

# **HISTORY OF MONEY REPORT**

## **Course ECNX 9003**

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This report is comprised of six annexes: Annex A provides the Economic aspects of the money supply. Annex B is a description of the Evolution of the coinage standard. Annex C describes in a Chronological order the evolution of paper money and coinage as currency in different countries to include the USA withdrawal of the Gold Standard as directed by President Nixon and endorsed by Congress in 1971. Annex D provides a functional description of the Federal Reserve Bank and the impact of the money supply on the economy. Annex E is the Glossary of the terms used. Annex F provides the answers to the Questions of the History of Money Supply course. Annex G depicts the Hours spent researching the information, and Annex H describes my impression expressed in the Evaluation of the course.

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# **History of Money Supply**

## **Introduction**

The history of money began around 2500 years ago with the first minting of coinage around the seventh to sixth century BC. Money is a clearly identifiable object of value that is generally accepted as payment for goods and services and repayment of debts within a market or that is legal within a country. Since ancient times people have swapped items of value either in the exchange of gifts or else in markets where a commonly shared system of tokens is more convenient. Many things have been exchanged in markets including, for example, livestock and sacks of cereal grain (from which the Shekel is derived) – and things directly useful in themselves. In addition, sometimes, merely attractive items such as cowry shells or beads were exchanged for more useful commodities. Precious metal from which early coins were made fall into this second category.

## **Aristotle's Opinion on the Creation of Money**

Aristotle's opinion on the creation of money as a new thing in society is: When the inhabitants of one country became more dependent on those of another, and they imported what they needed, and exported what they had too much of, money necessarily came into use. The worship of Moneta is recorded by Livy with the temple built in the time of Rome 413. A temple consecrated to the same god was built in the earlier part of the fourth century (perhaps the same temple). The temple contained the mint of Rome for a period of four centuries.

David Kinley (British writer) criticized the theory of Aristotle, considered to be flawed because the philosopher probably lacked sufficient understanding of the ways and practices of primitive communities, and may have formed his opinion from personal experience and conjecture.

## **Shekel**

The shekel was an ancient unit used in Mesopotamia around the third Millennium to define both a specific weight of barley and equivalent amounts of materials such as silver, bronze and copper. The use of a single unit to define both mass and currency was a similar concept to the British pound, which was originally defined as a one-pound mass of silver.

## **Overview of the Barter System**

Many cultures around the world eventually developed the use of commodity money. Ancient China, Africa, and India used cowry shells. Trade in Japan's feudal system was based on the koku – a unit of rice. The shekel was an ancient unit of weight and currency.

Wherever trade is common, barter systems usually lead quite rapidly to several key goods being imbued with monetary properties. In the early British colony of New South Wales, rum emerged quite soon after settlement as monetary of goods. When a nation is without a currency, it commonly adopts a foreign currency. In prisons where conventional money is prohibited, it is

quite common for cigarettes to take on a monetary quality, and throughout history, gold has taken on this unofficial monetary function.

## **Bartering Problems**

Bartering has several problems; most notably that it requires a “coincidence of wants.” For example, if a wheat farmer needs what a fruit farmer produces, a direct swap is impossible, as seasonal fruit would spoil before the grain harvest. A solution is to trade fruit for wheat indirectly through a third “intermediate” commodity. The fruit is exchanged for the intermediate commodity when the fruit ripens. If this *intermediate commodity* does not perish and is reliably in demand throughout the year (e.g. copper, gold, or wine), then it can be exchanged for wheat after the harvest. The function of the intermediate commodity as a store-of-value can be standardized into a widespread commodity money, reducing the coincidence of wants problem. By overcoming the limitations of simple barter, commodity money makes the market in all other commodities more liquid.

## **David Graeber’s View of the Barter System:**

In his book *Debt: The First 5000 Years*, anthropologist David Graeber refutes the suggestion that money was invented to replace the barter system and lacks supporting evidence. His research indicates that ‘gift economies’ were common, at least the beginnings of the first agrarian societies. When humans used elaborate credit systems, Graeber suggested that money as a unit of account was invented the moment when the unquantifiable obligation “I owe you one” transformed into the quantifiable notion of “I owe you one unit of something.”

Graeber’s view claimed that money emerged first as credit and only later acquired the functions of a medium of exchange and a store of value. There is no evidence of a society or economy that relied primarily on barter. Instead, non-monetary societies operated largely along the principles of gift giving to form productive reciprocal obligations and debt. According to Graeber, when barter did occur, it was usually with strangers to mitigate potential robbery by enemies. Both parties have to agree to sell and buy each other’s commodities. This is known as a double coincidence of wants. What a person desires to sell is exactly what the other wishes to buy in a barter system where goods are directly exchanged without the use of money.

## **Paper Money**

Paper money was introduced in Song Dynasty China during the 11th century. The development of the banknote began in the seventh century, with local issues of paper currency. Its roots were in merchant receipts of deposit during the Tang Dynasty (618–907), as merchants and wholesalers desired to avoid the heavy bulk of copper coinage in large commercial transactions. The issue of credit notes is often for a limited duration and at some discount to the promised amount later. The Jiaozuo nevertheless did not replace coins during the Song Dynasty; paper money was used alongside the coins. The central government soon observed the economic advantages of printing paper money, issuing a monopoly right of several of the deposit shops to the issuance of these certificates of deposit. By the early 12th century, the amount of banknotes issued in a single year amounted to an annual rate of 26 million strings of cash coins.

In the 13th century, paper money became known in Europe through the accounts of travelers, such as Marco Polo and William of Rubruck. Marco Polo's account of paper money was during the Yuan Dynasty. In medieval Italy and Flanders, because of the insecurity and impracticality (risky) of transporting large sums of money over long distances, money traders started using promissory notes. In the beginning these were personally registered, but they soon became a written order to pay the amount to whoever had it in their possession. These notes can be seen as a predecessor to regular banknotes. The first European banknotes were issued by Stockholm's Banco, a predecessor of the Bank of Sweden in 1661. These replaced the copperplates being used instead as a means of payment, although in 1664 the bank ran out of coins to redeem notes and ceased operating in the same year.

Inspired by the success of the London goldsmiths, some of which became the forerunners of great English banks, banks began issuing paper notes quite properly termed 'banknotes' which circulated in the same way that government issued currency circulates today.

In England, this practice continued up to 1694. Scottish banks continued issuing notes until 1850. In the USA, this practice continued through the 19th Century, where at one time there were more than 5000 different types of bank notes issued by various commercial banks in America. Only the notes issued by the largest, most creditworthy banks were widely accepted. The script of smaller, lesser-known institutions circulated locally. Farther from home, it was only accepted at a discounted rate if it was accepted at all. The proliferation of types of money went hand in hand with a multiplication in the number of financial institutions.

These banknotes were a form of representative money, which could be converted into gold or silver by application at the bank. Since banks issued notes far in excess of the gold and silver they kept on deposit, sudden loss of public confidence in a bank could precipitate mass redemption of banknotes and result in *bankruptcy*.

The use of bank notes issued by private commercial banks as legal tender has gradually been replaced by the issuance of bank notes authorized and controlled by national governments. The Bank of England was granted sole rights to issue banknotes in England after 1694. In the USA, the Federal Reserve Bank was granted similar rights after its establishment in 1913. Until recently, these government-authorized currencies were forms of representative money, since they were partially backed by gold or silver and were theoretically convertible into gold or silver.

### **The Vikings and Money in England**

The Viking invasions of England caused an enormous increase in the production of coins. Many of them ended up in Scandinavia. Indeed, far more English coins from that period have been found in Scandinavia than in England! The Scandinavian rulers started to mint their own coins, and then they copied English designs. Coins had been used in Britain when it was part of the Roman Empire. The departure of the Romans was completed in the 5th century. The invasions of the Anglo-Saxons from across the southern part of the North Sea ceased all coins being used as money in England for nearly 200 years.

## **Piggy Bank**

No one invented the piggy bank. The piggy banks' origin owes more to the history of language than to an individual inventor. In old English (around the 15th century) there was a word "pygg" which referred to a type of orange clay. People made all kinds of useful objects out of clay, including dishes and jars to hold spare change. Around the 18th century, the word "pygg" now sounded the same as the word for the animal "pig." An unknown person(s) thought to shape a "pygg" jar, to look just like a real pig. Perhaps an order came in for a "pygg" jar and the potter misunderstood.

## **Where do pennies come from?**

Before the Viking raids on England, the Saxons began minting a new type of silver coin with a much finer, more attractive design. These coins were called "pennies." Some historians believe that the penny (or *pennig* in Old English) was named after a minor Saxon king called Penda. Others believe that the penny, like the Scandinavian word for "money" got its name from the pans into which the molten metal for making coins was poured.

## **Alfred the Great Paying for War**

Alfred the Great, who prevented the Vikings from conquering all of England, increased the number of mints to at least eight so that he would have enough coins to pay his soldiers and to build forts and ships. The kings after Alfred needed more and more mints to pay for defense. Athelstan had 30 and in order to keep control of them all, he passed a law in 928 stating that there was to be only one single type of money or currency in England. Ever since then there has been just one.

## **Pay Through the Nose**

Instead of fighting the invaders, some English kings preferred to pay the Vikings to leave them in peace. These payments were called *Danegeld* (meaning "Dane debt" or Dane payment). The Vikings collected tribute in other countries too. In the 19<sup>th</sup> century, Ireland imposed a tax and slit the noses of anyone unwilling or unable to pay, and that is the origin of the English phrase "to pay through the nose" meaning to pay an excessive price. The English king who paid the most Danegeld was Aethelred II.

On 13 November 1002, King Aethelred gave orders for the massacre of all Danes living in England on St. Brice's day. His orders were not obeyed everywhere, and they made the Vikings determined to conquer England completely. Aethelred hoped they would be satisfied with money, but they kept coming back for more. During his reign 75 mints were active at the same time, and in order to pay Danegeld nearly 40 million pennies were produced! Aethelred decided to fight and he introduced a new tax to pay for a larger army. Aethelred was completely defeated and the Viking's leader, Cnut, became king of England and later king of Denmark and Norway as well.

## **King Cnut**

Cnut paid his army 20 million pennies before sending the soldiers home and therefore the mints were very busy again. They were busy in peacetime too because England prospered under his reign. Many of Cnut's coins have been found in Scandinavia, mostly in hoards consisting of mixtures of coins of different types. If these coins had been tribute, like Danegeld, they would have been mainly all of the same type. The mixture of coins found in the hordes is thought to be a sign that trade between England and Scandinavia flourished in that period of peace.

## **Roman Money Supply**

Merchants throughout the empire and as far away as India used Roman coins, but the monetary system primarily served as a way for the emperors to pay their troops, because the soldiers expected cash. When an emperor had insufficient income, he was forced to raise taxes, seize property, or, as a final measure, melt down existing coins and mint new ones that weighed less or contained smaller amounts of precious metals. Silver coins were a basic medium of exchange during the empire, and one of the major Roman coins, a *denarius* (plural, *denarii*), equaled four of the smaller silver coins called sesterces. During the reign of Augustus, a silver denarius weighed 5.7 gm (.20 oz) and was 99 percent pure. By AD 193 it had dropped to 4.3 gm (.15 oz) and was only 70 percent pure. The deficit spending of later emperors nearly halved the silver value of the coinage.

## **Annex A: Economic Aspects of Money Supply**

### **Introduction**

The purpose of this report is to present a discussion about the Economic aspects of the money supply in this country. The Keynesian's view of money supply provides an overview of economists' belief that growth in the money supply is the most important factor that determines economic growth. The Federal Reserve System has several tools that control the money supply: "can increase the supply of money and the availability of credit by lowering the percentage of deposits that banks must hold as reserves at the Federal Reserve System, by lowering the discount rate, or by purchasing government bonds through open market operations."

Alan Greenspan was the most influential chair of the Federal Reserve Board. He had four terms as Chairman of the Federal Reserve Board. A firm believer in laissez-faire capitalism, Greenspan opposed government regulation and control over the economy. The Federal Reserve System increases the money supply when it wants to encourage more spending in the economy, and especially when it is concerned about high levels of unemployment.

### **Keynesians' View of Money Supply**

Theories regarding the money supply are central to macroeconomics. They are also the subject of debate between Keynesians and monetarists (economists who believe that growth in the money supply is the most important factor that determines economic growth). The classical or pre-Keynes view was that the interest rate led to a balance between savings and investment, which in turn would cause equilibrium in the goods market. Keynes disagreed and believed that the interest rate was largely a monetary phenomenon; its chief function was to balance the unpredictable supply and demand for money, not savings and investment. This view explained why the amount of savings was not always correlated with the amount of investment or the interest rate.

Keynesians and monetarists also disagree about how changes in the money supply affect employment and output. Some economists argue that an increase in the supply of money will tend to reduce interest rates, which in turn will stimulate investment and total demand. Therefore, an alternative way of reducing unemployment would be to expand the money supply. Keynesians and monetarists disagree on how successful this method of raising output would be. Keynesians believe that under conditions of underemployment, the increased spending will lead to greater output and employment. Monetarists, however, generally believe that an increase in the money supply will lead to inflation in the long run.



## Annex B: Evolution of the Coinage Standard

### Moneta

The worship of Moneta was recorded by Livy with the temple built in the time of Rome 413; a temple consecrated to the same god was built in the earlier part of the fourth century (perhaps the same temple). The temple contained the mint of Rome for a period of four centuries.

### Mesopotamian Civilization

The Mesopotamian civilization developed a large-scale economy based on commodity money. The Babylonians and their neighboring city-states later developed the earliest system of economics as we think of it today, in terms of rules on debt, legal contracts and law codes relating to business practices and private property. Money was not only an emergence, it was a necessity.



Greek Drachm of Aegina. Obverse: Land Turtle/Reverse: ΑΙΓΙΝΑ (INA) and Dolphin. The oldest turtle coin dates 700 BC.



640 BC: One-third Stater coin from Lydia, shown larger.



309-379 AD: A Persian Silver Drachm from the Sasanian Dynasty.

The first ruler in the Mediterranean known to have officially set standards of weight and money was Pheidon. Minting occurred in the latter parts of the 7th century amongst the cities of Grecian Asia Minor, spreading to Aegean parts of the Greek islands and the south of Italy by 500 BC. The first stamped money (having the mark of some authority in the form of a picture or words) can be seen in the National Library of Paris. It is an electrum stater of a turtle coin, made at Aegina Island. This coin dates about 700 BC.

## **Electrum**

Other coins made of Electrum (a naturally occurring alloy of silver and gold) were manufactured on a larger scale about 650 BC in Lydia (on the coast of what is now Turkey). Similar coinage was adopted and manufactured to their own standards in nearby cities of Ionia, including Mytilene and Phoakaia (using coins of Electrum) and Aegina (using silver) during the 6th century BC. These were soon became adopted in mainland Greece itself, and the Persian Empire (after it incorporated Lydia in 547 BC).

## **Silver Coinage**

The use and export of silver coinage, along with soldiers paid in coins, contributed to the success of the Athenian Empire in the 5th century BC that dominated the region. The silver used was mined in southern Attica at Laurium and Thorikos by a huge workforce of slave labor. A major silver vein discovery at Laurium in 483 BC led to the huge expansion of the Athenian military fleet.

## **Touchstone**

It was the discovery of the touchstone, which led the way for metal-based commodity money and coinage. Any soft metal can be tested for purity on a touchstone, allowing one to quickly calculate the total content of a particular metal in a lump. Gold is a soft metal, which is also hard to come by, dense, and storable. As a result, monetary gold spread very quickly from Asia Minor, where it first gained wide usage, to the entire world.

### **Touchstone used a tool to estimate gold.**

Using such a system still required several steps and mathematical calculation. The touchstone allows one to estimate the amount of gold in an alloy, which is then multiplied by the weight to find the amount of gold alone in a lump. To make this process easier, the concept of standard coinage was introduced. Coins were pre-weighed and pre-alloyed, so as long as the manufacturer was aware of the origin of the coin, no use of the touchstone was required. Coins were typically minted by governments in a carefully protected process and then stamped with an emblem that guaranteed the weight and value of the metal. It was, however, extremely common for governments to assert that the value of such money lay in its emblem and thus subsequently reduced the value of the currency by lowering the content of valuable metal.

## **Gold and Silver -- Common Use of Money**

Gold and silver were used as the most common form of money throughout history. In many languages, such as Spanish, French, and Italian, the word for silver is still directly related to the word for money. Although gold and silver were commonly used to mint coins, other metals were used. For instance, Ancient Sparta minted coins from iron to discourage its citizens from engaging in foreign trade. In the early 17<sup>th</sup> century Sweden lacked more precious metal and so produced "plate money," which was large slabs of copper approximately 50 cm or more in length and width, appropriately stamped with indications of their value.

In the 13<sup>th</sup> century, Gold coinage began to be minted again in Europe. Frederick II was credited with having re-introduced the metal to currency during the time of the Crusades. During the 14<sup>th</sup> century Europe had en masse converted from the use of silver in currency to the minting of gold. In 1328, Vienna transferred from minting silver to instead gold.

### **Problem with Metal Coins**

Metal-based coins had the advantage of carrying their value within the coins themselves. On the other hand, they induced manipulations, the clipping of coins in the attempt to get and recycle the precious metal. A greater problem was the simultaneous co-existence of gold, silver and copper coins in Europe. English and Spanish traders valued gold coins more than silver coins, as many of their neighbors did, with the effect that the English gold-based guinea coin began to rise against the English silver-based crown in the 1670s and 1680s.

### **Silver Withdrawal**

Consequently, silver was ultimately pulled out of England for dubious amounts of gold coming into the country at a rate no other European nation would share. The effect was made worse with Asian traders not sharing the European appreciation of gold altogether. Gold left Asia and silver left Europe in quantities. European observers like Isaac Newton, Master of the Royal Mint, observed with unease.

### **Bank of England Risks a Catastrophe**

Stability came into the system with national banks guaranteeing to change money into gold at a promised rate; it did not, however, come easily. The Bank of England risked a national financial catastrophe in the 1730s when customers demanded their money be changed into gold in a moment of crisis. Eventually London's merchants saved the bank and the nation with financial guarantees.

### **Seigniorage**

Another step in the evolution of money was the change from a coin being a unit of weight to being a unit of value. A distinction could be made between its commodity value and its *specie* value. The difference in these values is seignior-age.

### **Expansion of European Trade-Bills of Exchange**

Bills of exchange became prevalent with the expansion of European trade toward the end of the middle Ages. A flourishing Italian wholesale trade in cloth, woolen clothing, wine, tin and other commodities was heavily dependent on credit for its rapid expansion. Goods were supplied to a buyer against a bill of exchange, which constituted the buyer's promise to make payment at some specified future date. Provided that the buyer was reputable or the bill was endorsed by a credible guarantor, the seller could then present the bill to a merchant banker and redeem it in money at a discounted value before it actually became due. The main purpose of these bills nevertheless was, that traveling with cash was particularly dangerous at the time. A deposit

could be made with a banker in one town, in turn a bill of exchange was handed out, that could be redeemed in another town.

These bills could also be used as a form of payment by the seller to make additional purchases from his own suppliers. Thus, the bills – an early form of credit – became both a medium of exchange and a medium for storage of value. Like the loans made by the Egyptian grain banks, this trade credit became a significant source for the creation of new money. In England, bills of exchange became an important form of credit and money during last quarter of the 18th century and the first quarter of the 19th century before banknotes, checks and cash credit lines were widely available.

## **Tallies**

The acceptance of symbolic forms of money opened up vast new realms for human creativity. A symbol could be used to represent something of value that was available in physical storage somewhere else in space, such as grain in the warehouse. It could also be used to represent something of value that would be available later in time, such as a promissory note or bill of exchange, a document ordering someone to pay a certain sum of money to another on a specific date or when certain conditions have been fulfilled.

In the 12th century, the English monarchy introduced an early version of the bill of exchange in the form of a notched piece of wood known as a tally tick. Tallies originally came into use at a time when paper was rare and costly, but their use persisted until the early 19th Century, even after paper forms of money had become prevalent. The notches were used to denote various amounts of taxes payable to the crown. Initially tallies were simply used as a form of receipt to the taxpayer at the time of rendering his dues. As the revenue department became more efficient, they began issuing tallies to denote a promise of the tax assessed to make future tax payments at specified times during the year. Each tally consisted of a matching pair – one stick was given to the assesses at the time of assessment representing the amount of taxes to be paid later, and the other held by the Treasury representing the amount of taxes be collected at a future date.

The Treasury discovered that these tallies could also be used to create money. When the crown had exhausted its current resources, it could use the tally receipts representing future tax payments due to the crown as a form of payment to its own creditors, who in turn could either collect the tax revenue directly from those assessed or use the same tally to pay their own taxes to the government. The tallies could also be sold to other parties in exchange for gold or silver coin at a discount, reflecting the length of time remaining until the taxes were due for payment. Thus, the tallies became an accepted medium of exchange for some types of transactions and an accepted medium for store of value. Like the giro-banks before it, the Treasury soon realized that it could also issue tallies that were not backed by any specific assessment of taxes. By doing so, the Treasury created new money that was backed by public trust and confidence in the monarchy rather than by specific revenue receipts.

## **Goldsmith Bankers**

Goldsmiths in England had been craftsmen, bullion merchants, moneychangers and moneylenders since the 16th century. However, they were not the first to act as financial intermediates; in the early 17th century, the scriveners were the first to keep deposits for the express purpose of relending them. Merchants and traders had amassed huge hoards of gold and entrusted their wealth to the Royal Mint for storage.

In 1640, King Charles I seized the private gold stored in the mint as a forced loan (which was to be paid back over time). Thereafter merchants preferred to store their gold with the goldsmiths of London, who possessed private vaults, and charged a fee for that service. In exchange for each deposit of precious metal, the goldsmiths issued receipts certifying the quantity and purity of the metal they held as a bailee (*i.e.* in trust). These receipts could not be assigned, only the original depositor could collect the stored goods.

Gradually, the goldsmiths took over the function of the scriveners of relending on behalf of a depositor and also developed modern banking practices; promissory notes were issued for money deposited which by custom and/or law was a loan to the goldsmith, *i.e.* the depositor expressly allowed the goldsmith to use the money for any purpose including advances to his customers. The goldsmith charged no fee, and did not even pay interest on these deposits. Since the promissory notes were payable on demand, and the advances (loans) to the goldsmith's customers were repayable over a longer time period, this was an early form of fractional reserve banking.

The promissory notes developed into an assignable instrument, which could circulate as a safe and convenient form of money backed by the goldsmith's promise to pay. Hence goldsmiths could advance loans in the form of gold money, or in the form of promissory notes, or in the form of checking accounts. Gold deposits were relatively stable, often remaining with the goldsmith for years on end, so there was little risk of default so long as public trust in the goldsmith's integrity and financial soundness was maintained. Thus, the goldsmiths of London became the forerunners of British banking and prominent creators of new money based on credit.

## **Summary**

The history of money begins around 2500 years ago with the first minting of coinage in about the seventh to sixth century BC. Aristotle's opinion of the creation of money as a new thing in society is: When the inhabitants of one country became more dependent on those of another, and they imported what they needed, and exported what they had too much of, money necessarily came into use.

The shekel was an ancient unit used in Mesopotamia around the third Millennium to define both a specific weight of barley and equivalent amounts of materials such as silver, bronze and copper. The shekel was an ancient unit of weight and currency. Ancient China, Africa, and India used cowry shells. Trade in Japan's feudal system was based on the koku – a unit of rice. Alfred the Great, who prevented the Vikings from conquering all England, increased the number of mints to at least eight so that he would have enough coins to pay his soldiers and to build forts and ships. The Viking invasions of England caused an enormous increase in the production of

coins. Many of them ended up in Scandinavia. Instead of fighting the invaders, some English kings preferred to pay the Vikings to leave them in peace. The piggy banks' origin owes more to the history of language, than to an individual inventor.

Merchants throughout the empire, and as far away as India, used Roman coins, but the monetary system primarily served as a way for the emperors to pay their troops, because the soldiers expected cash. The Mesopotamian civilization developed a large-scale economy based on commodity money. The Babylonians and their neighboring city-states later developed the earliest system of economics as we think of it today, in terms of rules on debt, legal contracts and law codes relating to business practices and private property.

The first ruler in the Mediterranean known to have officially set standards of weight and money was Pheidon. The use and export of silver coinage, along with soldiers paid in coins, contributed to the success of the Athenian Empire in the 5th century BC. Gold coinage began to be minted again in Europe in the 13<sup>th</sup> century. Frederick the II is credited with having re-introduced the metal to currency during the time of the Crusades. During the 14<sup>th</sup> century Europe had en masse converted from use of silver in currency to minting of gold. Vienna transferred from minting silver to gold during 1328. In 1640, King Charles I seized the private gold stored in the mint as a forced loan (which was to be paid back over time). Thereafter merchants preferred to store their gold with the goldsmiths of London who possessed private vaults and charged a fee for that service.

The touchstone led the way for metal-based commodity money and coinage. Any soft metal can be tested for purity on a touchstone, allowing one to quickly calculate the total content of a particular metal in a lump. The touchstone allows one to estimate the amount of gold in an alloy, which is then multiplied by the weight to find the amount of gold alone in a lump. Gold and silver were used as the most common form of money throughout history. In many languages, such as Spanish, French, and Italian, the word for silver is still directly related to the word for money. Although gold and silver were commonly used to mint coins, other metals were used. The Bank of England risked a national financial catastrophe in the 1730s when customers demanded their money be changed into gold in a moment of crisis. Another step in the evolution of money was the change from a coin being a unit of weight to being a unit of value. The difference in these values is seignior-age.

## Annex C: Chronology of the History of Money

### Introduction

What is money? By definition, it is something of value. However, over the last 10,000 years, the material form that money has taken has changed considerably—from cattle and cowrie shells to today's electronic currency. Here is an overview of the history of money.



Today we value gold Kruggerands and paper Franklins, but cattle and cowrie shells have also served as currency.

The early population did not buy goods from other people with money. They used barter. Barter is the exchange of resources or services for mutual advantage, and the practice likely dates back tens of thousands of years, perhaps even to the dawn of modern humans. Some would even argue that it is not purely a human activity; plants and animals have been bartering—in symbiotic relationships—for millions of years. In any case, barter among humans certainly predates the use of money. Today individuals, organizations, and governments still use, and often prefer, barter as a form of exchange of goods and services. This kind of exchange started at the beginning of humankind and is still used today.

**12,000 BC:** Anatolian obsidian as a raw material for stone-age tools was distributed with organized trade occurring in the 9th millennium. In Sardinia, one of the four main sites for sourcing the material deposits of obsidian within the Mediterranean, trade was replaced in the 3rd millennium by copper and silver.

**9000 BC:** Both grain and cattle were used as money or as *barter* (the first grain remains) found, considered evidence of pre-agricultural practice date to 17,000 BC). The importance of grain with respect to the value of money is inherent in language where the term for a small quantity of gold was "grain of gold."

**9,000-6,000 BC:** Livestock was often used as a unit of exchange. Later, as agriculture developed, people used crops for barter. For example, I could ask another farmer to trade a pound of apples for a pound of bananas. Both the animal and the manure produced were valuable; animals are recorded as being used as payment as in Roman law where fines were paid in oxen and sheep.

Cattle, which throughout history and across the globe have included not only cows but also sheep, camels, and other livestock, are the first and oldest form of money. With the advent of agriculture also came the use of grain and other vegetable or plant products as a standard form of barter in many cultures.

**4000 BC:** The use of gold as proto-money has been traced back when the Egyptians used gold bars of a set weight as a medium of exchange, as had been done earlier in Mesopotamia with silver bars.

**3100 BC:** Writing invented in Mesopotamia. The main use, and probable motivation for its development, was for keeping accounts.

**3000 BC:** The shekel was an ancient unit used in Mesopotamia around 3000 BC to define both a specific weight of barley and equivalent amounts of materials such as silver, bronze and copper. The use of a single unit to define both mass and currency was a similar concept to the British pound, which was originally defined as a one-pound mass of silver. In Sardinia, one of the four main sites for sourcing the material deposits of obsidian within the Mediterranean, trade in this was replaced in the 3rd millennium by copper and silver.

**20<sup>th</sup> Century BCE:** The first mention of the use of money within the Bible is within the book "Genesis" in reference to criteria of the circumcision of a bought slave. Later, the Cave of Machpelah is purchased (with argentum) by Abraham, during a period dated as being the beginning of the twentieth century B.C.E. The currency was also in use amongst the Philistine people of the same time-period.

**2575 BC:** Construction of the Great Pyramid at Giza. Given the limited range of uses of money in certain ancient civilizations, the completion of large-scale and long-term projects was usually based on detailed state planning, often involving slavery. Similarly, the much later but rigidly hierarchical civilization of the Incas in Peru managed without money at all.

**2250-2150 BC:** Cappadocian rulers guaranteed quality of silver ingots. The state guarantee, probably both the weight and the purity of her silver ingots, helped the wider acceptance as money.

**2050 BC:** Earlier collections of laws include the Code of Ur Nammu, King of Ur (Note 1).

**2000 BC:** Ancient Babylonians negotiated commercial transactions using gold and silver as a means of exchange as far back as 2000 BC, but the metals were not cast in a form suitable for easy circulation. Lack of standardization meant the weight and purity of the metal had to be tested every time a piece changed hands.

**1930 BC:** The Code of Eshnunna was created.

**1870 BC:** The code of Lipit Ishtar of Isin was created.

**1792-1750 BC:** Reign of Hammurabi in Babylon. The Code of Hammurabi includes laws governing banking operations.



**1760 BC:** The Code of Hammurabi, the best preserved ancient law code, was created in ancient Babylon. It was enacted by the sixth Babylonian king, Hammurabi.

**1200 BC:** Cowrie Shells. The first use of cowries, the shells of a mollusc that was widely available in the shallow waters of the Pacific and Indian Oceans, was in China. Historically, many societies have used cowries as money, and even as recently as the middle of this century, cowries have been used in some parts of Africa. The cowrie is the most widely and longest used currency in history.

**1000 BC:** Money in the shape of small knives and spades made of bronze were in use in the society of China, with cast bronze replicas of cowrie shells in use before this. First Metal Money and Coins-Bronze and Copper cowrie imitations were manufactured by China at the end of the Stone Age and could be considered some of the earliest forms of metal coins. Metal tool money, such as knife and spade monies, was also first used in China. These early metal monies developed into primitive versions of round coins. Chinese coins were made out of base metals, often containing holes so they could be put together like a chain.

**1000-500 BC:** Tool currencies adopted in China. These were metal models of valuable implements that had previously been accepted in commercial exchanges, e.g. spades, hoes and knives.

**950 BC:** The Queen of Sheba visited Solomon and they exchanged gifts. The Biblical account of their encounter is probably the best known example of competitive gift exchange.

**7<sup>th</sup> Century:** The development of the banknote began in the seventh century, with local issues of paper currency. Its roots were in merchant receipts of deposit during the Tang Dynasty (618-907), as merchants and wholesalers desired to avoid the heavy bulk of copper coinage in large commercial transactions.

**700-500 BC:** The first manufactured coins seem to have taken place separately in India, China, and in cities around the Aegean sea between 700 and 500 BC. While these Aegean coins were stamped (heated and hammered with insignia), the Indian coins (from the Ganges river valley) were punched metal disks, and Chinese coins (first developed in the Great Plain) were cast bronze with holes in the center to be strung together. The different forms and metallurgical process implies a separate development.

Minting occurred in the latter parts of the 7th century amongst the cities of Grecian Asia Minor, spreading to Aegean parts of the Greek islands and the south of Italy by 500 BC. The first ruler in the Mediterranean known to have officially set standards of weight and money was Pheidon. Minting occurred in the latter parts of the 7th century amongst the cities of Grecian Asia Minor, spreading to Aegean parts of the Greek islands and the south of Italy by 500 BC. The first stamped money (having the mark of some authority in the form of a picture or words) can be seen in the National Library of Paris.

**700 BC:** The first gold coins of the Grecian age were struck in Lydia at this time. The talent in use during the periods of Grecian history both before and during the time of the life of Homer, weighed between 8.42 and 8.75 grammes.

**7<sup>th</sup> – 12 Centuries:** The medieval Islamic world, a vigorous monetary economy, was created during the 7-12 centuries on the basis of the expanding levels of circulation in a stable high-value currency (the dinar).

**6<sup>th</sup> Century BC:** Similar coinage was adopted and manufactured to their own standards in nearby cities of Ionia, including Mytilene and Phoakia (using coins of Electrum) and Aegina (using silver); and soon became adopted in mainland Greece itself, and the Persian Empire (after it incorporated Lydia in 547 BC).

**687 BC:** Crude “coins” invented in Lydia (according to Herodotus).

**650 BC:** Other coins made of Electrum (a naturally occurring alloy of silver and gold) were manufactured on a larger scale in Lydia (on the coast of what is now Turkey). The pioneering use of paper money is widely credited to the Chinese who used it around 650 AD.

**640 BC:** The ancient kingdom of Lydia, the land located in what is now Turkey, created a system of money. Each Lydian coin was guaranteed to be of an exact weight and purity.

**640-630 BC:** The first true coins were produced in Lydia. The earliest coins made in Lydia, Asia Minor, consisted of electrum, a naturally occurring amalgam of gold and silver.

**620-600 BC:** The people of Lydia in Asia Minor came upon the idea of shaping electrum, a natural alloy of gold and silver, into bean-shaped lumps of fixed weight and purity and stamping them with official symbols. These early coins soon became popular because of the way they facilitated trade.

**600 BC:** Pythius operates as a merchant banker in Asia Minor. Pythius, who operates throughout western Asia Minor at the beginning of the 5<sup>th</sup> century BC, is the first banker in the area of Greece and Asia Minor of whom we have records. Many of the early bankers in Greek city states were “metrics” or foreign residents.

**600-570 BC:** Use of coins spreads rapidly from Lydia to Greece. Aegina (c. 595 BC), Athens (c. 575 BC), and Corinth (c. 570) start to mint their own coins. Prior to the introduction of coinage, the Athenians had used iron spits or elongated nails as money.

**600-300 BC:** Round, Base metal coins invented in China. The date is uncertain but these were probably at least roughly contemporary with the development of coinage in the West, and possibly much earlier. Being made of base metal the Chinese coins were of relatively low value and therefore inconvenient for expensive purchases.

**5<sup>th</sup> Century BC:** Modern Coinage. Outside of China, the first coins were developed out of lumps of silver. They soon took the familiar round form of today and were stamped with various Gods and Emperors to mark their authenticity. These early coins first appeared in Lydia, which is part of present-day Turkey, but the techniques were quickly copied and further refined by the Greek, Persian, Macedonian, and later the Roman empires. Unlike Chinese coins, which depended on base metals, these new coins were made from precious metals such as silver, bronze, and gold, which had more inherent value. The use and export of silver coinage, along with soldiers paid in coins, contributed to the success of the Athenian Empire in the 5<sup>th</sup> century BC, dominance of the region.

**550 BC:** Lydians produce separate gold and silver coins. During the reign of Croesus the Lydians began to produce coins of pure metal instead of electrum. This is the world's first bimetallic coinage. The practice of striking coins was established in all of the primary trading cities throughout the known world.

**546 BC:** Croesus King of Lydia is captured by the Persians. As a result, use of coins spreads to Persia. Unlike the Greeks the Persians use mainly gold coins in preference to silver. These coins are first produced by the tyrant Peisistratus, using silver from the Laurion mines 25 miles south of Athens.

**500 BC:** Modern Coinage. Outside of China, the first coins were developed from lumps of silver. They soon took the familiar round form of today and were stamped with various gods and emperors to mark their authenticity. These early coins first appeared in Lydia, which is part of present-day Turkey. But, the techniques were quickly copied and further refined by the Greek, Persian, Macedonian, and later the Roman empire. Unlike Chinese coins which depended on base metals, these new coins were made from precious metals such as silver, bronze, and gold that had more inherent value.

**490 BC:** Discovery of a Rich Seam of Silver in the Laurion Mines. Themistocles subsequently persuades the Athenians to use some of the proceeds to build a fleet of warships.

**483 BC:** A major silver vein discovery at Laurium led to the huge expansion of the Athenian military fleet.

**480 BC:** Battle of Salamis. Greek civilization is saved by the victory of the Athenian fleet over the Persians.

**407 BC:** Sparta captures the Laurion Mines. Sparta releases 20,000 slaves from the mines and cuts off supplies of silver to Athens.

**406-405 BC:** Athens issues bronze coins with a silver coating. The Athenian public hoards silver coins which, as a result, quickly disappear from circulation, leaving only the inferior bronze ones.

**405 BC:** Aristophanes' comedy *The Frogs* is produced. In the play Aristophanes refers to how the new, inferior coins have displaced the old superior ones from circulation - probably the world's first statement of *Gresham's law* that bad money drives out good.

**3<sup>rd</sup>-4<sup>th</sup> Centuries:** Over the centuries, coin designs varied considerably in beauty and complexity. The first coins had a crude design on one side and nothing more than a simple punch mark on the other. Within a few hundred years, coins of great artistic beauty were being struck in Greece and then in Rome. As the Roman Empire declined in the 3rd and 4th centuries, so did the quality of its coins.

**394-371 BC:** Career of Pasion the Athenian banker. Pasion, a slave, becomes the wealthiest and most famous Greek banker and gains his freedom, and Athenian citizenship in the process. Greek banking transactions are carried out primarily in cash.

**390 BC:** The Gauls attack Rome. The cackling of geese in the capitol, where the city's reserves of money are kept, alerts the defenders. The grateful Romans build a shrine to Moneta, the goddess of warning, and from *Moneta* the words *money* and *mint* are derived.

**360-336 BC:** Reign of Philip II of Macedonia-Philip unites Greece and Macedonia. During his reign he deliberately mints far more coins than required for the immediate needs of his kingdom, probably to support the campaign against Persia that he was planning before his assassination. Among these coins is the golden *stater* celebrating his triumph in the chariot race in the Olympics in 356 BC - an early example of the use of coins as propaganda. These staters are widely circulated among the Celts of central and northern Europe whose earliest coins are copies of Philip's.

**350 BC:** Normal rate of interest in Greece is 10% except for risky business. According to Demosthenes 10% is the normal rate of interest for run-of-the-mill business. For risky business such as lending for shipping rates of between 20% and 30% are normal.

The Greek philosopher Aristotle contemplated the nature of money. He considered that every object has two uses, the first being the original purpose for which the object was designed, and the second possibility is to conceive of the object as an item to sell or barter.

**336-323 BC:** Reign of Alexander the Great. During the conquest of Asia Minor the cost of maintaining Alexander's army reaches about 20 talents or half a ton of silver a day, but later enormous quantities of Persian bullion are captured. The coining of the previously stagnant Persian gold stocks and payments to Alexander's soldiers, many of whom settle in new towns founded by him, give an enormous stimulus to trade throughout his empire. Alexander also simplifies the exchange rate between silver and gold by fixing it at 10 units of silver equals one of gold.

**323-30 BC:** Empire of the Ptolemies in Egypt. For long before Egypt came under Greek control grain had been used as a form of money in addition to precious metals, and state granaries functioned as banks. The Ptolemies transform the local warehouse deposit system into a fully integrated giro system with a central bank in Alexandria. Payments are made by transfer from one account to another without money passing.

**300 BC:** These ancient coins commemorate, clockwise from top left: Julius Caesar, Cleopatra VII (two different coins), and Ptolemy XIII.



## Greco-Roman Coins

Although early Greek coins portrayed mostly gods or goddesses, Ptolemy I, the patriarch of the Ptolemaic Dynasty, issued a coin in about 300 BC exhibiting his own portrait. In subsequent centuries Greek and Roman coin minters followed Ptolemy's example and rendered realistic, and often unflattering, images of their emperors. George Rainbird/Robert Harding Picture Library

**275 BC:** The *aes signatum* or bronze bars are still commonly used as currency in Rome. These cumbersome bronze bars are later superseded by coins which are much more convenient.

**269 BC:** Regular issues of silver coins are minted by the Romans and widely circulated. Despite the example of the Greek colonies on the southern Italian mainland and Sicily, and of Carthage, the Romans are relatively late in adopting coinage.

**218-201 BC:** 2nd Punic War between Rome and Carthage. Because of the enormous demand for coins to pay troops, the Roman rulers debase their coinage in purity and weight, causing inflation.

**200 BC:** Delos becomes a prominent banking centre. Delos, a barren Greek island, capitalizes on its magnificent harbor and famous temple of Apollo to become a financial centre. Its rise is aided by the defeat of Carthage, one of its main rivals, by the Romans. Transactions are carried out by giro or credit transfer.

**118 BC:** Leather money was used in China in the form of one-foot-square pieces of white deerskin with colorful borders. This could be considered the first documented type of banknote. This consists of pieces of white deerskin, about one foot square, with a value of 40,000 *cash*. (The *cash* was the name of a base metal coin).

**55-54 BC:** Julius Caesar raids Britain. In his account of his two raids Caesar notes scornfully that the Britons still used sword blades as currency. However a number of the Celtic tribes had begun to mint their own coins of gold, silver, bronze and *potin* (alloys of copper and tin).

**30-14 BC:** Reign of Augustus Caesar-Augustus reforms the Roman monetary and taxation systems issuing new, almost pure gold and silver coins, and new brass and copper ones and also introduces three new taxes: a general sales tax, a land tax, and a flat-rate poll tax.

**15-130 AD:** The shekel is the ancient Jewish coin that was a unit of currency.

**800-900 AD:** The Nose. The phrase "To pay through the nose" comes from Danes in Ireland, who slit the noses of those who were remiss in paying the Danish poll tax.

**9<sup>th</sup>-15<sup>th</sup> Century:** Paper money was introduced during the Song Dynasty in China. From the ninth century to the fifteenth century A.D., the first actual paper currency was used as money. Through this period the amount of currency skyrocketed causing severe inflation.

**806:** Paper Currency. The first known paper banknotes appeared in China. In all, China experienced over 500 years of early paper money, spanning from the ninth through the fifteenth century. Over this period, paper notes grew in production to the point that their value rapidly depreciated and inflation soared. Then beginning in 1455, the use of paper money in China disappeared for several hundred years. This was still many years before paper currency would reappear in Europe, and three centuries before it was considered common.

**12<sup>th</sup> Century:** The English monarchy introduced an early version of the bill of exchange in the form of a notched piece of wood known as a tally tick. The Song government granted several shops the sole right to issue banknotes, and the government finally took over these shops to produce state-issued currency.

**13<sup>th</sup> Century:** Gold coinage began to be minted again in Europe. Frederick the II is credited with having re-introduced the metal to currency during the time of the Crusades. Paper money became known in Europe through the accounts of travelers, such as Marco Polo and William of Rubruck. Marco Polo's account of paper money during the Yuan Dynasty.

**14<sup>th</sup> Century:** During this century, Europe en masse converted from the use of silver in currency to minting of gold.

**1328:** Vienna transferred from minting silver to gold.

**15<sup>th</sup> Century:** Europe had begun to produce beautiful coins and medals of outstanding workmanship and artistic design. The manila rings of West Africa were one of the currencies used from the 15 century forward to buy and sell slaves. African currency is still notable for its variety, and in many places various forms of barter still apply.

**1455:** The use of the currency vanished from China. European civilization still would not have paper currency for many years.

**16<sup>th</sup> Century:** Prior to the 16th century, most coin makers produced coins by placing a round disk of metal between two dies and hitting it with a hammer. Hammered coins, as they were known, could be very beautiful—including some of the earliest that came from ancient Greece and Rome—but they tended to be somewhat crude and lacked well-formed edges. Because the edges were irregular, it was fairly simple to cut off thin slivers of gold or silver and then to spend the coins as if they were of full weight.

A major change in the way coins were produced occurred during the 16th century, when heavy machinery was first used to mint coins. Many of these new mints were located in water-driven mills, thus these coins were referred to as *milled* coins. This technique was a quantum leap over

hammering. Not only were milled coins attractive and much more uniform, but continuous small parallel cuts—known as a milled or reeded edge, as on the United States quarter—made it more difficult to shave off slivers of precious metal.

The word *dollar* was derived from the German *thaler*, or *taler*, a large silver coin first issued in Central Europe in the 16th century, and later adapted to *daler*. The dollar was the world's first unit of currency divided into decimal subunits, which simplified the use of money.

The phenomena described by Gresham's law were noted by merchants, financiers, and statesmen long before the 16<sup>th</sup> century. When the English financier Sir Thomas Gresham expressed the thought that "bad money drives out good," he made no theoretical exposition of the formulation. Not until the latter part of the 19<sup>th</sup> century did this principle become known as Gresham's law.

**1500:** "Potlach" comes from a Chinook Indian custom that existed in many North American Indian cultures. It is a ceremony where not only were gifts exchanged, but dances, feasts, and other public rituals were performed. In some instances potlach was a form of initiation into secret tribal societies. Because the exchange of gifts was so important in establishing a leader's social rank, potlach often spiraled out of control as the gifts became progressively more lavish and tribes put on larger and grander feasts and celebrations in an attempt to out-do each other.

**1509-1547:** Some rulers compromised the integrity of the circulating coinage, issuing debased coins as a way to inflict a "hidden" tax on their subjects. Henry VIII, the king of England during this period, was often guilty of this practice. He caused great harm to his nation's economy by reducing the purity of English gold and silver coins.

**1535:** The earliest known use of wampum, strings of beads made from clam shells, was by the North American Indians in 1535. Most likely, this monetary medium existed well before this date. The Indian word "wampum" means white, which was the color of the beads.

Spanish conquerors discovered huge amounts of gold and silver in the Americas. Turning these metals into coins made it easier to divide and transport them, and the Spaniards established the first mint in the New World in Mexico City in 1535. Spain soon built minting facilities throughout its Spanish-American empire.

The areas of the New World colonized by Britain did not yield nearly the quantities of gold and silver as the Spanish territories and English-speaking America did not establish its own mints until much later. Although the colonists still used English pence and pounds, they also exchanged French, Dutch, and German money, as well as coins struck in Spanish America.

**1630:** France, England and Holland had joined Spain in establishing colonies in the New World. Ships from these countries arrived often in colonial ports, and money from all four countries circulated freely throughout the colonies.

**1637:** Massachusetts declared white wampum legal tender for sums up to one shilling, a limit raised substantially in 1643.

**1640:** King Charles I seized the private gold stored in the mint as a forced loan (which was to be paid back over time). Thereafter merchants preferred to store their gold with the goldsmiths of London, who possessed private vaults, and charged a fee for that service.

**1652:** John Hall set up a private mint in Massachusetts and his popular “pine-tree” shillings and other coins circulated widely until the mint was forced to close down in 1684.

**1661:** The first European banknotes were issued by Stockholm’s Bank a predecessor of the Bank of Sweden.

**1664:** Stuyvesant arranged a loan in wampum worth over 5,000 guilders for paying the wages of workers constructing the New York citadel.

**1670-1680s:** English and Spanish traders valued gold coins more than silver coins, as many of their neighbors did, with the effect that the English gold-based guinea coin began to rise against the English silver based crown.

**1690:** The first official state issue of paper money was made by the Massachusetts Bay Colony.

**1694:** The Bank of England was granted sole rights to issue banknotes in England after 1694.

**17<sup>th</sup> Century:** Sweden lacked more precious metal and so produced "plate money", which were large slabs of copper approximately 50 cm or more in length and width, appropriately stamped with indications of their value.

**1723-1729:** One of the best examples was the *Pennsylvania Land Bank* which authorized three series of note issues during this period.

**1727:** Tobacco certificates circulated much more conveniently than the actual leaf and were authorized as legal tender in Virginia and regularly accepted as such throughout most of the eighteenth century.

**1730:** The Bank of England risked a national financial catastrophe when customers demanded their money be changed into gold in a moment of crisis. Eventually London's merchants saved the bank and the nation with financial guarantees.

**1740:** A dispute arose involving a “Land Bank or Manufacture Scheme” in Boston, and the following year the British parliament ruled that the bank was illegal in that it transgressed the provisions of the *Bubble Act of 1720* (passed after the collapse of the *South Sea Bubble* - one of the most notorious outbreaks of financial speculation in history).

**1764:** A complete ban on paper money (except when needed for military purposes) was extended to all the colonies.

**1766:** When Benjamin Franklin was in London, he tried in vain to convince Parliament of the need for a general issue of colonial paper money, but to no avail.



**1775:** In North Carolina alone as many as seventeen different forms of money were declared to be legal tender.

**1780:** During the Revolution, the *Bank of Pennsylvania* was established (with the support of Thomas Paine), but it was little more than a temporary means of raising funds to pay for the desperate needs of a practically starving army.

**1781:** The Bank of North America was granted a charter by Congress (by a narrow margin of votes) and began its operations in Pennsylvania on 1 January 1782. It was followed after the war by the *Bank of New York* and *Bank of Massachusetts*, which both opened in 1784, and the *Bank of Maryland* in 1790.

**1787:** The government constituted the first issue of legal tender notes since the adoption of the U.S. Constitution in 1787. The law authorizing this currency passed in February 1862, provided for an issue in the amount of 150 million dollars. Further issues totaling 300 million dollars were authorized in July 1862 and March 1863. The first coin was minted in New Haven Connecticut. It was a copper cent, stamped with the words: "We are one and mind your own business."

**1789:** At the time the national government was established in 1789, the amount of metallic money in circulation was insufficient to meet the needs of the new nation and comprised varying denominations and values of British, Spanish, French and Portuguese coins. The paper currency previously established by the Continental Congress had become worthless and had ceased to circulate; the paper money issued by the states had become depreciated.

**1790:** The Constitution was ratified and the United States of America officially became a country. The new Congress agreed on a money system that would become law and would be used by all the states. The new system would have a dollar as the basic unit and would use both gold and silver in the coins.

**1791-1794:** Early efforts to establish a sound metallic and paper currency led to the inception of the First United States Bank (1791), a national currency (1792), including the present decimal system of coinage, and a mint (1794).

**1792:** The United States established its first official mint in Philadelphia, Pennsylvania. Regular coinage began the following year, based on a new unit of currency, the dollar. Congress passed the first coinage act, adopting a bimetallic standard under which both gold and silver coins were to be minted.

A mint was opened in Philadelphia to make gold, silver and copper coins. Congress passed the first coinage act, adopting a bimetallic standard under which both gold and silver coins were minted. The gold dollar contained 24.75 grains of pure gold and silver dollar 15 times as much silver, making the legal mint ratio 15 to 1. Silver dollars also were largely withdrawn from circulation, because they could be exported to the West Indies and exchanged at face value for slightly heavier Spanish dollars, which were then melted down and taken to the mint for coinage into American dollars at a profit.



Courtesy of the United States Mint

### **Sacagawea Golden Dollar**

**1804-1806:** The United States Mint issued the new golden dollar coin in early 2000. The *obverse* (front) side of the coin depicts Sacagawea and her infant son, Jean Baptiste. Sacagawea was the Native American woman who helped guide the Lewis and Clark expedition during much of its journey across the North American continent from 1804 to 1806.

**1812:** After the 1812 War, the Second Bank of the United States was set up, but once one of the heroes of that war, General Jackson, became president it was doomed to failure.

**1816:** Gold was officially made the standard of value in England in 1816. At this time, guidelines were made to allow for a non-inflationary production of standard banknotes which represented a certain amount of gold. Banknotes had been used in England and Europe for several hundred years before this time, but their worth had never been tied directly to gold. In the United States, the Gold Standard Act was officially enacted in 1900, which helped lead to the establishment of a central bank.

**1833:** Congress refused to renew the charter of the Second United States Bank, a successor to the First United States Bank. During the following three decades, sometimes referred to as the dark decades of American banking, abuses of sound banking practices multiplied and assumed scandalous proportions, and speculators and counterfeiters flourished.

**1834:** When Congress adopted a mint ration of 15 to 1 by reducing the weight of the gold dollar, the metallic currency was limited mainly to a meager supply of small silver and copper coins. The first unified currency consisted of the notes issued by the Continental Congress to finance the American Revolution. These notes were originally declared redeemable in gold or silver coins, but redemption was found impossible after the revolution because of the excess of printed notes over metal reserves. Thus, the notes depreciated and became almost worthless.

**1835:** Silver was undervalued at the mint; its market value was constantly higher than its coin value. As a result, gold gradually replaced silver in the monetary stock, especially after the discovery of gold in California in 1849. To relieve the famine in small coins, in 1853, Congress reduced the weight of the half-dollars, quarters and dimes by 7 percent.

During the Civil War (1861-1865), the governments in both the North and South, financed their needs through the issue of fiat money. The notes issued by the Confederate treasury and the

Southern states became entirely worthless after the war. The US notes (greenbacks) and other paper money issued by the Federal government also depreciated rapidly, especially after the suspension of payment in specie (redemption of paper money with coins of gold or silver) in 1861, and gold and silver were driven out of circulation.

**1838:** The National Banking Act authorized the establishment of national banks that could issue bank notes backed by government bonds. A ten percent tax levied on state bank notes in 1865 forced state banks to discontinue issuing them, thus giving the national banks a monopoly.

The National Currency Act of 1863, later amended and renamed the National Banking Act, was enacted by Congress to establish a national banking system and a uniform national currency. Later experience revealed that this system was not sufficiently elastic in providing adequate amounts of currency during periods of prosperity and in contracting the volume of currency in slack times.

The Philadelphia mint made all the coins used in the United States until 1838. Six other mints opened to keep up with the country's need for coinage.

**1850:** The Spanish dollar was the coin most widely used throughout the world.

**1858:** Canada issued its first coins in 1858, borrowing the 'dollar' name for its unit of currency from the United States.

**1861-65:** During the Civil War (1861-1865) the governments in both the North and the South financed their needs through the issue of fiat money. The notes issued by the Confederate treasury and the Southern states became entirely worthless after the war.

**1861:** The U.S. notes (greenbacks) and other paper money issued by the federal government also depreciated rapidly, especially after the suspension of payment in specie (redemption of paper money with coins, usually of gold or silver) in 1861, and gold and silver coins were driven out of circulation.

**1862-1863:** The law authorizing this currency, passed in February 1862, provided for an issue in the amount of \$150 million. Further issues totaling \$300 million were authorized in July 1862, and March 1863.

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**1865:** A 10-percent tax levied on state bank notes forced state banks to discontinue issuing them, thus giving the national banks a monopoly of bank-note issue.

**1866-79:** In 1866, an act was passed providing for the gradual retirement of the greenbacks. It was repealed two years later, however, and the notes continued to circulate without gold reserve backing until 1879. In that year, when the amount of greenback currency in circulation was about \$347 million, the greenbacks were made redeemable in gold; thereafter they circulated on the same basis as all other forms of legal tender.

**1870:** The First Legal Tender Case, a United States Supreme Court case (*Hepburn v. Griswold*) reviewed Congress' right to pay its debts with unbacked paper money. The case was one of numerous suits protesting the use of 450 million dollars issued under the Legal Tender Acts of 1862 and 1863 to repay loans. The court found the acts unconstitutional because they made the paper money legal tender for payment of all debts, including ones contracted before the passage of the acts, a violation of the obligation of contracts. The court also noted that the Constitution of the United States prohibits payment of public debts with anything but gold and silver.

**1873:** As a result of a revision of the coinage laws in 1873 the silver dollar was omitted from the list of coins authorized for minting. Although the coinage of silver dollars was resumed in 1878, the metallic gold dollar remained the monetary standard of value in the US, thus bimetallism was legally discontinued and the gold standard adopted. After the elimination of the silver dollar, the greatly expanded production of silver in the West caused the value of silver to fall sharply and led to agitation by the silver interest for restoration of the free coinage of the silver dollar.

**1875:** Specie Resumption Act of 1875. The Civil War currency, known colloquially as greenbacks, was made redeemable. The issuance of fiat money frequently results in a steeply spiraling inflation, as specie-based currency withdrawn from circulation, causing a sharp rise in prices.

**1878-1890:** This agitation led to the passage of the Bland-Allison Act in 1878 and the Sherman Silver Purchase Act of 1890, under which the Treasury was directed to purchase larger amounts of silver for coinage. The former law also created the silver certificate, which remained an important part of U.S. currency until it was retired in 1968.

The Sherman Silver Act, which introduced into the stream of currency an enormous quantity of overvalued silver and caused a drastic decline in the gold reserve of the Treasury, helped bring on the panic of 1893 and was repealed by Congress in that year. Even so, silver was the main issue in the 1896 presidential campaign, when William Jennings Bryan called for free coinage of silver. The silver forces were defeated, and in 1900 the Gold Standard Act affirmed the gold dollar as the standard unit of value.

**1890:** There were only about 20 central banks in the world, but by 2000 there were more than 160. In the United States, the dollar is the unit of currency, and the Federal Reserve System is the central banking system that manages the currency.

**Late 1800s:** The money systems in use were adopted by most countries. All included paper and metal coins. At first, coins were made from precious metals. Even so, in 1896, silver was the main issue in the 1896 presidential campaign when William Jennings Bryan called for free

coinage of silver at a ratio of 16 to 1. The silver forces were defeated, and in 1900 the Gold Standard Act affirmed the gold dollar as the standard unit of value.

**19<sup>th</sup> Century:** The instability of the ratio of silver and gold grew over the course of the 19<sup>th</sup> century with the increase both in the supply of these metals, particularly silver, and of trade.

**1900:** Most of the industrialized nations were on some form of gold standard with paper notes and silver coins constituting the circulating medium.

**1913-1914:** In the USA, the Federal Reserve Bank was granted similar rights after its establishment. The next important change in the currency system authorized the establishment of 12 regional Federal Reserve banks with power to issue two types of currency. The first, and most important, was the Federal Reserve note, which is issued under conditions consistent with economic stability and the need of trade and industry. The second type of Federal Reserve currency notes were originally intended to replace the national bank notes but never became a permanent part of the currency because the Federal Reserve notes proved adequate.

The Federal Reserve Bank was planned as an equivalent in some respects of the central banks of other countries. Among the chief functions of the Federal Reserve System are control of the volume of money and credit in the U.S. and the substitution of Federal Reserve notes for bank notes previously issued by the national banks. As of December 31, 1974, private citizens have been allowed to own gold but not to use it as currency.

**1925:** The gold-bullion standard was used in the United Kingdom from 1925-1931, while a number of Latin American countries have used the dollar-exchange standard.

**1929:** Great Depression. The economic depression and the epidemic of bank failures in the early 1930s led to sweeping reforms in the nation's monetary structure.

**1930:** End of the Gold Standard. The massive Depression of the 1930s, felt worldwide, marked the beginning of the end of the gold standard. In the United States. The gold standard was revised and the price of gold was devalued. This was the first step in ending the relationship altogether. The British and international gold standards soon ended as well, and the complexities of international monetary regulation began. The economic depression and the epidemic of bank failures in the early 1930s led to sweeping reforms in the nation's monetary structure.

**1933:** Legislation was passed by Congress that provided: "All coins and currencies of the United States (including Federal Reserve notes and circulation notes of Federal Reserve Banks and national banking associations) heretofore or hereafter coined or issued, shall be legal tender for all debts, public and private, public charges, taxes, duties, and dues..." Following enactment of the Gold Reserve Act of 1934, by the terms of which gold coins were withdrawn from circulation and the further coinage of gold coins was discontinued, gold coins ceased to be legal tender in the U.S.

The principal types of gold standard are the gold-coin standard, the standard in the United States until 1933, the gold-bullion standard consisting of a specified quantity of gold, and the gold-

exchange standard, under which the currency is converted into currency of some other country on the gold standard.

Executive proclamations issued by President Franklin D. Roosevelt prohibited gold exports except under government license, and called in all gold and gold certificates from general circulation, thus ending the gold standard. This period was also marked by important legislation regarding silver. Under the Thomas Amendment to the Emergency Farm Relief Act of May 12, 1933 (commonly known as the Inflation Act), the president was given the power to restore unlimited coinage of silver under a bimetallic system.

**1934:** Under the Gold Reserve Act of January 30, 1934, the country returned to a modified gold standard with a devalued dollar. The act gave the president authority to lower the weight of the gold dollar to between 50 and 60 percent of its former gold content. The following day the president issued a proclamation reducing the gold content of the dollar to 59 percent of that established by the Gold Standard Act of 1900, or from 23.33 to 13.71 grains of fine gold.

The Silver Purchase Act, which was signed by the president on June 19, 1934, authorized the nationalization of silver and declared it to be the policy of the United States to have the silver holdings of the U.S. Treasury ultimately make up a maximum of one quarter of the value of the nation's combined monetary gold and silver stocks.

In August 9, 1934, the president issued an executive order, requiring that all silver in the United States, with the exception of certain categories such as silver coins, fabricated silver, and silver owned by foreign governments, be delivered to the mints to be coined or held as bullion for later coinage. Under the Silver Purchase Act and subsequent legislation, the Treasury purchased large quantities of silver abroad and from domestic producers, which tended to raise the price of the metal and curtail the monetary use of silver abroad, especially in China and India.

**1935:** The national bank notes were retired, but greenbacks are still part of U.S. paper currency.

**1939-45:** Near the end of World War II (1939-1945), most of the Allied nations joined together in a conference held at Bretton Woods, New Hampshire, to set up a new international monetary system, replacing the international gold standard that had collapsed during the Great Depression. The conference also provided for the establishment of the International Monetary Fund (IMF). The U.S. dollar played a key role in the new system, becoming, in effect, the world's currency.

**1944:** The major world powers met at the Bretton Woods Conference to organize an international monetary system that would alleviate many of the foreign-exchange problems created by World War II. The International Monetary Fund (IMF) was established at the conference primarily to promote currency stabilization, thereby facilitating the growth of world trade. The participating nations agreed to tie the values of major world currencies to the value of the United States dollar, which was determined by the amount of gold the dollar could buy.

An agreement was also reached to set upper and lower limits within which exchange rate fluctuations were permitted in response to market conditions. At the time of the conference this limit was set by the IMF at 1 percent in either direction. If a country chose to adjust the value of its currency beyond 1 percent, the nation would have to change its currency value officially in terms of U.S. dollars. Although the Bretton Woods agreement enabled countries to raise their currency values; in practice almost all currency changes since then have been devaluations.

**1949:** The British pound sterling, for example, was devalued in 1949 and again in 1967.

**1960s:** This system functioned well until the mid-1960s, when the United States began to have a large balance of trade deficits. The supply of dollars exceeded the demand, and some sources urged the devaluation of the dollar. Because it was the center of the international monetary system, however, the United States and other nations were reluctant to devalue the dollar.

**1970:** In the early 1970's foreign government holdings of U.S. dollars were over five times greater than the U.S. gold stock. The introduction of many types of monetary assets began in circulation. The Federal Reserve continued to fine-tune its measures of these monetary aggregates. Money market mutual fund shares were added to M2. In the late 1970's the Federal Reserve began to "target" the money supply, that is, the Fed tried to establish a stable rate of growth for the money supply.

**1971:** The Federal Reserve System, also known as the Fed, defined the money supply as equal to the sum of currency in circulation (excluding bank vault cash) and demand deposits (checking accounts). This definition of the money supply ignored saving accounts and time deposits (accounts that earned interest but could not be withdrawn without penalty until they matured).

The Federal Reserve began publishing measures of broader monetary supplies. The monetary aggregates were given the names M1, M2 and M3. M1 was comparable to the original money supply measure, that is, currency in circulation and demand deposits. M2 equaled M1 plus accounts such as savings accounts and small time deposits. M3 was an even broader measure, adding in larger time deposits. The United States suspended the international payment of gold for U.S. currency. This action effectively ended the gold standard, the name for this official link between the dollar and the price of gold.

Eventually the persistent U.S. balance of trade deficits caused a loss of confidence in the dollar, and on August 15, 1971, U.S. President Richard M. Nixon suspended the convertibility of the dollar into gold. Representatives of the ten major world currencies met in Washington, D.C. in December of that year to revise the system agreed on at the Bretton Woods Conference. The result was the Smithsonian Agreement (1971), which broadened the band within which currencies could be freely adjusted to 2.25 percent above and below the legal value of the currency. Following this agreement, the United States devalued the dollar by 8 percent and the value of the British pound sterling was again adjusted.

Because the price of U.S. imports and exports was relatively inelastic, the dollar devaluation of 1971 did not have an immediate positive impact on the trade balance. The U.S. trade deficit actually increased, from \$2.3 billion in 1972.

**1973:** The government conducted an overly expansionary monetary policy, and the U.S. money supply increased by historic proportions. These forces again put pressure on the value of the dollar, and it had to be devalued by an additional 10 percent in February 1973. The nation reported a trade surplus in 1973, but the sharp rise in oil prices late that year had a major effect on the U.S. trade balance throughout the remainder of the decade. The United States actively

promoted a policy of flexible exchange rates that allowed currency values to be determined by the interactions of supply and demand.

**1974:** Private citizens can own gold but not use it as currency.

**1980:** The Federal Reserve Bank began publishing estimates of a broader monetary aggregate, which was designated L and included M3 plus assets such as short-term Treasury bills and commercial paper. The Depository Institutions Deregulation and Monetary Control Act was passed. It expanded the range of monetary instruments used by the financial community, gradually eliminated the ceiling on interest rates that savings and loan institutions are allowed to pay depositors, and made all banks subject to the reserve requirements of the Fed by 1989.

**Mid 1980s:** Federal Reserve notes constituted about 99 percent of the total volume of paper money in circulation. Other U.S. notes and national bank notes made up the balance of the total volume of paper money in circulation.

**June 1980-March 1985:** The U.S. dollar rose about 100 percent against the currencies of ten leading industrial nations. The rise in the dollar eventually contributed to an immense U.S. trade deficit.

**1982:** A third important development occurred in 1982 when the Federal Reserve changed its monetary policy. Monetary policy involves action to influence the economy's performance--its output and employment level as well as the inflation rate, by controlling the money supply and the rate of interest.

The Fed went back to the practice of targeting interest rates as the primary way of stimulating or tightening the economy, rather than using its ability to increase the reserves of commercial banks.

**1985:** Representatives of the United Kingdom, West Germany (now part of the united Federal Republic of Germany), France, Japan, and the United States agreed to work together to bring down the value of the dollar; within a year the dollar had declined in value about 40 percent against the West German mark and over 50 percent against the Japanese yen.

**1990s:** A resurgence of the currency was seen, a component of M1 because of the export of U.S. currency to areas such as Russia and Latin America where domestic currencies lost credibility. The global underground economy, also known as the black market, also draws in significant sums of U.S. currency.

**1994:** The M1 in the United States averaged over \$1.1 trillion on a daily basis. M2 is less liquid. It consists of M1 plus savings deposits of \$100,000 or less. M3 consists of M2 plus savings deposits of more than \$100,000. L consists of M3 plus government securities, such as savings bonds and treasury notes.

**1997:** The ten largest banks in the world were headquartered outside the United States, but the U.S. dollar was the most important world currency.



**1998:** The U.S. dollar accounted for over 50 percent of all foreign currency deposits. Dollar deposits are a foreign currency when held by a bank outside the United States.

### Changing Face of US Currency



A portrait of United States President Andrew Jackson, *top*, underwent changes in 1998 with the release of the new \$20 bill, *bottom*. The Department of the Treasury is responsible for manufacturing U.S. currency and periodically introduces new features to discourage counterfeiting. Source: Dan Loh/AP/Wide World Photos

**January 1, 1999:** Participating members of the European Union (EU) adopted a single currency, the euro. Euros were used mainly for accounting purposes and for electronic money transfers until January 1, 2002. At that time, euro-denominated coins and bills entered circulation and replaced the national currencies of participating EU member states.

**20 Century:** By the end of the 20th century, all developed countries had switched to a decimal system within their units of currency. In addition to the regular denominations in circulation today (cent, 5 cents, 10 cents, 25 cents, 50 cents, and dollar), the U.S. Mint has produced half-cent, 2-cent, 3-cent, and 20-cent pieces as well as gold coins ranging from \$1 to \$20.

**Second Half of the 20th Century:** Gold became relegated almost exclusively to non-circulating commemorative or bullion coins. Silver was replaced with nickel or nickel alloys to make coins known as *token coinage*, because they do not contain precious metals nor can they be exchanged for gold or silver. All current United States coins fall under the category of token coinage.

**June 2001:** The US currency accounted for 48 percent of M1; the remaining 52 percent of total M1 consisted of checking account and other deposits, much of which came into existence through borrowing. According to some estimates over half of U.S. currency has quietly found its way to foreign currencies. The Federal Reserve System has no way of measuring exactly how much currency is going to foreign currency. The most popular U.S. currency in foreign countries is the one-hundred dollar bill.

Today, currency continues to change and develop, as evidenced by the new \$100 U.S. Ben Franklin bill. The U.S. has already changed its \$100 and \$20 banknotes. More changes are in the works.

**The Future (Electronic Money):** In our digital age, economic transactions regularly take place electronically, without the exchange of any physical currency. Digital cash in the form of bits and bytes will most likely continue to be the currency of the future.

**Note:** These law codes (2050, 1930, and 1870 BC) formalized the role of money in civil society. They set amounts of interest on debt... fines for 'wrongdoing'... and compensation in money for various infractions of formalized law.

## **Annex D: Federal Reserve System Controls the Money Supply in Different Ways**



**Alan Greenspan**

### **Introduction:**

The U.S. Senate voted in 2000 to give Alan Greenspan a fourth term as Chairman of the Federal Reserve Board. A firm believer in laissez-faire capitalism, Greenspan opposes government regulation and control over the economy. Because the Federal Reserve System exercises so much influence over the U.S. economy, the chairman of the Federal Reserve Board is often considered one of the world's most powerful individuals.

The monetary policies adopted by the Federal Reserve System can have dramatic effects on the national economy and, in particular, on financial markets. Most directly, of course, when the Federal Reserve System increases the money supply and expands the availability of credit, then the interest rate, which determines the amount of money that borrowers pay for loans, is likely to decrease. Lower interest rates, in turn, will encourage businesses to borrow more money to invest in capital goods, and will stimulate households to borrow more money to purchase housing, automobiles, and other goods.

By far the most important function of the Federal Reserve System is controlling the nation's money supply and the overall availability of credit in the economy. If the Federal Reserve System wants to put more money in the economy, it does not ask the Treasury to print more dollar bills. Remember, much more money is held in checking and savings accounts than as currency, and it is through those deposit accounts that the Federal Reserve System most directly controls the money supply.

The Federal Reserve affects deposit accounts in one of three ways.

First, it can allow banks to hold a smaller percentage of their deposits as reserves at the Federal Reserve System. A lower reserve requirement allows banks to make more loans and earn more money from the interest paid on those loans. Banks making more loans increase the money supply. Conversely, a higher reserve requirement reduces the amount of loans banks can make, which reduces or tightens the money supply.

The second way the Federal Reserve System can put more money into the economy is by lowering the rate it charges banks when they borrow money from the Federal Reserve System. This particular interest rate is known as the discount rate. When the discount rate goes down, it is more likely that banks will borrow money from the Federal Reserve System, to cover their reserve requirements and support more loans to borrowers. Once again, those loans will increase the nation's money supply. Therefore, a decrease in the discount rate can increase the money supply, while an increase in the discount rate can decrease the money supply.

The third way the Federal Reserve System can adjust the supply of money and the availability of credit in the economy is through its open market operations—the buying or selling of government bonds. Open market operations are actually the tool that the Federal Reserve uses most often to change the money supply. These open-market operations take place in the market for government securities. The U.S. government borrows money by issuing bonds that are regularly auctioned on the bond market in New York. The Federal Reserve System is one of the largest purchasers of those bonds, and the bank changes the amount of money in the economy when it buys or sells bonds.

To summarize the Federal Reserve System's tools of monetary policy: It can increase the supply of money and the availability of credit by lowering the percentage of deposits that banks must hold as reserves at the Federal Reserve System, by lowering the discount rate, or by purchasing government bonds through open market operations. The Federal Reserve System can decrease the supply of money and the availability of credit by raising reserve ratios, raising the discount rate, or by selling government bonds.

### **Impact of Money Supply on the Economy**

The Federal Reserve System increases the money supply when it wants to encourage more spending in the economy, and especially when it is concerned about high levels of unemployment. Increasing the money supply usually decreases interest rates—which are the price of money paid by those who borrow funds to those who save and lend them. Lower interest rates encourage more investment spending by businesses, and more spending by households for houses, automobiles, and other “big ticket” items that are often financed by borrowing money. That additional spending increases national levels of production, employment, and income. However, the Federal Reserve Bank must be very careful when increasing the money supply. If it does so when the economy is already operating close to full employment, the additional spending will increase only prices, not output and employment.

### **Interaction of Supply and Demand**

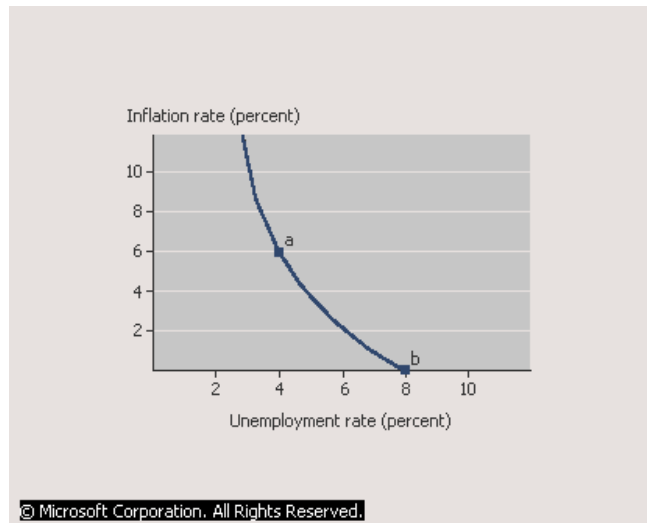
The free-market value of a national currency is determined by the interaction of supply and demand. If the quantity of the currency demanded is greater than the quantity supplied, a nation's currency will appreciate, or increase in value. A nation's currency will depreciate, or decrease in value, when the quantity of currency supplied is greater than that demanded. The demand for a nation's currency depends on the amount of its exports, domestic investments, and assets held in domestic currency. A nation's currency supply on world markets depends partly on the amount of imports, investments abroad, and assets held in foreign countries.

Ultimately, the supply of a currency depends on national monetary policy. If a country prints too much money, causing inflation domestically, a balance of payment deficit results.

### Effects of Devaluation

Currency devaluation primarily affects a nation's trade balance, which is the difference between the value of its exports and that of its imports. Devaluation reduces the value of a nation's currency in terms of other currencies; thus, following a de-valuation, a nation will have to exchange more of its own currency in order to obtain a given amount of foreign currency. This causes the price of imports to rise and makes domestic products more attractive to consumers at home. Because it takes less foreign currency to buy a given amount of a devalued currency, the price of the nation's exports declines, making them more desirable to foreign consumers. The total effect of currency devaluation depends on the actual elasticity's of the supply and demand for traded goods. Devaluation often is criticized as an inflationary monetary policy because it raises the domestic price of imports.

### Impact of inflation on Money Supply



### Phillips Curve

The Phillips curve illustrates the trade-off found by economist A. W. Phillips between lower unemployment and increased inflation. If unemployment is low at 4 percent, inflation is slightly high at 6 percent (point a). If inflation is eliminated, unemployment increases to 8 percent (point b). The trade-off poses a dilemma for policy-makers, although economists disagree on whether this relationship exists. © Microsoft Corporation. All Rights Reserved.

For several decades after World War II (1939-1945), the main inflation theories were demand-pull and cost-push. The cost-push theory emphasized the role of excessive increases in wages relative to productivity increases as a cause of inflation, whereas the demand-pull theory tended to attribute inflation more to excess demand in the goods market caused by expansion of the money supply. A central concept in inflationary theory since the mid-1950s has been the *Phillips curve*, which relates the level of unemployment to the rate of inflation. The Phillips curve suggests that society can make a choice between various combinations of inflation rate and

unemployment level. Many economists, however, dispute whether such a choice really exists, saying that in order to keep unemployment under control it will be necessary to accept continuously increasing inflation. At the same time many other economists dispute whether a stable relationship between unemployment and the level of real wage demands exists. However, the Federal Reserve System can go too far in expanding the money supply. If the supply of money and credit grows much faster than the production of goods and services in the economy, then prices will increase, and the rate of inflation will rise. Inflation is a serious problem for those who live on fixed incomes, since the income of those individuals remains constant while the amount of goods and services they can purchase with their income decreases. Inflation may also hurt banks and other financial institutions that lend money, as well as savers. The underlying cause of inflation is not devaluation, however, but rather excess money creation. In a period of unanticipated inflation, as the value of money decreases in terms of what it will purchase, loans are repaid with dollars that are worth less. The funds that people have saved are worth less, too. If a country prints too much money, causing inflation domestically, a balance of payment deficit results.

### History of Money Coin Images

Penny: Abraham Lincoln on the front and Lincoln Memorial on the back.



Nickel: Thomas Jefferson on the front and Monticello on the back.



Dime: FDR on the front and Torch on the back.





Quarter: George Washington on the front and USA Emblem on back.



Half Dollar: JFK on the front and President's Coat of Arms on back.



Golden Dollar: American Indian Sacagawea.



Courtesy of the United States Mint

## Annex E: Glossary

**Ancient:** An ancient unit of weight and money.

**Booty:** Seized or stolen valuables, especially by soldiers in war.

**Barter:** The direct exchange of one commodity for another. This was the means used in primitive societies, and barter is still practiced in some parts of the world.

**Bill of Exchange:** Document ordering someone to pay a certain sum of money to another on a specific date or when certain conditions have been fulfilled.

**Bimetallism:** Instability in the ratio of gold and silver. The attempt to create a bimetallic standard where both gold and silver backed currency remained in circulation.

**Bitcoin:** Distinct from centrally controlled government-issued currencies; private decentralized trust networks support alternative currencies.

**Chremata:** Translated in some contexts as "goods" or "property," although with a wider ranging possible applicable usage, having a definite meaning "valuable things."

**Coincidence of Wants:** What a person desires to sell is exactly what the other wishes to buy. In a barter system where goods are directly exchanged without the use of money, double coincidence of wants is an essential feature.

**Currency:** *System* of money (monetary units) in common use, especially in a nation. In economics, term designating all the circulating media of exchange of a country. Currency includes coins and paper money.

**Denari:** Ancient Roman gold coin worth 25 silver denarii.

**Devaluation:** In economics, official act reducing the rate at which one currency is exchanged for another in international currency markets.

**Depreciation:** Decline in a currency's value. A nation's currency will depreciate or decrease in value when the quantity of currency supplied is greater than that demanded.

**Dollar:** Unit of currency.

**Electrum:** Naturally occurring alloy of silver and gold.



**Exchange Rate:** The price at which two currencies can be exchanged against each other. This is used for trade between the two currency zones.

**Fiat money:** Value of the material from which they are made is usually less than their value as money. Example, the amount of nickel in a nickel coin today is less than its value as money. Do not allow free convertibility of the currency into a metallic standard. Money is given value by government fiat or edict rather than by its nominal gold or silver content.

**Final Demand:** The measure of what a country's economic activity produces in the end.

**Fractional Reserve Banking:** Depositors still have the money in their accounts, but now the people and firms to whom the bank has loaned money also have that money in their accounts to spend. After making loans, the bank retains only a fraction of its deposits as reserves. The bank really could not pay all of its depositors without calling in the loans it has made.

**GNP:** Total value of goods and services produced in an economy during a given period of time, usually a year.

**Greenback:** A popular name for the paper currency issued by the Federal government during the American Civil War to facilitate the payment of war expenses. It was so called because the reverse side of each note was printed in green ink. In convertible notes issued by the Union government, the color green was also used.

**Gresham's Law:** Keeping gold and silver paid, but paying out in notes. In economics, the principle that when depreciated or debased currency is in circulation along with coins that have full value in terms of precious metal, the latter tends to disappear. It describes the tendency for cheaper money to drive more valuable money out of circulation.

**Gross National Product (GNP):** Total value of goods and services produced in an economy during a given period of time, usually a year.

**Heregeld:** King Aethelred introduced a new tax to pay for a larger army during the Vikings invasion.

**Inflation:** It is an increase in the average price of all goods and services.

**Ingot Metal Casting:** Metal casting that is shaped, typically oblong for easy working or for recasting.

**Keynesianism:** The belief that an increased money supply can lead to increased employment and output.

**Koku:** Unit of rice in Japan.

**Legal Tender:** Signifies the currency designated by law that a debtor may offer and a creditor be obligated to accept in the settlement of financial obligations.

**Liquidity:** Refers to how easy it is to convert money into cash—the most liquid form of money.

**Macroeconomics:** Deals with economic factors such as total national output and income, unemployment, balance of payments, and the rate of inflation.

**Microeconomics:** Study of the composition of output such as the supply and demand for individual goods and services, the way they are traded in markets, and the pattern of their relative prices.

**Monetarists:** Belief that an increased money supply ultimately only affects prices, leading to inflation, and that output is not increased.

**Numismatics:** Scientific study of money and its history in all its varied forms. The technical name for the practice of collecting coins. A term derived from the Greek word *nomisma* meaning “coin” or “currency.” Numismatics includes the study of coins, banknotes, medals, tokens, and primitive forms of money.

**Money Supply:** Its most narrow definition denotes currency in circulation plus bank deposits. Money supply as equal to the sum of currency in circulation (excluding bank vault cash) and *demand deposits* (checking accounts). This definition of the money supply ignored saving accounts and *time deposits* (accounts that earned interest but could not be withdrawn without penalty until they matured).

**Formula for Money Supply (MS):**

M1= cash+ traveler checks +demand deposits

M2= M1+saving deposits of less than \$100,000

M3= M2+saving deposits greater than \$100,000

L = M3+government securities (savings bonds+ treasury notes)

MS= M1+M2+M3+L

**Quid-pro-quo:** Something done or given in exchange for something else.

**Obsidian:** Jet-black volcanic glass, chemically similar to granite and formed by the rapid cooling of molten lava that was used by early civilizations for manufacturing tools and ceremonial objects.

**Penny** (or *penning* in Old English): Named after a minor Saxon king called Penda. Others believe that the penny, like the Scandinavian word for "money", got its name from the pans into which the molten metal for making coins was poured.

**Pfennig (German):** May come from *Pfanne*, German for "pan". The Danish word for a pan is *pande* but in Old Danish a small pan was called *penninge*, from which the word for *penge* meaning "money" possibly comes.

**Phillips Curve:** Relates the level of unemployment to the rate of inflation. The Phillips curve suggests that society can make a choice between various combinations of inflation rate and unemployment level.

**Planchets:** Strips are run through machines that punch out circular metal disks called planchets.

**Purchasing Power:** Depends primarily on the relationship between the number of dollars people are holding as currency and in their checking and savings accounts, and the quantity of goods and services that are produced in the economy each year.

**Sceat:** Originally meant "treasure" like the word *skat* in Danish or *skatt* in Norwegian and Swedish.

**Scutage (medieval tax):** In feudal times, a tax paid by a knight or vassal to his lord that freed him from military service.

**Seigniorage (profit from minting coins):** Profit represented by the difference between the value of bullion and the face value of the coins minted from it. It is the difference between the value of money and the cost to produce and distribute it.

**Wampum:** String of beads made from clam shells by North American Indians in 1535.

**Ingot:** Mass of metal cast in a convenient form for shaping, remelting, or refining.

## Annex F: Evaluation of the Money History Course

### ECNX 9003 - The Story of Money

1. Did this course meet your expectations?  
The course met all my expectations. It provided the necessary points required to launch an independent research of the History of Money at my own pace.
2. The course provided a historical view of how money was used in ancient Egypt to include the European and Asian countries. It enhanced my cultural knowledge of how money was used in ancient and modern times.
3. How do you use this course information in your teaching? N/A because I am a businessman, not a teacher.
4. Was the course presented at a level appropriate for you? It was too basic and was not in line with my academic background. However, I investigated the areas of interest to me.
5. Would you recommend his course to a fellow teacher or administrator? Without reservation I would recommend the course to CEO's and Presidents of Corporations.
6. In what way, if any, could we improve this course or Enhancement Courses overall? The course should include more websites to be used as a research platform.
7. I learned about this course offer in the quarterly catalog published by your institution.
8. Other comments. I appreciate being given the latitude to research the area of interests which are related to my business. It provided the necessary information required to have a cultural exchange with a customer.

## Annex G : Course Log

Date	Time (Hrs)	Subject Researched
9/7/13	5.0	History of Roman Empire Money
9/8/13	5.0	History of Ancient Egypt, studied the Barter Commodities Exchange
9/9/13	5.0	Review of Aristotle opinion of money and currency used during this period, the Federal Reserve System and IMF System
9/11/13	5.0	Review of the North American History of Money
9/12/13	5.0	Researched European currency
9/15/13	5.0	Studied Invasion of the Vikings to Britain established currency
9/17/13	5.0	Read History of Money pamphlet provided by the University
9/18/13	5.0	Drafted Chronology of the History of Money
9/22/13	5.0	Answered Questions about the course (1-4)
9/23/13	5.0	Reviewed Chronology of the History of Money
9/24/13	5.0	Wrote History of Money Report
9/25/13	5.0	Reviewed the History Money
9/26/13	5.0	Reviewed annexes of the report
9/27/13	5.0	Reviewed annexes of the report
9/30/13	6.0	Researched Coins
<b>Total</b>	<b>76 Hours</b>	

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