account to cover the amount of the check. Accepting checks requires more trust on the part of the seller than accepting cash does.

**Electronic Funds and Electronic Cash**

Breakthroughs in electronic telecommunication have improved the efficiency of the payments system, reducing the time needed for clearing checks and for transferring funds. Settling and clearing transactions now occur over *electronic funds transfer systems*, which are computerized payment-clearing devices such as *debit cards (ATM Cards)*, *Automated* *Clearing House (ACH)* transactions, *automated teller machines* (ATMs), Mobile cash transfer and *e-money*. Debit cards can be used like checks: Cash registers in supermarkets and retail stores are linked to bank computers, so when a customer uses a debit card to buy groceries or other products, his bank instantly credits the store’s account with the amount and deducts it from his account. Such a system eliminates the problem of trust between the buyer and seller that is associated with checks because the bank computer authorizes the transaction. ACH transactions include direct deposits of payroll checks into the checking accounts of workers and electronic payments on car loans and mortgages, where the payments are sent electronically from the payer’s account and deposited in the lender’s account. ACH transactions reduce the transactions costs associated with processing checks, reduce the likelihood of missed payments, and reduce the costs lenders incur in notifying borrowers of missed payments.

Thirty-five years ago, ATMs did not exist, so to deposit or withdraw money from your checking account, you needed to fill out a deposit or withdrawal slip and wait in line at a bank teller’s window. Adding to the inconvenience was the fact that many banks were open only between the hours of 9 A.M. and 3 P.M. Today, ATMs allow you to perform the same transactions at your bank whenever it is most convenient for you. Moreover, ATMs are connected to networks (such as Visa) so that you can make withdrawals of cash away from your home bank.

The boundaries of electronic funds transfers have expanded to include **e-money**, or electronic money, which is digital cash people use to buy goods and services over the Internet. A consumer purchases e-money from an Internet bank, which transfers the money to a merchant’s computer when the consumer makes a purchase. The best known form of e-money is the **PayPal** service, which is owned by eBay, the online auction site. An individual or a firm can set up a PayPal account by transferring funds from a checking account or credit card. As long as sellers are willing to accept funds transferred from a buyer’s PayPal (or other e-money) account, e-money functions as if it were conventional, government-issued money. The central bank does not control e-money, though, so it is essentially a private payments system. PayPal was originally developed to make payments for online auctions easier, but in recent years, PayPal and other e-money providers, such as Amazon.com’s PayPhrase, have attempted to expand to capture a greater share of the payments made online.

Mobile phones have also come in as efficient means of electronic funds transfers. Pioneered in Kenya, Mobile cash transfer services are spreading rapidly throughout the world. You can now pay bills, buy goods and pay for services using your mobile phone.

The developments in e-money are exciting and lead some commentators to talk about a “cashless society.” A Federal Reserve (An equivalent of Central Bank in the USA) study found that noncash payments continue to increase as a fraction of all payments, and electronic payments now make up more than two-thirds of all noncash payments. Not surprisingly, the number of checks written has been dropping by more than 2 billion per year in America. In reality, though, an entirely cashless (or checkless) society is unlikely for two key reasons. First, the infrastructure for an e-payments system is expensive to build. Second, many households and firms worry about protecting their privacy in an electronic system that is subject to computer hackers. While the flow of paper in the payments system is likely to shrink, it is unlikely to disappear.

The efficiency of the payments system, which increases as the cost of settling transactions decreases, is important for the economy. Suppose that the banking system broke down, and all transactions—commercial and financial—had to be carried out in cash. You would have to carry large amounts of cash to finance all your purchases and would incur additional costs for protecting your cash. No bank credit would be possible, severely harming the financial system’s role in matching savers and borrowers. Disruptions in the payments system increase the cost of trade and credit. Many economists, for example, blame the collapse of the banking system for the severity of the Great Depression of the 1930s. The efficient functioning of the economy’s payments system is a significant public policy concern. Governments typically regulate the medium of exchange and establish safeguards to protect the payments system.

**MEASURING MONEY SUPPLY**

Households, firms, and policymakers are all interested in measuring money because, as we will see, changes in the quantity of money are associated with changes in interest rates, prices, production, and employment. Recall that one of the functions that money provides is to serve as a medium of exchange. If this were the only function of money, then money should include only currency, checking account deposits, and traveller’s checks because households and firms can easily use these assets to buy goods and services. But including just these three assets would result in too narrow a measure of the money supply in the real world. Many other assets can be used as a medium of exchange, even though they are not as liquid as cash or a checking account deposit. For example, you can easily convert your savings account at a bank into cash. Likewise, if you own shares in a money market mutual fund—which is a mutual fund that invests exclusively in short-term bonds, such as Treasury bills—you can write checks against the value of your shares. So, assets such as savings accounts and money market mutual fund shares can plausibly be considered part of the medium of exchange.

**Measuring Monetary Aggregates**

As part of its responsibility to regulate the quantity of money in Kenya, the Central Bank currently publishes data on two different definitions of the money supply.

**M1 Aggregate** The narrower definition of the money supply is **M1**. it includes,

* Currency,
* Bank account deposits against which checks can be written (interest earning checking accounts in commercial banks, demand deposits, and checking accounts in credit unions).
* Traveller’s checks.

The bank account deposits include checking accounts at savings institutions and credit unions (Saccos), as well as interest-bearing checking accounts at commercial banks. Note that measures of M1 also include non interest bearing checking account deposits called *demand deposits*.

**M2 Aggregate M2** is a broader measure of the money supply than M1 and includes accounts that many households treat as short-term investments. These accounts can be converted into currency, although not as easily as the components of M1. As shown in panel (b) of Figure 2.1, in addition to the assets included in M1, M2 also includes:

● Time deposits, primarily *certificates of deposits* in banks.

● Savings accounts (no checks can be written against).

● Money market deposit accounts at banks.

● Non institutional money market mutual fund shares.

“Non institutional” means that the money market fund shares are owned by individual investors rather than by institutional investors, such as pension funds. Non institutional is also sometimes referred to as “retail.”

**Does it matter what monetary aggregate we use?**

Which is the correct measure of money? If M1 and M2 move together closely enough, the Central Bank could use either of them to try to influence the economy’s output, prices, or interest rates. If M1 and M2 do not move together, they may tell different stories about what is happening to the money supply.

THE QUANTITY THEORY OF MONEY

The connection between increases in the money supply and increases in prices has been discussed by writers dating back at least as far as the Greek philosopher Aristotle in the fourth century B.C. During the sixteenth century, the Spanish conquest of Mexico and Peru resulted in huge quantities of gold and silver being exported to Europe, where they were minted into coins, greatly increasing the European money supply. Many writers noted that this increase in the money supply was followed by an increase in the price level and a corresponding loss of *purchasing power*, which is the ability of consumers to use money to acquire goods and services.

**Irving Fisher and the Equation of Exchange**

In the early twentieth century, Irving Fisher, an economist at Yale University, developed the quantity theory of money in an attempt to make more explicit the relationship between the money supply and inflation. Fisher began his analysis by using the *equation of exchange*:

*MV* = *PY*.

The equation states that the quantity of money, *M*, multiplied by the *velocity of money*, *V*, equals the price level, *P*, multiplied by the level of real GDP, *Y*. Recall that the price level measures the average level of the prices of goods and services in the economy. There are several measures of the price level. The measure that is most relevant here is the *GDP deflator*, which includes the prices of all goods and services included in GDP.

If we multiply real GDP by the GDP deflator, we get nominal GDP, so the right side of the equation of exchange equals nominal GDP. Fisher defined the velocity of money— or, simply, *velocity*—to be equal to the number of times each dollar in the money supply is spent on a good or a service that is included in GDP, or:

For example, in 2009, nominal GDP was Ksh.14,256 billion and M1 was Ksh.1,693 billion, so velocity in 2009 (using the M1 measure of the money supply) was Ksh.14,256 billion /Ksh.1,693 billion = 8.4. This result tells us that during 2009, on average each dollar of M1 was spent 8.4 times on goods or services included in GDP. Because Fisher defined velocity to be equal to *PY/M*, we know that the equation of exchange must always hold true. The left side *must* be equal to the right side. A theory is a statement about the world that might possibly be false. Therefore, the equation of exchange is not a theory. Fisher turned the equation of exchange into the **quantity** **theory of money**, by asserting that velocity is constant. Fisher argued that the average number of times a dollar is spent depends on how often people get paid, how often they go shopping, how often businesses send out bills, and other factors that change only very slowly. Because this assertion may be true or false, the quantity theory of money is, in fact, a theory.

**The Quantity Theory Explanation of Inflation**

To investigate the effects of changes in the money supply on inflation, we need to rewrite the equation of exchange from levels to percentage changes. We can do this by using a handy mathematical rule that states that an equation where variables are multiplied together is equal to an equation where the *percentage changes* of those variables are *added* together. So, we can rewrite the quantity equation as:

% Change in *M* + % Change in *V* = % Change in *P* + % Change in *Y*.

If Irving Fisher was correct that velocity is constant— says, it always equals 8—then the percentage change in velocity will be zero. Remember that the percentage change in the price level equals the inflation rate. Taking these two facts into account, we can rewrite the quantity equation one last time:

Inflation rate = % Change in *M* - % Change in *Y*

This relationship gives us a useful way of thinking about the relationship between money and prices: Provided that velocity is constant, when the quantity of money increases faster than real GDP, there will be inflation. The greater the percentage changes in the quantity of money, the greater the inflation rate. In the United States, the long-run rate of growth of real GDP is about 3% per year. So, the quantity theory indicates that if the Federal Reserve allows the money supply to increase at a rate faster than this, the result will be inflation.

**How Accurate Are Forecasts of Inflation Based on the Quantity Theory?**

Note that the accuracy of the quantity theory depends on whether the key assumption that velocity is constant is correct. If velocity is not constant, then there may not be a tight link between increases in the money supply and increases in the price level. For example, an increase in the quantity of money might be offset by a decline in velocity, leaving the price level unaffected. Because velocity can move erratically in the short run, we would not expect the quantity equation to provide good forecasts of inflation in the short run. Over the long run, however, there is a strong link between changes in the money supply and inflation.

**The Hazards of Hyperinflation**

Episodes of hyperinflation are comparatively rare. Some examples are Germany during the early 1920s, Argentina during the 1990s, Uganda during Idi Amin era (Idi Amin could not understand the logic that the country was bloke, he simply ordered the printing of more notes) and Zimbabwe during recent years. What happens to a country suffering from hyperinflation? In these cases of extreme inflation, prices rise so rapidly that a given amount of money can purchase fewer and fewer goods and services each day. When money loses its value so quickly, households and firms are willing to hold it for only very short periods of time. Eventually, if prices rise as rapidly as they did in Zimbabwe during 2008, anyone holding money for even a few hours finds that the money has lost most of its value before he or she can spend it. In those circumstances, households and firms may refuse to accept money at all, in which case money no longer functions as a medium of exchange. When economies don’t use money, the specialization necessary to maintain high rates of productivity breaks down. For instance, during the German hyperinflation of the early 1920s, many workers abandoned their jobs because the money firms paid them lost its value before they had time to spend it. Not surprisingly, economic activity contracted sharply, and unemployment soared. The resulting economic hardships helped pave the way for the rise of Adolf Hitler and the Nazi Party.

**What Causes Hyperinflation?**

The quantity theory indicates that hyperinflation is caused by the money supply increasing far more rapidly than real output of goods and services. Once prices begin to rise rapidly enough that money loses a significant amount of its value, households and firms try to hold money for as brief a time as possible. In other words, velocity begins to rise as money changes hands at a faster and faster rate. In quantity theory terms, during a hyperinflation, both *M* and *V* on the left side of the equation increase rapidly, which means that because there are limits in the rate at which *Y* can grow, as a matter of arithmetic, the inflation rate must soar.

Although the quantity theory can help us understand the arithmetic of *how* a hyperinflation occurs, it doesn’t explain *why* it occurs. Central banks control the money supply and, so, have the means to avoid the economic disaster of a hyperinflation. Why, then, have some central banks occasionally allowed the money supply to increase at very rapid rates? The answer is that central banks are not always free to act independently of the rest of the government. The ultimate cause of hyperinflation is usually governments spending more than they collect in taxes, which results in government budget deficits.

A budget deficit forces the government to borrow the difference between government spending and tax collections, usually by selling bonds. High-income countries, such as the United States, Germany, and Canada, can sell government bonds to private investors because those investors are confident that governments can make the interest payments. But private investors are often unwilling to buy bonds issued by developing countries, such as Zimbabwe, because they doubt that those governments will make the payments due on the bonds. Governments that can’t sell bonds to private investors will often sell them to their central banks. In paying for the bonds, the central bank increases the country’s money supply. This process is called *monetizing the government’s debt*, or, more casually, funding government spending by printing money.

**Should Central Banks Be Independent?**

In the modern economy, hyperinflations occur primarily in developing countries when their central banks are forced to create so much money to fund government spending that the inflation rate soars. But central banks in high-income countries may also come under political pressure to buy government bonds to help fund government budget deficits. The more independent a central bank is of the rest of the government, the more it can resist political pressures to increase the money supply, and the lower the country’s inflation rate is likely to be.

In a classic study, Alberto Alesina and Lawrence Summers, who were at the time both economists at Harvard University, tested the link between the degree of independence of a country’s central bank and the country’s inflation rate for 16 high-income countries during the years 1955–1988. Countries with highly independent central banks, such as the United States, Switzerland, and Germany, had lower inflation rates than did countries whose central banks had little independence, such as New Zealand, Italy, and Spain. In the past few years, New Zealand and Canada have granted their banks more independence, at least partly to better fight inflation.

**Summary**

**Money** is anything that is generally accepted as payment for goods and services or in the settlement of debts. In **barter** economies, where goods and services are traded directly for each other without the use of money, **transactions costs** are high. Barter economies typically move to reduce transactions costs by using **commodity money**, which is a good used as money that has value independent of its use as money. Using money allows people to take advantage of **specialization**, which is required for high levels of productivity.

Money provides four key services to households and firms: (1) It acts as a **medium of exchange**, (2) it is a **unit of account**, (3) it is a **store of value**, and (4) it offers a **standard of deferred payment**. Money, like other assets, is a component of **wealth**, which is the sum of the value of a person’s assets less the value of the person’s liabilities. Money and wealth are distinct from income, which is equal to a person’s earnings over a period of time. There are five criteria for an asset to serve as money: (1) It should be acceptable; (2) it should be of standardized quality; (3) it should be durable; (4) it should be valuable relative to its weight; and (5) it should be divisible. **Commodity money** has value independent of its use as money, while **fiat money** has no value other when used as money. Fiat money circulates partly because it is designated by the government as **legal tender** but primarily because households and firms have confidence that it will retain its value.

The **payments system** consists of ways to conduct transactions in the economy. Over time, payments systems have changed from the simple to the complex—beginning with the use of commodity money, such as gold and silver coins, evolving to the use of paper currency, then to the use of **checks**, and finally to the use of electronic funds and **e-money**. In the modern economy, electronic funds transfer systems include debit cards, Automated Clearing House (ACH) transactions, automated teller machines (ATMs), and e-money.

The measures of the money supply are called **monetary aggregates** and are defined by the central bank of Kenya. The CBK collects and publishes data on *M1*, a narrower measure of the money supply, and *M2*, a broader measure of the money supply. **M1** includes currency, traveller’s checks, and checking account deposits. **M2** includes all the assets that are included in M1, as well as time deposits, savings accounts, money market deposit accounts, and non institutional money market mutual fund shares.

History shows us that increases in the money supply tend to be followed by increases in the price level and a corresponding loss of purchasing power. In the early twentieth century, Irving Fisher developed the **quantity theory of money**. He began with the equation of exchange: *MV = PY*, where *M* is the quantity of money; *V* is velocity, or the average number of times each dollar is spent on a good or service that is included in GDP; *P* is the price level; and *Y* is real GDP. Fisher turned the equation of exchange into the quantity theory of money by asserting that velocity is constant. The quantity equation can be restated as:

% Change in *M* + % Change in V = % Change in *P* + % Change in *Y*, or

Inflation rate = % Change in *M* - % Change in *Y*.

The quantity theory of money predicts that in the long run, increases in the quantity of money that exceed increases in real GDP will result in inflation. The relationship between increases in the money supply and inflation across countries seem to be consistent with the quantity theory. Countries such as Zimbabwe that have experienced a very high rate of growth in their money supply have also experienced **hyperinflation**—inflation that exceeds 100% per year.

**REVIEW QUESTIONS**

Define *liquidity*. Rank the following assets in terms of liquidity, from most to least liquid: money market mutual fund, savings account, corporate stock, shilling note, house, gold bar, checking account.

Explain whether each of the following is included in only M1, only M2, or both M1 and M2:

a. Traveller’s checks

b. Savings deposits

c. Certificates of deposit

d. Checking account deposits

What is the quantity theory of money? What does the quantity theory indicate is the cause of inflation?

What is purchasing power? How is it affected by inflation?

What is a hyperinflation? What is the cause of hyperinflation?

Briefly discuss the pros and cons of a central bank being independent of the rest of the government.

If during 2012 the money supply increases by 4%, the inflation rate is 2%, and the growth of real GDP is 3%, what must have happened to the value of velocity during 2012?

A student makes the following statement: “If the money supply in a country increases, then the level of total production in that country must also increase.” Briefly explain whether you agree with this statement.

Is Kenya likely to become a “cashless society”? Briefly explain.