

08 Money

Money is a contentious topic because money symbolizes success, money makes the price system work, small changes in money cause huge changes in everything else, the money market is inherently unstable, and money is a major means by which the state exerts power. To achieve stability, the state creates institutions to manage money, such as treasury departments, mints, and central banks. State officials and their clients use the institutions for their own ends, often distorting the economy. Sometimes state officials and their clients undermine the stability that the institutions were set up to gain. It is hard to have institutions to stabilize money without also having interventions. This chapter is not a full treatment of money but only gives the basics of money and explains the features of the money market that allow the state to use money as an instrument of policy. If I could study the topic of money without the attendant strife, I would enjoy it quite a bit, but, of all the topics in economics, I dislike the topic of money most because of the unavoidable strife.

08 Money; Synopsis. If money was a neutral medium of exchange, money would have few problems, and this chapter would not be necessary. Money isn't neutral. A small change in any of the following causes disproportionately big changes in everything else: the quality of money, how much money exchanges for other things, savings, investment, the rate of interest, or how fast money circulates. To understand all this, we have to look at all this in enough detail, and this synopsis cannot do that. With most goods, a change in price causes a change in the amount of the good offered for sale, or desired by consumers, about proportional to the change in price. A 10% reduction in the cost of cars leads consumers to want about 10% more cars and leads car makers to offer about 10% fewer cars. A 20% increase in the price of cookies leads people to buy about 20% fewer cookies and leads bakers to make about 20% more cookies. A change in the price of cars or cookies does not much affect oranges. Money is not the same. The price of money is interest. A small change in the rate of interest, say from 8% to 10%, or 8% to 6%, does not lead to a proportional change in the demand for mortgages and car buying. A change in the interest rate affects everything, and it affects everything differently. Changes in money can lead to great instability.

To know why the money market is potentially unstable depends on knowing how banking works. In brief, there is much more money in circulation than bankers can have backed up by reserves in their vaults. Business people want the money situation to be like this because additional money makes it easier to get loans and probably reduces the rate of interest.

To stabilize the money system, governments create institutions such as central banks, treasury departments, the Securities and Exchange Commission, and the Federal Reserve Board (or System, the FED). Operated properly, these institutions can do a lot of good such as by easing the boom and bust cycle. Unfortunately, the power inherent in these institutions invites politicians and their clients to interfere. It is especially tempting to use these institutions to force growth, make the economy grow in particular ways, distort the economy to favor some industries, and correct problems of employment. These are abuses. Mismanagement of money causes many of the problems that correct management is supposed to solve.

Background: The Business Cycle. Almost all readers have lived through the business cycle, especially in 2012 while I revised this chapter, so it does not need much definition. The next chapter goes into the business cycle more, but this chapter refers to it, so I need to mention it. About every ten years, the economy goes through a cycle of “boom” and “bust”, or “recovery” and “recession”, or “up” and “down”. The boom phase and bust phase each last about two or three years, and have a year or two in between. During the boom, firms feel they can sell all they can produce, and firms are willing to take out loans to invest in expansion. The unemployment rate declines (but never goes away), wages rise, and people mistakenly feel they can always get a job that will allow them to live well and raise a family well. Because people easily find good jobs, they spend a lot. To meet the demand from spending, firms hire more people, who spend more, which actions stimulate more production and more employment. The boom feeds on itself. The interest rate tends to start low, and then to climb. The climb does not discourage investment at first but eventually does climb enough to discourage investment. About then but not necessarily exactly then, the cycle reverses. Firms wish to invest less. Fewer jobs are available. People demand fewer goods. Firms do not produce as much and do not hire as many people. The bust feeds on itself. The interest rate falls, and it might stay low all during the down period; but the fall does not at first restart investment. Eventually, maybe because of lower interest, investment, employment, demand, and production increase again. Economists dispute the exact events, their order, and their relations. There is no widely accepted general theory of the business cycle, and I do not offer one because we do not need one here.

People wishfully mistake the boom period of the business cycle for the normal condition of the economy. That is why the state now calls the boom phase “recovery”. It is easy to see why people succumb to wishful thinking but we have to be careful not to do it too. We cannot fool ourselves that the low rate of unemployment and the consistent high profits are normal or that we could sustain them by somehow tinkering with the economy.

Double Coincidence of Wants. Money solves a problem called “the double coincidence of wants”. For exchange without money to work well, an unlikely coincidence has to happen often: two people, who each have what the other wants, need to show up at the same time, in the same place, with their goods – Carl with corn and Teresa with tomatoes. That coincidence is too unlikely to be the basis for any real economy, and not even regular markets such as a farmers’ market get people together enough.

An “intermediate good” is a good that is used to trade “in between” two other goods, so as to indirectly trade the two other goods. Intermediate goods allow for “delayed exchange”. Delayed exchange through intermediate goods solves the problem of the “double coincidence of wants”.

Intermediate goods have these properties: (1) nearly everybody wants the intermediate good in itself; (2) the good is durable; (3) everybody feels sure they can trade the good for other goods; and (4) the intermediate good can be cut up or can be combined to match the different exchange ratios for nearly all other goods.

Examples explain best. Metals last a long time, people want metals for the metals themselves, people do not mind holding metals because people feel that they can always trade metals away for whatever they want whenever they want, and the amount of the metal can be adjusted to the needs at hand.

If Carl shows up with corn one day but Teresa is not there with tomatoes, Carl can trade the corn for silver. When Teresa shows up next week but Carl has no corn, he can trade the silver to Teresa for her tomatoes. Teresa will take the silver for her tomatoes because she knows she can trade silver for corn from somebody else or from Carl later, or she can trade it for any other good. Carl and Teresa use silver to delay the exchange and so get over the need to be in the same place at the same time.

When people use intermediate goods regularly, the intermediate goods become money.

With money, transitivity and opportunity cost become clearer and become more powerful forces to tie everything together. If we have even just 10 goods (corn, tomatoes, peppers, carrots, onions, bread, strawberries, peas, cheese, and honey) we have 45 different possible pairs of exchange [the combinations of 10 items taken 2 at a time]. To make sure that we get the best for our trades, we have to consider the links between all those pairs, and we have to do it all at once. In contrast, with money, we have to think about only the exchange ratio between money, one good (corn) and any other good (tomatoes). In practice, really we only have to think about the exchange rate of money with any one good at a time, that is, we only have to think about the money price of one good at a time. We only have to think about how many grains of silver exchange for how many baskets of corn right now. We can keep the silver for later, and then worry about how many grains of silver exchange for how many units of any other good when we are interested in that other good. In this simple way, we can rapidly compare all pairs of goods to make sure we always get the correct exchange ratio. All modern shoppers do this already without thinking about it.

Because metals are a good in themselves, the exchange ratio of a metal with all goods changes if the supply of the metal changes or if the demand for the metal changes. If a new mine opens up, then the amount of silver increases and all trade ratios for silver change too. If people start to like copper more than silver, then all trade ratios based on silver will fall. But such changes usually happen so slowly that they do not make people nervous and do not undermine the system. When money is based on a real good such as silver, money is usually more stable and more reliable than when money is a pure abstraction with no value in itself, such as the paper money of the modern world.

When changes happen slowly enough to the medium of exchange, the changes make no difference in the exchange rates (prices) of other goods. Suppose that 4 baskets of corn, or 5 baskets of tomatoes, both originally exchange for 3 grains of silver, so that indirectly 4 baskets of corn can exchange for 5 baskets of tomatoes. Then a large silver discovery makes silver more abundant so that 4 baskets of corn trade for 6 grains of silver. But, then, in that case, 6 grains of silver also trade for 5 baskets of tomatoes. So, corn and tomatoes still exchange at the same rate with each other, 4 baskets of corn trade for 5 baskets of tomatoes. The only difference is the intermediate step through silver currency, and that makes no real difference. A simple change in the intermediate “money” step does not change the value of the “real” goods at either end. We will see in later chapters that, in the real world, continually changing the money step does affect things.

Brief Chronology. This chapter is about the logic of money rather than about its history, but it helps to have a few historical reference points. I suggest the reader go online for more history.

-The first institutions that functioned like banks likely were religious temples that arose along with all

agrarian (agricultural) civilizations, beginning at least 2000 years B.C.E. (B.C.)

-Grains, small bits of metal, shells, semi-precious stones, and other goods were used as money.

-The Lydians in modern-day Turkey issued the first known Western golden coins about 560 B.C.E (B.C.). The Lydians were Indo-Europeans.

-Various states and private people issued a variety of coins from then onward.

-Metal smiths and other business firms that dealt with metal began to loan some of their stocks out for interest.

-In Europe, the business of loaning became regularized in the late Middle Ages and throughout the Renaissance, after about 1000 C.E. (A.D).

-The first recognizable banks formed in Italy during the 1200s and 1300s.

-The London Royal Exchange was formed in 1565 to regulate financial actions and to raise money for government operations. It served as the model for the Bank of England in 1694.

-In 1609, the Amsterdam Exchange Bank was founded, and quickly helped set up Northern Europe as a rival to England for commercial power.

-In the late 1700s in Europe, capitalism and banking expanded rapidly. There were many regional banks, often with their own currencies.

-Until the early 1800s, silver was the primary method of exchange between banks, and the primary method of figuring conversion rates between currencies. After that, gold took the place of silver in large-scale exchanges. There was no single formal world regulator of currency, although the banks in England and northern Europe sometimes played that role informally.

-After 1789, the United States tried to establish a central bank.

-In the 1820s, Andrew Jackson ended the attempts at a central bank in the United States. He did so deliberately to empower local entrepreneurs. Many regional banks flourished, often with their own currency. This time showed the greatest instability in money in the United States.

-During the Civil War, Abraham Lincoln maneuvered to allow taxes to be paid only with money from the central government. He did this by adding a 10 percent fee for the use of any other currency, including currency from local banks. This is why the money of the United States declares it is valid for all debts public and private. The money of the central government became the only "legal tender", the only money that could legally be used for all debts (transactions). Eventually all other money disappeared.

-Lincoln's action did not result in a central bank as with the Bank of England or as we know them today, but the action did give the central government in the United States effective control over currency.

-In 1913, the United States established a formal central bank and a hierarchical mandatory banking system throughout the country, called the Federal Reserve System.

-The many wars from the late 1800s through World War II made it hard to set up a system of world banking and made it hard to maintain a single world currency officially based on silver or gold, although both those metals continued as de facto world currencies.

-After World War II, for a while gold became the official standard for all world currencies, but countries could not maintain conversions rates and a fluid world money market.

-In the 1960s through the 1970s, the world abandoned silver and gold as world currencies. Since then, all currencies have “floated” against each other.

-The world money market has been reasonably stable in recent decades because it has used the United States dollar, South African Kruger Rand, German Mark, Euro, and Japanese Yen as de facto world currencies, and because central banks in various countries have worked to stabilize markets when they could.

-Since the 1970s, despite some periods of strain, the world has had a fairly stable money-and-financial market.

-Before the establishment of central banks, both inflation (rising prices) and deflation (falling prices) occurred. After, inflation has been more common, largely due to political interference in the central banks. For example, in the United States, before World War II, deflation was more common but since the 1970s, and especially since the Reagan Presidency, rising prices have been normal, and Americans have seen few falling prices other than in electronic goods.

Definitions. Money is not inherently any particular stuff such as silver coins or dollar bills. Money is what money does, as in the list below. Whatever serves the purposes of money is money whether the state issues it or not. As any thing comes to carry out the uses of money, usually the state does act to control that thing, such as credit card debt. With money, it is especially important to keep in mind that the terms “value”, “price”, and “cost” are short for “exchange ratio” and for all the relations set up through exchange ratios. Money does this:

-Stores value. We can keep money around in our pockets or in a bank in case we need it.

-Enables delayed exchange. By being able to store value, money allows us to buy and sell when we want. This is how money solves the “double coincidence of wants.”

-Serves as a medium of exchange.

-Measures value.

-Allows for a rapid comparison of many goods and situations.

- Minimizes transaction cost and opportunity cost.
- Transports value from place to place.
- Can be divided or combined to match the needs of a situation.
- Supports the calculation of interest.
- Supports the flow of resources (capital) into ventures.
- Supports credit.

Copper or silver can do all this. So can a unified currency system, founded on symbolic money such as paper and token coins. There is no full agreement on what can act as money. Classical economists thought of money as only metal or paper but later neoclassical economists included checking accounts and savings accounts. I include the following too, primarily because they let people do things in the economy such as gather capital and finance ventures:

Bonds Credit cards Debit cards Credit in general Purchase orders and accounts Loans Reputation

Buying and Selling. To buy a good is to exchange for the good using money as a medium. To sell a good is to exchange the good indirectly for another good using money as the medium of indirectly acquiring the other good. Buying and selling are indirect, delayed exchange, in which the indirection serves many useful functions. Nearly all of this chapter could be stated in terms of indirect exchange rather than in terms of buying and selling but to do that is really cumbersome, and we already have a solid understanding of exchange that we can take for granted, so I use the normal language of buying and selling.

Symbolic Medium Only. Most of the time money serves as a medium of exchange without regard for its characteristics as a medium or its characteristics due to what it is made of. Sometimes money has properties as a medium, and those cases are described below. In the modern world, nearly all money is symbolic in that its value does not depend on the intrinsic value of the material out of which it is made but rather depends on what the state assigns and depends on what people are willing to accept. A quarter does not have 25 cents worth of silver; the paper in a dollar bill is not worth a dollar; and I have no idea how the electronic blips that mean 25 cents are worth in themselves. The fact that money is symbolic allowed banks first, and then the state, great power in manipulating money and the economy. How that happens is described under the section "fractional reserves" rather than discussed primarily in terms of symbolic money.

Inherently Non-Smithian. Coins and other currencies have been around for thousands of years but paper money and banking as we know them did not develop until well after capitalism, about 400 years ago. Only in the last 300 years have we gotten the national banks and currency system of the modern world, and only since the 1950s have we gotten a de facto world symbolic currency based on the American dollar or the Euro. The banking practices that gave rise to paper money also gave banking the power to generate vast amounts of credit, generate vast amount of capital, and move vast amounts of

capital. Those powers directly support the success of modern capitalism and the high quality of modern life.

Even when money was entirely just metal coins, the money system was prone to inherent fluctuations more than most markets, enough so that the money system is not really a Smithian market (near perfect). With the advent of paper money and banks, the money system became really volatile. Because money represents the public price system and thus influences everything else, money must be stabilized. At first, only particular nation states such as England did this, and did this only informally. Eventually nation states had to cooperate to achieve one world system. The Bank of England accepted this task formally only in the 1920s. National systems are based on national banks. In the United States, the national bank is called the Federal Reserve System, or “Fed” or “FED”. The Fed is the primary instrument of monetary policy. It sets the basic interest rate and controls the amount of money.

The powers of the national banks can be abused to further the interest of state officials or their clients, and the powers have not always been used wisely to help the economy. I believe that, now, officers of the Fed do not much abuse their powers and that they use their powers modestly and wisely. Unfortunately, state officials other than officers of the Fed can force the Fed to try to compensate for bad policies such as deficit spending, as we will see in the next chapter. Even when officials of the national bank (the Fed) are adept public servants and good public servants, the power of the national bank allows for bad policies and allows for officials other than the bank regulators to misuse the Fed. Bad officials can force good officials to use the money system to cover for the bad officials. We will see this in the next chapter.

In the 1800s, nation states stepped in just as banks were developing a private system of their own. Some Libertarians and Austrians argue that the private system would have controlled money better than the state, would not be subject to abuse nearly as much, and would not have allowed abuses by officials or their clients. That might be true but there is little we can do about “might have been”. Their argument is worth studying in their writings. For better or worse, the state did take over money, and will keep control for the near future. We have to study what did happen and the resulting reality. The explanations that follow are simple logical stories designed to get across ideas rather than historical accounts of what really happened.

Fractional Reserves. The power and the instability of the modern money system, its ability to use paper instead of coins, or to use computer memory instead even of paper, are all rooted in something called “fractional reserves”. The idea is simple even if the results are spectacular.

To keep it simple, start with silver and with a primitive bank. The bank agrees to take in deposits of silver from clients. At first, the bank does not pay interest to depositors, and does not charge the depositors a fee for storage. If the silver only sat in a vault, the bank would not make anything, and might go broke paying operating expenses. So the bank loans out the silver in its vaults, and it charges borrowers interest for the loans. The bank has to worry that depositors will come in to demand silver that the bank has loaned out but it does not have to worry very much. The depositors do not all come in immediately after they have deposited their silver to demand it back. The depositors wait for a week, a month, or even years before requiring their silver. Almost never do all the depositors ask for their all silver all at once. At any given time, usually the bank has to return only a small fraction of the silver it has on deposit. The bank can safely loan out a much larger fraction of the silver. This “slack” is the basis for fractional

reserves, modern banking, and the modern credit system.

Of all the silver that was deposited in the bank, what fraction can the bank loan out safely? If the bank had 1,000 tons of silver in its vault originally before giving out any loans, could the bank loan out 200 tons (20%) or 600 tons (60%) or 900 tons (90%) or 999 tons (99.9%)? There is no one correct answer. It depends on how often the depositors come back for their money, on the usual period of a loan, and on how consistently customers pay back loans. The fraction that the bank does not loan out is called the “fractional reserve”. If the bank kept 400 tons while loaning out 600 tons, the fractional reserve would be 400 tons, or 0.40, or 40% of its total of 1000 tons. If the bank loaned out 900 tons, the fractional reserve would be 100 tons, or 10% of its total wealth of 1000 tons.

The greater the fractional reserve, the safer the bank is, and the safer depositors feel; but the less potential profit the bank can make from loans. The less the fractional reserve, the more the bank can loan out and can make potential profit; but the more risk it has to bear and the more risk its depositors have to bear. If the depositors also were part owners in the bank, the depositors would want the bank to loan out as much as possible even at some risk to themselves; and the officers of the bank want to loan out as much as they can so their salaries are as high as they can get. When depositors began to receive interest on their deposits, they wanted the bank to loan out as much as possible. When the bank began to give interest on loans, it wanted to loan out as much as possible, at the highest rates possible, so it could give as much interest to depositors as possible, so it could attract more depositors, so it could loan out even more, and so on. The getting and giving of interest on deposits naturally tends toward expansion. Yet, if the bank loans out too much silver, and then something bad happens such as that a major customer goes under, then the bank will tumble down too, along with deposits, depositors, shareholders, and managers. The bank officers seek the best balance, following their intuition. This is where entrepreneurial judgment makes a difference. It turns out that 10% reserves is usually enough to be safe under present conditions, and yet allows for the greatest potential profit on loans and the highest rates to depositors.

Making Value. Now the bank discovers something really useful. The bank does not have to hand over hardly any silver in loans at all. The bank can keep nearly all its silver as a fractional reserve, and instead give its loan customers a slip of paper that tells the amount of the loan, and that gives the bearer a right to redeem the amount of the loan in silver from the bank. As long as merchants trust the bank, any loan customer can take the piece of paper to merchants to buy whatever he-she needs for his-her own business needs. A shoemaker can buy leather using the slip of paper or a cabinet carpenter can buy oak. The merchant that receives the paper as payment can trade the paper in turn to another merchant, as when a leather merchant trades the paper for some tannin. Or the receiving merchant can go to the bank to redeem silver if he-she wishes. In effect, the receiving merchant has a claim on the bank for silver, and can redeem that silver at the proper time; the receiving merchant becomes an indirect client-depositor of the bank.

The same question arises: If the bank has 1000 tons of silver, for how much additional value can the bank issue loan slips? Can the bank issue loan slips for 500 tons, 1000 tons, 2000 tons, 4000 tons, 6000 tons, 10,000 tons, 20,000 tons, or even 50,000 tons? Again, there is no correct answer. The answer depends on how often the depositors come in to claim their silver deposits, and on how long merchants keep and use the slips before they come in to claim their silver.

Notice that the numbers have changed radically. Instead of the bank issuing the value of 400 tons or so in loans, the bank now issues the value of 4000 tons or more in loans. In the previous section, some fraction of the total the bank kept while some other fraction the bank loaned out, but the total was still 1000 tons. In this section, the total amount of value in circulation grows. Whatever the bank issues in loans, it issues on top of the amount that it keeps in its vaults. If the bank issues 9000 tons in loans while it has 1000 tons in its vaults, the total value in circulation has increased from 1000 tons to 10,000 tons. In this second case, the bank has created value by issuing loans.

In this second case, the amount in the vault is still the “fractional reserves” but now the fraction is figured against the total amount of new value in the economy. Do not worry about the details of this arithmetic but try to get the gist of the expansion that happens. If the bank keeps 1000 tons and issues 1000 tons in new value, the total amount in value in the economy is 2000 tons, while the amount in reserve is 1000 tons, so the fraction in reserve is half the total, or 0.50, or 50%. If the bank issues 4000 tons in new value, the total amount of value is 5000 tons, while the amount in reserve is 1000 tons, so the fraction in reserve is one-fifth the total, or 0.20, or 20%. If the bank issues 9000 tons of new value, the total of value is 10,000 tons, while the amount in reserve is 1000 tons, so the fraction in reserve is one-tenth the total, or 0.10, or 10%.

Now comes a clever trick, a trick that allows a combination of the first case and the second case. Suppose one bank has 1000 tons of silver in its vaults, and routinely issues the paper equivalent of 4000 tons of silver as new value. In that case, the total value in the economy is 5000 tons, while 1000 tons of real silver is on reserve, so the bank keeps a reserve rate of 20% (1000 is 20% of 5000). The bank wants to make more new paper value, so it changes its reserve rate from 20% to 10%. How much new paper value does it create? 1000 tons is the amount on reserve while 10% is the reserve rate. 1000 tons is 10% of the new total value (not of the new paper value). The new total value has to be about 10,000 tons. The previous new paper value was the equivalent of 4000 tons but now the new paper value is the equivalent of 9000 tons (10,000 tons minus the 1000 tons of real silver in the vault). The amount of new paper value increased from 4000 tons to 9000 tons. In reducing its reserve rate by one-half, the bank has doubled the total amount of new paper value.

Small changes in the reserve rate can have enormous effect on the amount of paper equivalent value in circulation and on the amount of total new value in circulation.

The new value in the economy (new paper value or new total value) is oppositely related to the fractional reserve: the smaller the fractional reserve, the more the total new value; and the total new value can rise very quickly as the fractional reserve declines. When the fractional reserve is 0.50, the total new value is a modest 1000 tons. When the fractional reserve declines to 0.10, the total new value is the equivalent of 10,000 tons. If the fractional reserve declines to 0.05, the total new value would be 20,000 tons. If the reserve declines to 0.01 the total new value would be 100,000 tons!

I have written about increasing the new value but banks can also decrease the new value by increasing their reserve rate. In that case, they shrink the total amount of new paper equivalent value just as quickly as it had expanded. When a bank fails, this is what happens to its share that it had contributed to the total money supply of the whole country.

In reality, one bank by itself cannot cause such an increase in the supply of total value. One bank by itself looks more like the first case in the section “Fractional Reserves”. Yet all the banks in the system can together cause an increase in the total value in the system, as in the case in this section. They do this essentially by loaning money back and forth from bank to bank using borrowers and merchants as intermediaries. A change in the fractional reserves of every small bank (the clever trick) has the effect of increasing or decreasing the total value available in the entire big banking system. I do not go through the mechanics here, but the expansion or contraction of additional value really does happen. This kind of rapid expansion or contraction is part of what intrinsically destabilizes the money market. It is not the only thing that can destabilize the money market but it became the most important thing as banking grew through the 1700s and 1800s.

Making Symbolic Money. When a client (depositor) deposits silver, the bank gives the client a piece of paper saying that the silver is in the bank. When the bank gives a customer a loan, the bank gives the customer a piece of paper saying that the silver is in the bank. Both the client and the customer can use the pieces of paper as a currency like silver to buy goods from merchants or to pay their employees; the merchants in turn can use the pieces of paper to buy goods from other merchants or can use them to pay workers; the workers can use the pieces of paper to buy things from other merchants; and so on. The pieces of paper guarantee access to silver eventually. These pieces of paper are the ancestors of modern paper money.

Once people began to accept these pieces of paper from banks, banks began to standardize the value of the pieces of paper into particular denominations such as 10 pieces of silver or 20 pieces of silver, and banks began to issue the pieces of paper apart from giving loans. If a client came into the bank to ask for some silver back, the bank might ask the client to accept a piece of paper instead. As long as the client trusted the bank, there would be no reason not to accept the piece of paper instead. At that point, the paper is money.

It does not matter if the bank uses pieces of paper or small coins, as long as the coins are primarily symbolic rather than that the coins embody the full value of what they stand for. As long as a coin says “10 silver pieces” but does not carry the full weight of 10 silver pieces, then it acts just like a piece of paper. Both the coin and paper are symbolic currency. This is what we have in the modern world. The world had been tending toward this situation since about 1300 but did not develop modern banking with fully symbolic currency until about 1800.

Real or Not. “Value” is an exchange ratio between goods, so how can the use of fractional reserves make additional value without making any additional real goods? Is the additional value real or only symbolic? Does the symbolic become the real? The answers depend on how stable the financial system is. As long as people believe in the system, and no large crash causes a chain reaction of bank failures, then the new value is real value because the value in money can exchange with other goods, just like the value embodied in a bag of apples by its ability to exchange with pears. A piece of paper marked “three silver coins” can exchange for the same bag of pears, and so it has value just as much as does the bag of apples. When the banking system has problems, then we see that the value in money based on fractional reserves is not quite as real as the value embodied in a bag of apples. Perhaps it is better to call the created value of the banking system “potential” value that is realized only when particular

conditions are met; but then we get into conceptual fuzziness. I call it just “value”.

In sections below, we will think in terms not of changing the amount of value in money but only of changing the quantity (supply) of money or the rate of interest. Then the question about the reality of money-induced value does not come up. It still lingers in the background but we will understand the effects through changes in the supply of money.

Why Merchants and Banks Want This. This system can be erratic. Suppose banks keep a 10% reserve as standard but then go to a 5% reserve. The total silver on reserve in their vaults decreases by one-half. If a bank had kept 100 of its 1000 tons on reserve, now it keeps only 50 of its 1000 tons on reserve. At the same time, the total money value available in the economy doubles. The total value “out there” with a claim on their diminished reserves has doubled. If the total money value in the economy “out there” was the equivalent of 100,000 silver tons before, now it is the equivalent of 200,000 silver tons – yet the banks have added no real silver to the system. In the opposite direction, if the banks increase the reserve rate instead from 10% to 20%, the total supply of money in the economy does not decline by only 10% but instead declines by one-half!

Yet merchants and banks love fractional reserves anyway. Some Conservatives treat fractional reserves as if fractional reserves were a plot to destabilize the money system, so the instability in turn is an excuse for the state to step in to save us. But fractional reserves are not the basis for such a plot. Fractional reserves arose before the state took over the money system because banks and customers wanted profit. Their desire for profit opened the door for the state, but the state did not make the door. With fractional reserves, money can flow easily from one venture to another. This kind of credit value is not like the value in a bag of apples or even in a barrel of oil where use is fixed and exchange possibilities are fairly fixed too. It is liquid wealth. Made up money value can go just about anywhere to do almost anything.

Made up value based on fractional reserves is MORE value. Even though the number of apples, compact discs, and toasters might not increase, there is more wealth available. The liquid wealth can be turned into two-by-fours, concrete, electric lines, plumbers, and whatever material goods or services are needed when the time comes. Merchants can get things done, and can get more done. The getting-things-done actually leads to more real (non-money) wealth over time too, so that made up value makes real value.

For reasons to be explained below, with increases in the supply of money, the rate of interest can fall. A lower rate of interest means that business firms prefer to invest their wealth in ventures rather than to let it sit in banks. The investment of one firm in various ventures stimulates other firms to invest in various ventures. More investment in various ventures creates more demand for work, which means some new jobs and some higher salaries (how much depends on the imperfect structured labor market). More money and low interest rates can create good times and prosperity, at least for a while.

In the early days of modern banking in the 1700s and 1800s, many banks could issue their own money based on their own fractional reserves. It was not unusual to have money issued by the “Fourth Bank of Alabama” for instance. The desire of merchants for more made up value and for low rates of interest, and the ability of banks to make a profit from loans to merchants under those conditions, spurred banks to

keep very low fractional reserves, often as low as 1%. Banks failed often, and then their currencies were valueless. People benefited from the easy money but also were hurt by the failures and general uncertainty. Whether people were overall better off under this free market in currency is not clear, but the uncertainty and anger opened the door for central governments to control banking and currency.

Whether made up value is real or not, and whether it does harm in some ways or not, made up value results in one great good. Made up value helped make possible the modern credit system in which an entrepreneur can get a good idea funded. It helped make possible railroads, airlines, telephones, medical research, credit cards, and even small business. Enormous pools of value can be moved according to the reputation of a financier. Financiers do not have to move actual truckloads of stuff. Reputation became a force just as real as any oil deposit or gold mine. Despite any abuses that financiers perpetrated, the finance system itself was a powerful force for advancement that dwarfs the abuses.

Money is as money does, even if the money is not issued by the state. The modern credit system is a kind of money that is not issued by the state and not closely controlled by the state. Reputation activates credit. Thanks to the modern credit system, we do not need the state to finance ventures for us, as capitalists might have needed the state in the 1700s or 1800s. There is much more than enough liquid wealth available for private enterprise now. We do not need state programs to induce growth and expand the economy, and we do not need the distortion that comes from state programs.

Inflation. The money price of a good is how much money people give for it, such as \$15 for a new media disc. Money price is sometimes called “nominal” price because “nominal” here means “in name (only)”. The “real” price is what we already know as price, it is the exchange ratio of a good with other goods, such as one box of cherries for one media disc, or one hour of labor for one media disc. Ordinarily, money price and real price coincide, but sometimes they differ, and the difference can be important.

Inflation usually occurs when the amount of money increases but the amount of other goods does not increase (the value of other goods in relation to themselves without regard to money does not change). Inflation occurs when the money price of goods increases but the real price of goods does not.

The term “inflation” is used because, after the change, it takes more money to buy the same amount of goods. This usage is a little contrary to common sense because the value of the money in itself (the exchange rate of money with goods) has gone down, but we are stuck with the history of the term.

Inflation can also occur when the total supply of goods decreases but the total amount of money stays the same. Nowadays this usually happens only during depressions. It is possible to combine an increase in the money supply with a decrease in the amount of goods, but this usually happens only during full-blown depressions such as the Great Depression. This combination usually happens only as the result of bad state policy, when the state prints large amounts of paper money in an effort to drastically change the economy, then people lose faith in the economy in general, and then real production stops too. This used to happen regularly in countries that Americans called “banana republics”. It would take too much space to discuss these cases, and they are not common in the U.S. now, so I do not discuss them here.

Now sometimes in advanced countries such as the U.S., inflation coincides with recession as an

undesired result of policies that cause inflation, especially when the inflation comes at the same time that a recession is due. I discuss these cases in this chapter and the next.

Before more explanation, we need to know that the total value of all the money in an economy usually is not as much as the total value of all the real goods in the economy. An economy needs the money supply to equal only a small part of the total value of all real goods for the economy to work well. What fraction is needed is debatable but certainly less than half will do. We get back to this topic later.

Suppose that silver was the only medium of money, and that silver had little value except as a medium of money. The total amount of silver used in the economy is 400 tons. One day a huge silver strike results in a continual increase of silver in the economy. I ignore the effects that come from the desire for silver in itself, other than as a medium of money. 100 tons of silver enter the economy every year for four years, until the silver strike is "played out". At the end of four years, the economy now has 800 total tons of silver. While silver was entering the economy, the money supply inflated. If the money price of a bag of apples had been three small silver coins, now it is six small silver coins. If the money price of a car had been 5000 large silver coins, it becomes 10,000 large silver coins.

It is worth going through a case with two valuable metals so we can be clear about what inflates and what does not, and that the problem is not with metal or with money as such but with changes in money. The reader can skip this paragraph if he/she understands already. Suppose that gold was NOT the medium of money, silver was the only medium of money, and silver was used only for money. Suppose the total value of all goods in the economy was the equivalent of 100 tons of gold (100 tons of gold would exchange for all the other goods in the economy), and that the economy had a total of 200 tons of silver money that was the equivalent in value to 50 tons of gold, or to half the total value of goods in the economy. Due to a big strike of silver, the total amount of silver in the economy increases to 400 tons. Each ton of silver now would NOT exchange for the same amount of goods or of gold as before, although goods and gold would still exchange in the same ratios with each other as before. The total value of goods in the economy would still be equal to the value of 100 tons of gold but it would not be equal to the value of 400 tons of silver. Now it would take 2 tons of silver to exchange for the same goods that 1 ton had previously exchanged for. Now 400 tons of silver still could NOT buy all the goods at once. 400 tons of silver is not now equal in value to 100 tons of gold even though, before, 400 tons of silver was equal in value to 100 tons of gold. Money inflated in value. The exchange rate of money to goods changed so that it took more money to get the same goods.

One source of inflation is the expansion of made-up money value through the reduction of fractional reserves (say from 20% to 10%). Banks create this kind of inflation when they print more bank notes while not increasing their reserves.

Deflation is the opposite of inflation: the total value of goods in the economy increases even as the total value of money in the economy stays the same. The cost per good in money terms goes down. This usually does not happen because of changes in the currency, as with inflation.

Deflation usually happens when the economy grows naturally due to innovation, and we have more goods in relation to money. With the implementation of electricity, we got a lot more goods out of the same resources, and the goods exchanged at lower rates with each other, so we are wealthier; but the

total amount of money did not increase. The cost of a TV set or computer steadily decreased due to this kind of deflation.

Modern people think that inflation is the norm for an economy but that is not true. Deflation used to be more common until central banks allowed state officials to implement policies that cause continual inflation – for which see the next chapter. Because the implementation of innovation caused greater productivity and better use of resources, which caused lower prices, deflation was more common than inflation in the United States until about the 1970s.

When banks first implemented fractional reserves on a large scale in an interlocking system in the 1700s and 1800s, the reduction in the reserve rate to 5% or so caused some inflation and some prosperity. For a long time, though, reserves have been reduced as much as is practical. Between the middle 1800s and World War II, despite various fluctuations, reserves came steadily closer to a rate of about 10%. Reserves have stayed steady at about 10% since World War II. So, for a while now, the reduction of reserves has not been a steady source of increase in the money supply and a steady source of inflation.

That does not mean inflation is not a problem, or it cannot become a crisis. When the central bank mismanages the currency, and especially if bad policy comes at a time of other problems such as war, then inflation can jump. The most recent example is wars in Iraq and Afghanistan. The jump in inflation always brings many other problems. These issues are best left to the next chapter on policy.

Even though the rate of reserves has held steady at around 10% for a while, still the money supply is large enough to serve merchants. After all, a reserve rate of 10% means that the official money supply through banks is ten times as large as deposits; and that accounting does not even include other kinds of acting money such as credit cards and purchasing accounts. We no longer need to increase money supply except to go along with the general increase in natural growth (increase in productivity due to the implementation of innovation).

Hume and Cantillon. David Hume was a philosopher, historian, and close friend of Adam Smith in the middle 1700s. The Mercantilists before Smith had argued that more money was always better. In contrast to the Mercantilists, Hume told a parable to show why the Mercantilists were wrong and that real production was fundamental. This is my version: Suppose copper was the only money in England, and copper was used only for money. One night, fairies double the amount of copper in every pocket in England. Is everybody now twice as rich? No. The money price of all goods doubles but almost everything else stays exactly as before. As long as money is only a neutral medium of exchange, the quantity of money does not matter. What matters is wealth in real goods such as iPods and bicycles. Once inflation is over, the inflation does not make any difference. Classical economists used Hume's parable to argue that money was only a neutral medium of exchange, and money did not matter as much as real changes in production.

Conservatives sometimes still refer to this parable when they argue against state policies to manipulate the economy through changing the supply of money or changing other features of the money system. Except that money is not a neutral medium, and so the money supply does matter, as do related factors such as the rate of interest. We will see that the absolute size of the money supply matters less than changes in the money supply, that the effect of changes depends on who can foresee them, and that the

effect of changes depends on who can act on changes when they do foresee changes.

We need to get a point out of the way so that we can go on: To work well, an economy needs a certain ratio between the total value in money and the total value of all real goods. With too little money, people have trouble overcoming the “double coincidence of wants”, making all the trades they wish, and storing enough value. This is what Adam Smith meant when he said that money was the “highway” on which the economy ran. Imagine that gold was the only money in the economy of the United States. There is not enough gold in the world now to make the American economy work. Fortunately all modern economies have at least enough money now, and so a shortage of money is not much of a worry. It is not usually possible to have too much money except during severe induced inflation. While inflation is happening, there is too much money in relation to real goods; but after the inflation is over then the money supply is workable again, as in Hume’s parable. There is an optimum range of money supply for economies, but the range is so broad that the question of an optimal amount does not matter as much as changes in the supply, foreseeing changes, and doing something about the changes. We are well within the optimum range so we do not have to worry about this consideration.

Now we can take up the main argument again. Richard Cantillon was a pioneer economist of the early 1700s, even before Smith. The “Cantillon effect” is his idea that changes in the economy often do not affect all parts of the economy equally or at the same pace, and so changes make a difference even when the end result is theoretically neutral as in Hume’s parable. Even if the end result is neutral, a change can still have a profound effect while it is happening. Sometimes the impact can be lessened if people expect changes and can do something about them but often changes have an impact even if people expect the changes. Economists have not worked out all these possibilities but have offered some good ideas based on experience.

Not all changes in the money supply affect everyone the same. When the supply changes, the change in money price of goods often lags behind the change in supply of money. This lag does not strike equally all goods, all parts of the economy, all people, or all firms.

Fixed incomes such as pensions are forged in terms of money rather than in terms of real goods. A pensioner gets \$2000 per month. A pensioner does not get an apartment, food, medicine, cable TV, and a case of beer. If the amount of money doubles, then \$2000 can buy only about half of what it used to buy. The pensioner suffers a disadvantage. The value of money has been cut about in half (the exact new value of money depends on various diminishing returns).

A person takes out a mortgage on a house in terms of money, not in terms of some percentage of the real value of the house. Suppose, before inflation, the real value of a house was represented by \$200,000, and the payment on a mortgage for the house was \$2000 per month. The person paid about 1% of the real value each month (excluding interest). Suppose the supply of money doubles. Now the money value of the house is about \$400,000 but the monthly payment is still the same \$2000 per month. The house will be paid off when the payments total \$200,000, not \$400,000. If the house buyer were still to pay 1% of the real value of the house each month, he-she would have to increase payments to \$4000 per month, but he-she is under no legal obligation to do that.

The pensioner with a fixed income suffered under inflation while the house buyer with fixed payments

benefits under inflation. People that receive income suffer under inflation while people that have to pay out benefit from inflation. Business firms usually can arrange affairs so that they benefit more than they suffer, so they generally like inflation. Working people are like the person on a pension except that usually they can adjust their wages faster than people on pensions; still they suffer more than they benefit.

Of course the opposite is true in case of deflation: people that receive money benefit while people that pay out money suffer.

Eventually, after all inflation (or deflation) has worked through, all old obligations have been met, all new obligations have been written to take account of the new value of money, and all pensions have been adjusted, then the inflation (or deflation) will make no difference – as in Hume's parable. But these changes can take decades to work through, during which time new changes are likely to come up. Even if people expect changes, it is hard to write all contracts so as to neutralize the effects. It is better to worry about changes now as with Cantillon than to rest on the theoretically neutral endpoint of Hume's parable.

Different groups within the economy feel the effects of changes in the money supply at different times and in different ways, are more or less able to foresee the changes, are more or less able to use the changes for their own benefit, or are more or less susceptible to bad effects. Cantillon showed that changes in the European money supply due to importation of silver and gold from the Americas, after Columbus, helped some countries (England and Holland) while the changes in the money supply for the same reason hurt other countries (Spain and Portugal). Importation helped some professions (some bankers) while it hurt other professions (the military elite in Spain). Nowadays, financial institutions such as large banks usually can foresee changes and take advantage of changes in the money supply; large business firms often can foresee and take advantage; most business firms can endure changes in the money supply; small firms often can foresee changes but suffer from them anyway; and most common working people are hurt by changes in the money supply.

Cantillon is more correct during changes while Hume is more correct after changes have worked themselves out. To the people and firms that can foresee the changes and can act to benefit from the changes, Cantillon is more relevant, in a good way. To the people and firms that can foresee the changes and can act to neutralize bad effects, Hume is more relevant. To the people and firms that are not harmed by the changes, whether they can foresee them or not, Hume is more relevant. To the people and firms that are harmed, Cantillon again is more relevant, but in a bad way. People and firms that cannot foresee the changes or that can do nothing about the changes are likely to suffer, and so Cantillon is more relevant. In the modern world, changes happen often enough, and can last long enough, and the ability to foresee varies enough, so that we have a rich mixture of cases.

Economists sometimes argue past each other because they think either in terms purely of Hume or purely of Cantillon, they confuse a change in money supply with a supply that somehow stays bigger or smaller, they do not understand that some people and firms can foresee while others cannot, or they do not understand that some people and firms can do little even if they can foresee. Economists argue like Hume when they wish to show the robustness of the free market, and they argue like Cantillon when they wish to fault the state for interfering in the market.

A section at the end of the chapter describes some of the schools of economics according to their ideas

of money and its effects on the economy.

Money Market. We have to look at the demand and supply of money, the market for money. Think of interest as the price that a person pays for using money for a while. Money differs from other goods in two ways.

(1) The price paid for using money is more money. Ordinarily a person does not give five apples later in return for four apples now, but that is usually the case with money. Interest is the price of money. Now that we have a price for money, we have to understand why money costs as much as it does at particular times in particular cases. We have to understand the forces that influence the rate of interest in particular situations.

(2) Time is an essential aspect of the rate of interest. If I ask for \$5 now, and give back the money a few minutes later, I expect to give back \$5. If I ask for \$100 and give it back in a year, I expect to give back more than \$100. The idea of “more of the same but later” can apply to goods other than money as well, but in the modern world it applies to them so infrequently that I do not take up the subject here.

Classical Ideal. In the Classical ideal, the rate of interest is adjusted so as to keep the amount of savings equal to the amount of investment.

Classical economics explained the relation between savings, investment, and the rate of interest as follows. People save money; it does not matter why. Firms need to borrow; it does not matter why. Assume all savings are in banks, so no money is just hoarded under the bed. Firms seek to borrow the savings that consumers have put in the bank. The bank is happy to loan out the money for a price, that is, at a rate of interest.

At a low rate of interest, consumers would rather spend their salaries than save. At the same time, business firms wish to take out large loans. The amount demanded for loans exceeds the amount in savings. At a high rate of interest, consumers wish to deposit much of their salaries rather than to spend a lot. At the same time, business firms do not wish to borrow much. The amount deposited in savings exceeds the amount demanded for loans. At a middle rate of interest, the amount deposited in savings equals the amount demanded by firms for loans for investment. The bank sets the interest rate there. At that rate, savings equals investment, and the market for money clears, or the money market is in its partial equilibrium.

Only if the money market is in its own partial equilibrium can the economy come to general equilibrium. This balance only happens if consumers and business firms do not want money for anything except savings and investment, as we will see in later sections.

Full Practical Capacity. Classical economists saw the following implication of the argument about savings, investment, and interest. Neoclassical economists developed this implication: (1) When savings equals investment through the rate of interest, (2) so also total (aggregate) demand equals total (aggregate) supply, and they do so at (3) the fullest practical capacity that the economy can achieve. Workers make enough to buy all the goods that they make at the firms where they are employed. Firms make enough to pay all the workers to buy the goods. There is no unemployment. It would be hard to

make the economy bigger (grow) without upsetting this balance of many things at once.

Perfect and Imperfect. Under perfect competition without innovation, firms would not have to borrow to invest at all. They would only replace existing capital, and they should be able to do that automatically out of the selling price of their goods. With innovation, firms should borrow only as much as they need to implement innovation at the expected rate of profit, that is, at the expected rate of increase in productivity.

Balance in the money market is more likely under near-perfect competition than when uncertainty is very important or when imperfect competition is very important. I do not know of any good theory that explains how uncertainty and imperfect competition affect how the money market comes to a balance, or if the money market comes to a balance. I do not know how uncertainty and imperfect competition affect dynamic balance through their effect on the money market. It is likely that both of them distort the market enough to that it does not really come to the full balance that we need. Keep in mind that the rate of growth in productivity is about 2.5% per year while the expected profit is from 5% to 20% per year and the background rate of interest is at least 5% per year, so that uncertainty and imperfect competition do have effects. Still, because we have no good theory of these effects, we have to assume that what we do understand is good enough.

Non-Neutral Medium. Money has to be able to flow easily and fully between savings and investment for automatic balancing to work. Money has to be a neutral medium of exchange, as in Hume's parable. People save only according to the rate of interest they can get on it as savings while firms borrow money only for investment and only according to the rate of interest on loans. But people and firms do want money for other reasons too. These other reasons mean that money is not only a neutral medium. People want savings for insurance against something bad. They keep money in the bank even at low interest rates just for "a rainy day". They can keep more in savings than firms demand in loans for investment.

Firms like to keep some money around for immediate use in case of something bad. Firms keep some cash or near-cash (credit accounts) around even if they receive only low interest on the cash.

People and firms also want money around in case something good comes up. For example, the people that invest in stocks like to have some "liquid assets" that they can use right away to buy stocks with. Even bargain hunters like to have some money in the checking account so that they can move in on a good estate sale. A land investment company needs some liquid assets, or a good credit line, so that it can make a quick land purchase when the current owner finally decides to sell. Sometimes it is better to rush development of a new shopping mall to take advantage of the late summer sales for back-to-school.

Overly Simplistic But Necessary. Just from a glance at how money is not neutral, and knowing that the rate of interest should approximate the rate of growth due to increases in productivity but does not, we can see that the Classical model of the relationship between savings, interest, and investment is overly simple. Yet it is also the best model that has stood the test of time. There is no better model that incorporates various traits of money as a medium, on which economists generally agree, and that is strong enough to serve as a reliable basis for policy. Officials still fall back on the Classical model because there is nothing better. Economists supply officials with non-Classical ideas for particular situations, such as during a severe recession. But once out of those situations, officials tend to fall back

on the Classical model again.

Some Deliberate Interference. With that warning, we can see what might happen as the result of changes in the supply of money or in the rate of interest. We can make this experiment without worrying for now about why the supply of money might change or why the rate of interest might change. Money is like any other good: when the supply increases, the price drops (the interest rate drops); when the supply decreases, the price increases (interest increases); when the price increases (interest rate increases) people wish less of the good, money; and when the price decreases (interest drops), people wish more money.

Suppose the supply of money increases considerably and that business people did not foresee the increase. Then the price of money drops, that is the rate of interest drops – at least until the increase in the supply of money has worked its way through the economy and Hume's parable dominates. When the rate of interest drops, people save less. Due to the effects of something called "present value" (not explained here), business firms find that ventures pay off more, and firms wish to carry out more ventures. Firms want to borrow money to engage in ventures.

Firms might have a little trouble finding money for investment because the amount of savings is low, but they can still find money for investment by borrowing against the future and by using the other sources of money such as credit and reputation. Business people feel that times are good. They wish to have a low rate of interest as long as it is not too low. Business leaders sometimes pressure state officials to lower the rate of interest "because it is good for business, and therefore good for workers and all Americans". Officials seek to expand the supply of money so as to lower the rate of interest.

Any one-time increase in the supply of money has to work itself through as with Hume's parable, and the rate of interest has to return to whatever is normal. Then, business people pressure state officials to repeat the process; but then the process is not as effective because everybody can see it coming. If the supply of money decreases, the opposite happens. In modern times, it is hard to imagine the supply of money decreasing on a large scale, but this is exactly what used to happen during the downturn (recession) of the business cycle. In a way, this is what happened after 2008, when financial institutions (mostly large banks) refused to offer loans even though they have large reserves of cash. If money does not circulate, then the money supply is effectively smaller by the amount that is held back. The interest rate should have risen to call out some of the money from the electronic vaults but the central government, and the rhythm of the recession, kept the rate down for a long time. Sometimes the state used to create a decrease in the money supply with bad policies of its central bank, as at the beginning of the Great Depression in the United States.

If the rate of interest is forced upwards, then business slows down. The slowing is reinforced because people save much of their earnings rather than spend their earnings on products so as to encourage business ventures. Even though there are a lot of savings, business firms do not use the savings for investment.

This is enough to show that we can use the Classical model to understand changes but it gets tricky if we deviate from the situation in which the Classical model works. The Classical model provides us with a basic framework and with ideas about how things happen but it does not tell us everything. It is best if we

can stay within the Classical situation so that we have a good sense of how things do work. As with other aspects of the economy, unless there is a clear flaw with problems, and we can be sure that interfering will cause more good than harm, it is a good idea not to interfere. Let the automatic self-regulation of the Classical model do its job.

Zones in the Money Market. To better see the dynamics of the money market, when the Classical model works, and when it does not, it helps to divide it into the three zones: low interest, moderate interest, and high interest. Then we (A) look at what happens to savings or to investment when the interest rates varies a little bit at the margin, (B) look at what happens to the interest rate when savings or interest varies a bit at the margin, (C) look at what happens to savings and the interest rate when investment varies at the margin, and (D) look at what happens to investment and the interest rate when savings varies at the margin. This is too complicated to do all of it here, and it requires mathematics to do compactly. We can look at some of the most important changes, and we can approximate the results fairly well in words.

For the money market to respond in a way that helps achieve balance, it is good if a change in the interest rate causes a change of similar size in savings and investment, and vice versa for all relations. It is best if changes are pretty nearly proportional. If the rate of interest doubles from 3% to 6%, then the market works best if the amount of savings doubles as well while the amount demanded for loans for investment drops by about half. If the rate of interest falls by half from 8% to 4%, then the market works best if the amount of savings falls by half as well while the amount demanded for loans for investment doubles. When this proportionality does not happen, then the market might not balance, or it might balance in an odd way.

We need to dismiss a technical point. The real rate of interest is best figured by discounting the rate of inflation from the nominal rate of interest: we subtract the rate of inflation from the declared (nominal) rate of interest to get the real rate of interest. If the rate of inflation is 2% per year while the declared (nominal) rate of interest is 6% per year, the real rate of interest is only 4% per year. Because of the changing value of money, a person has to pay back less on a 6% loan than if the value of money did not change. When the rate of inflation is high enough, and the rate of interest is low enough, the real rate of interest can actually be negative, as in the early 2000s, when the rate of interest on savings was essentially zero but the rate of inflation was about 3% per year, for a real interest rate of negative 3%. For ease, I assume that the rate of inflation is zero, and ignore inflation. Inflation does make some differences because of the Cantillon effect, but I cannot go into that here.

(1) Low Rate of Interest, 0% to 3%. At very low rates of interest, the amount of savings does not respond very well to the rate of interest. People and firms have to keep some liquid reserves even if they get no interest on them. In the years from 2000 through at least 2012, people kept money in the bank even though the rate of interest was essentially zero. Strategic action does not lead savings to equal investment, and the rate of interest does not mediate between the two to keep them equal.

If people have to keep money in the bank, and the rate of interest is low, we might think that firms would be happy and would take out a lot in loans, but this is not usually the case. Very low rates of interest usually happen during the down phase of the business cycle when business does not anticipate being able to do much investing, and so does not require loans. The lack of interest in loans helps keep the

interest rate low (low demand) and the surplus savings helps keep the rate low too. The two conditions can actually reinforce each other so that it is hard to stimulate in investment, a higher interest rate, and a better use of savings. John Maynard Keynes called a strong version of this situation the “liquidity trap”. As mentioned above, after 2008, banks did not make loans even though they had lots of reserves, in part because the rates were held low, the banks felt they could not make a realistic profit on such low rates, and the banks did not want to be committed to low rates on loans made now. In effect, the banks sat on their own “savings” because of the low rates of interest. The “liquidity trap” described by Keynes used to be a strong trap only in severe busts such as the Great Depression. I do not know if what happened after 2008 is a modern version of the same trap or a different effect with similar results.

(2) *Moderate rates from 3% to 10%.* Actually, 10% is high if there is not also some inflation going on, but we have grown used to a 10% rate of interest, so I use it as the upper bound.

In this range, savings and investment respond best to changes in the rate of interest. This is the range of best proportionality. A surplus of savings drives down the interest rate somewhat, and thus calls forth a desire for investment by business firms, a desire that returns the rate upward and that also uses up any surplus savings. Similar adjustments happen in case there is too little savings, or a higher demand for investment, or a lower demand for investment, or if the rate of interest changes on its own for reasons that I do not go into here. The reader might want to play through these scenarios in imagination.

(3) *High rates above 10% (or above 8%).* When interest gets this high, it does not encourage more savings. People need a good part of their salaries to live on, and for comparative competition. Even with a high price for money, people still have to spend their money on real needs. They do not have any left over to save more. Strategic action does not lead savings to equal investment, and the rate of interest does not mediate between them to make them equal.

Ordinarily the inability to save more would not matter much because, at high rates of interest, firms would not wish to borrow money to invest and so would not need people to save. However, if the economy is just moving into that situation, and is in the up phase of the business cycle, then firms have a lot of confidence and wish to borrow against the future anyway. Business people say “money is too tight”. Particular firms bid up the rate of interest so as to get as much as they can from savings. The process can feed on itself. This is what economists mean when they say “things are heating up too fast”, and then look for ways to slow things down.

Proper Place. The economy works best in the middle zone. There, money is not fully neutral but savings, interest, and investment respond most proportionately to each other, savings nearly equals investment due to strategic action, and the rate of interest mediates to keep savings and investment nearly equal. Aggregate demand nearly equals aggregate supply, and the economy is nearly at full practical capacity. This zone is most like the Classical ideal.

In the low zone, the economy would not be at full capacity. Aggregate demand might equal aggregate supply but only because everything had collapsed down to the same scale.

In the high interest zone, the economy also would not be at full capacity unless the economy were in the

peak of the boom phase of a cycle. Recall that business does not invest much when the interest rate is high. It is unlikely that aggregate demand would equal aggregate supply in any stable way.

Except for the endpoint of phases in the business cycle, and except during unusually harsh and prolonged cycles, the economy tends to return on its own to the middle range of interest. This return happens even though, in the middle range, the rate of interest does not have to correspond to the rate of increase in productivity, and even though the middle range shows effects from uncertainty and imperfect competition.

There is no good theory for how or why the economy tends to return on its own to the beneficial middle zone, but we are very lucky that it does.

The Fed or FED. The instability and the lack of clear relations in the money market should be obvious now. Sometimes we feel that we need to do something when the economy is unstable or when it lingers at the poles of the business cycle, even if we are not completely sure of the effects of interference. Central banks organize the money system and stabilize it for the public interest. The American central bank is called the Federal Reserve System, or by the affectionate title of “the Fed”. TV commentators refer to the Fed when they say that the state is doing something about economic conditions. The Fed works with the Treasury Department to manage the money system and to influence the entire economy.

The United States experimented with something like central banks in the early 1800s, but then abandoned them. Then, abuses by wealthy and powerful financiers in the late 1800s led to anti-trust laws (anti-monopoly laws) and to the re-establishment of a central bank in 1913 as the Fed.

In effect, all banks in the United States belong to one Federal Reserve System. The system has twelve districts, each of which sends a representative to the Federal Reserve Board. The Board has a Chairman, who has considerable power to act on his-her own. The President appoints the Chairman with the approval of Congress. Although technically the entire Federal Reserve System is “the Fed”, many bankers and politicians think of the Board, or just the Chairman, as “the Fed”.

Member banks cannot set their own fractional reserve ratio. The Fed sets the ratio of fractional reserves according to legal guidelines established by Congress, usually from about 8% to 12%, but often near 10%. Rarely does the Fed change the fractional reserve ratio by more than a portion of a percentage point in a year. Changing the reserve rate is a blunt tool that has huge effects, and is kept back for serious circumstances.

The Fed can force member banks to borrow money from the Fed or to give money back to the Fed. Borrowing money from the Fed is like increasing the reserves of the member banks while giving money back to the Fed is like diminishing the reserves. Increasing reserves allows banks to lend more while decreasing reserves decreases loans. So forcing the banks to borrow might expand the economy while forcing the banks to give money back might shrink the economy. When the Fed forces member banks to borrow, in effect, the Fed forces the money supply to expand. When the Fed forces member banks to give money back, it forces the money supply to contract. How the Fed forces banks to borrow or to return money is not hard to understand but it is complicated and counterintuitive, often depends on bonds, and we do not need to know the exact mechanism to see the effects, so I do not describe the

mechanism here.

The Fed sets the interest rate at which member banks borrow money. Thus the Fed determines the rate at which member banks give loans and the rate of interest that banks give to depositors, so the Fed has great influence over the general rate of interest for the whole economy. In effect, the Fed sets the basic interest rate for all deposits and loans throughout the economy.

The Fed does not actually print money or stamp coins; the Treasury Department does that. So the Fed does not control the actual amount of what most people think of as money. Recall that the official supply of money in the United States includes not only paper bills and coins but also the amounts listed in savings accounts and checking accounts. The Fed and the Treasury Department cooperate to enlarge the supply of money or to shrink the supply of money.

By setting the interest rate, and by forcing member banks to borrow money or give money back, the Fed can influence the amount in savings accounts and checking accounts. Between the Fed and the Treasury Department, the state does control all the official money in the United States.

Money Supply, Natural Growth, and Inflation. The rate of natural growth due to implementation of innovation is about 2.5% per year. Natural growth leads to natural deflation as the amount of real goods increase but the amount of money stays the same. More wealth means more transactions (exchange, buying and selling). More transactions sometimes require more money.

If, for many years, the money supply does not increase along with natural growth, then natural deflation eventually will lead to a shortage of money and to a rise in the rate of interest. On the other hand, if increase in the money supply exceeds the rate of natural growth, then the increase in money will lead to inflation.

If the money supply increases but at less than the rate of natural growth, it is not clear what will happen; but that case is not important here.

Once we have a large enough supply of money to carry out all normal trade and to leave a cushion for unforeseen innovations and other events, then it seems logical to increase the supply of money at the same rate as the natural rate of growth. By doing that, we avoid deflation and inflation, and we keep the benefits of enough money without the harmful effects of too much money. Economists have suggested this policy to the Fed (see the last section in this chapter).

Conclusion. The Fed and the Treasury Department control the supply of official money and the interest rate for most loans and deposits. By controlling those, the Fed can influence the climate of savings, investment, and business. It can influence the total size (capacity) of the economy.

Comments on the Fed. It seems as if the Fed has great power but I think people overestimate the power of the Fed and the Treasury Department. For a better perspective, see the movie "Too Big to Fail". Usually people misjudge the power of the Fed when they wish to blame the Fed for bad events or when they wish the Fed to save the economy from abuse. The Fed can do a lot, but it cannot do all that. I explain the power of the Fed, and limits on the power of the Fed, as a way to defend the Fed against

undeserved criticism and hopes. There are three limitations on the power of the Fed. I do not look at statistics because the statistics are far too complicated and do not provide certain interpretation.

(1) Changes to the rate of interest or to the supply of money only have effects while they are changes. After they have worked their way through, then Hume's parable operates and things tend to return to where they were before. In the past, it might have taken many years for a change to work through but now the economy can adjust to many changes in a few months or even a few weeks.

(2) Changes usually only make much of a difference when people do not expect them, cannot do much about the changes until they happen, or when changes are drastically large. These days, most changes are not drastically large. When firms expect a change, they adjust to it in advance, and then it has little effect. If firms expect the interest rate to go up, they borrow more now at low rates and borrow less in the future when the rate goes up, and so thus subvert the effects. If workers expect some inflation to eat into their wages (and so change savings), they demand higher wages to make up for the inflation (and so have enough to save after all). These days, most state policies can be anticipated. In effect, at least over a long enough time period, money becomes a neutral medium again as in the Classical account by Hume. A recent school of economics called "Rational Expectations" made much of the ability to anticipate state actions and thus neutralize them.

The media tend to respond dramatically even to small changes by the Fed. The media look for indications of changes from the Fed like ancient soothsayers used to read dead bird guts. If we look more closely, we can see that these dramatic episodes tend to be temporary, and that the economy tends to revert back. If we do not panic at the report of an anticipated change in the rate of interest of one tenth of a percent, and instead relax for a couple of weeks, we can see that these changes do have some effect, but they rarely have the drastic effect that the media and business firms declare. Fed policy does work, but not to the extent that we need fear Fed policy when it is applied minimally.

(3) There is acting money that is not under the control of the Fed or the Treasury. The Fed does not control all credit, credit cards, debit cards, purchase orders, or reputations. Firms can get a lot done without resorting to the savings of people in banks. Even if non-official money ultimately depends on official money, non-official money is not immediately tied to the quantity of official money. Non-official money is more under the control of the free market. I think most business now is conducted with non-official money rather than with official savings in banks and official paper money and coins.

Some people worry about the amount of money-like stuff that is not under the control of the Fed but I think it is a good thing. It creates a free market alternative to official money and to state policies. For at least five decades now, except for bad situations created by war or petroleum embargoes, the interest rate has held mostly to the beneficial middle range. The interest rate consistently reflects the influence of real increases in productivity and the influence of uncertainty and imperfect competition. Those have been more potent forces than the policies of the federal government. I believe the real interest rate has reflected operation of the market because enough business is done with non-official money that is not fully under the control of the Fed and the Treasury Department.

When more money was under state control, before the days of credit cards and other alternatives types of money, the Fed made some big mistakes. Many bad government policies by agencies other than the Fed

contributed to the start of the Great Depression in 1929 but some particularly bad policies by the Fed made the Depression much worse and made the Depression last too long. Essentially, the Fed raised the interest rate when it should have done nothing or should have tried to lower the rate of interest. It tried to increase the amount of money (which would have worked opposite to raising the rate of interest) but the collapse of the banking industry decreased the amount of money even faster, and so aggravated the increase in the rate of interest. As a result, all money pretty much froze, investment was impossible, and jobs disappeared.

Since then, the Fed has learned, and has not made similar mistakes. It has adopted a policy of minor corrections when needed, and when the corrections are not likely to cause any chain reactions. It has used threats as often as real actions, and those usually are enough. It tries to resist the call of state officials, and it tries not to be a tool to compensate for the mistakes of state officials – although too often it has no choice. In practice, the Fed relies on the free market except when it sees a pressing need or when other state officials force the Fed to compensate for their mistakes.

If the economy were faced with a serious problem, the Fed and Treasury could use their power to create money to do something about the problem in the short term until the free market acts to correct the underlying flaw or Congress acts to correct the underlying flaw. That situation rarely arises.

I believe the Fed has evolved a policy in practice that is well within the limits of its theoretical powers, that this evolved limited-policy-in-practice mostly cooperates with the free market, and this limited-policy-in-practice is a good thing that serves the economy well. It is easy to criticize the Fed based on past mistakes and on its theoretical ability to meddle in the economy in a large way, but I think such criticism is misguided. Just by being there, the Fed serves much of its needed function of stabilizing the money system and the economy without actually having to do much except sometimes threaten and sometimes adjust the interest rate.

It is important to see this because we should not blame the Fed alone when things go wrong or when bad policies by Congress or the President cause things to go wrong. The Fed is not that powerful, and there are other actors in the state that can interfere as well. Those other actors should get their proper larger share of the blame.

Two Standard Rules and Their Exceptions. How the Fed actually uses its power comes under the headings of policy and of macroeconomics, which subjects belong to the next chapter. But it is useful to mention some standard policy rules to get the ideas across here.

(1) The first standard rule: lower interest rates to stimulate business; and raise interest rates to contain business.

State officials and economists want to minimize the effects of the business cycle, especially the down phase. A low interest rate usually stimulates investment. So, to counter the down phase, a low rate might get firms to invest, to increase production, and to increase consumer demand. We have to be careful because the interest rate might already be low during the down phase, and so lowering the interest rate or increasing the money supply might not help. But, if there is some room for play, lowering the interest rate can help.

Policies that aim to go against the business cycle so as to ease bad effects are called “counter cyclic policies” or “counter cyclical policies”. Generally they do not work, and they open the door to serious abuse, for reasons that I explain in the next chapter. But they might be the only weapons available, and, in a bad down phase, we have to do something. The government also can alleviate the effects of the cycle by acting through consumer demand, as suggested by John Maynard Keynes, but that topic belongs to the next chapter.

(2) The second standard rule: to stop inflation, slow down business and demand. Reduce the demand for money by both firms and consumers. Increase the rate of interest. If necessary, induce a recession by inducing unemployment.

The 1970s saw unusual double-digit inflation caused by debt from the Vietnam War, deficit spending from Poverty Programs, oil shocks as OPEC (Organization of Petroleum Exporting Countries) raised prices from about \$15 dollars a barrel to about \$80 per barrel, the economic recovery of the world outside of America, a decline in the relative quality of American goods, wages set at above the level of cost effectiveness, and military spending.

In the early 1980s, President Reagan used the second rule to cure the inflation of the 1970s. Ordinarily, state officials do not like to slow down business or to cause unemployment. But, by the late 1970s, inflation was so bad that it had to be stopped regardless. President Reagan raised interest rates, stopped unions from asking for wage increases to compensate for inflation, and broke some unions such as the Air Traffic Controllers Union (PATCO). The economy went into a hard, sharp recession with at least 10 percent unemployment; but the recession was short, inflation ended, and the economy recovered well.

A bad problem also arises when inflation mixes with the business cycle. Inflation is not supposed to coincide with the down phase of the business cycle. If firms are not investing, and people do not have jobs, then nobody should demand more money, and so inflation should not occur. (The supply of goods can shrink much faster than the supply of money, and so cause inflation, even during the down phase; but this condition is rare outside the rapid onset of bad depressions such as in the 1930s, and so I do not consider it here.)

Usually inflation can only happen during the down phase of the business cycle because additional unusual events upset regular economic relations, such as in the 1970s; but inflation can also happen during the down phase if it is caused by bad state policy such as chronic deficit spending. Bad state policy played a role in the 1970s and it continues to play a role now. This is the thread that I take up in the next chapter.

When inflation happens during the down phase of the business cycle, we need both to raise the interest rate to fight the inflation and to lower the interest rate to fight the down phase of the business cycle. It is not possible to do both at once, and then which is done depends on politics and mood.

A Useful Example: Housing Crisis. As I was finishing the first version of this book in 2007, house buying in the United States went through a crisis. This section was slightly revised in 2012, but

mostly it stands as it was written in early 2008. It still applies. This section is based not primarily on other materials read but on my personal observation. I encourage you to read some of the many books on these topics now available.

Beginning in the late 1960s, and accelerating through the 1980s, the world caught up to America. America lost its dominance in world markets. America began to experience unemployment and bad employment similar to the “outside” world. American workers pressured state officials. They used institutions like the Fed, and policies like induced expansion, to lessen the effects, but could not reverse the effects.

In the 1970s, the United States began a long-term trend of reduced manufacturing and increased services such as medical care and lifestyle counseling. I do not know if this change was part of the world catching up to America or if it came from a shift in American tastes. This trend further reduced job opportunities for Americans, and, in some cases, led to reduced salaries and benefits for the jobs that workers did get.

Under President Carter in the late 1970s, America reduced regulation of business. President Reagan continued the trend begun by Carter. In addition, Reagan reduced taxes for wealthy people and high-income people. Later Presidents, including Clinton, all continued the trends except that Clinton reversed somewhat the skewed taxes.

The reduced regulation begun by Carter might have been beneficial. The long trend of reductions was a mistake. They reductions led to wealth flowing from the lower and middle classes to the upper class. Wealth became ever more concentrated. Eventually America was split into what analysts in 2011 called the 99% and the 1%. This trend has happened before in United States history, but never to this extent. The extent of wealth concentration now evident in America is as skewed as it has ever been.

President Reagan began his first term by containing inflation, mostly by inducing a recession and causing high unemployment. Contrary to popular belief, he did not reduce the budget much, he indulged in large deficit spending, and he increased the federal debt to high levels compared to the national economy. President Reagan ended his second term by creating massive deficits and stimulating inflation again. It is not clear, but it seems as if the inflation was foreseen, in part to reduce the impact of the debt. President Reagan institutionalized the practice of large deficits and induced inflation. State-induced inflation can persist even in the down phase of the business cycle, in which case it makes counter cyclic policy even harder and less effective. State-induced inflation is bad policy.

Because of the relative reduction in manufacturing, ordinary channels for investment were not available. As part of the expansion of services, helped by reduced restriction, and spurred by fear of inflation, investments flowed increasingly into finance. In some cases, the finances were questionable, such as “junk bonds”. Increasingly, wealth was created by “moving paper around” rather than by any increase in real wealth in material goods or utility-based services.

Also because of reduced manufacturing, limited alternatives for investment, reduced regulation, inflation, and fear of inflation, Americans increased investment in real estate. The real estate boom actually began in the middle 1970s. Middle class Americans invested in very large houses because they guessed that

their equity would increase. Even middle class Americans invested in real estate not to live in but as a financial venture. The investment in real estate increased house prices, which in turn increased investment, and so on. I think real estate investment accelerated in the Reagan Presidency and again under Clinton and Bush 2. I give some details of the bubble below but I do not explain bubbles in general.

Financial institutions joined investment in real estate, partly by direct buying, but mostly by investing in other firms that financed mortgages and real estate purchases. Without other solid arenas in which to invest, such as manufacturing, and with reserves of wealth generated by inflation, deficit spending, and the move to finances, financial institutions had wealth that had to be invested. The logical avenue was real estate.

The first war in Iraq caused further inflation because President George H. W. Bush (Senior) did not raise taxes to fund the war but instead funded it by borrowing, often by selling securities to foreign investors. The wars in Afghanistan and Iraq, instigated by President George W. Bush (Junior) followed the same pattern with the same bad results. Late 2007 had the highest rate of inflation in the United States in over 30 years. Figures vary, but inflation was at least 6%.

In the early 2000s, the “Bush tax cuts” under President George W. Bush (Junior) reduced taxes on people with a large income, and therefore also on people of wealth. The intention was to get wealthy people to save the money so the money would be invested, so as to induce economic expansion. Regardless of your political allegiance, strictly on the basis of evidence, the “Bush tax cuts” clearly failed. They did not increase investment in real productivity although they probably did spur the real estate bubble. They did not cause any real growth. They did increase inflation, wealth disparity, and the need to invest in real estate.

Financial institutions (all called “banks” here in this section) offered Americans mortgage plans that were ridiculous. Banks gave loans to Americans who clearly could not afford the terms of the loans. Banks accepted houses for mortgages that should not have been sold. Banks insured mortgages that should not have been insured. Banks insured each other for real estate when they should not have done so. I do not specify the terms of the bad mortgages or insurance schemes.

It is easy to blame banks and the lack of regulation for the housing crisis and for the general financial crisis. They certainly share the blame. But we should focus on the largest factor: greed by average Americans. Americans willfully neglected the old adage: “if it looks too good to be true, it is too good to be true”. Americans bought houses that were much too large. They spent more than they could afford. The fact that they could not afford it was obvious; you did not need a degree in accounting to know you could not afford a monthly payment larger than half your yearly salary. They bought bad houses intending to resell quickly (“flipping”). Americans excused themselves by saying the price would always go up, they could never lose, and they could always sell at a gain even if they could not make the payments. People who behave like that deserve to lose their shirts.

The country never really recovered from the recession of around 2000, partly because the Bush tax cuts were the wrong medicine for that recession and might have made it worse. The situation might have lingered beyond 2007 except the country finally showed the strains of deficit spending and the country

followed the normal rhythm of the business cycle: it went into recession again in 2007. The recession caused all the bricks to fall at once, and we had a crisis.

In 2006 and following, at the same time, we had:

- Increasing long-term employment problems due to the rest of the world catching up with the United States.

- Increasing long-term employment problems due a loss of manufacturing. -Increasing long-term lack of places to invest.

- Chronic inflation, largely due to state policies, including especially deficit spending.

- Increasing disparities in wealth with record accumulation of wealth at the top.

- Increasing lack of regulation and oversight, culminating finally in essentially none.

- Accumulation of funds, still without a full outlet for investment.

- Tax reductions for the wealthy that increased inflation, wealth disparity, and the accumulation of funds for investment without adequate avenues for investment.

- Acute inflation due to present wars in Iraq and Afghanistan.

- Long-term over-investment in housing, largely due to lack of investment opportunities elsewhere but partly due to bad policies by the state in housing.

- Increasing over-investment in housing, in part due to unethical marketing but largely due to greed by Americans.

- Rising interest rates that made investment outside of real estate increasingly risky.

- A looming regular cyclic recession.

- More and more "balloon payments" were coming due.

- Bad insurance of the housing market.

-I think ordinarily business firms that make profits from imperfect markets have been able to find ways to invest their profits but that this has not happened well enough since at least the time of Ronald Reagan, this problem has gotten increasingly worse, and this problem fueled the other problems; but I do not have hard evidence.

After 2007, the Fed was caught between stopping inflation versus keeping the economy out of deep recession. People wanted the Fed to lower interest rates to keep down balloon payments on mortgages

and to keep the economy out of recession. People also wanted the Fed to raise interest rates and, with the Treasury Department, to control the supply of money so as to control inflation. If the economy had only gone through its normal business cycle without the added problems of chronic inflation from bad policy, increased inflation from war spending, and the house buying crisis, probably the Fed only would have had to adjust interest rates a bit. The Fed had to choose the lesser of two evils. The Fed chose to support house buyers and to lessen the recession rather than to kill inflation. The Fed and Treasury Department chose to lower interest rates and to limit the supply of money at the same time. The two measures go against each other but they might allow relief for house buyers, encourage the banks to lend, and so allow for some recovery without runaway inflation. Whether the policy works depends on a balance of forces, and on cooperation from banks. The Fed lowered the interest rate, which fell from about 5.25% in September 2007 to about 3.5% in January 2008 – a gigantic drop in a very short time by normal Fed standards in which a change of 0.25% in a quarter is drastic. Even that turned out not to be enough because banks refused to give loans, and the economy did not pick up. By the end of 2008, the interest rate at local banks for savings was essentially zero. Aside from the Fed action, state officials offered ineffectual symbolic stimulus packages such as tax rebates, which would fuel inflation. By limiting the supply of money, the Fed and the Treasury Department have been able to slow inflation but not stop it. Food and fuel prices have steadily climbed until food is nearly double in 2012 what it was in 2007. Rising prices on food and fuel hurt the poor and bleed off enough “buying power” (demand) to keep the recovery slow. This standoff is where things have remained. The recession lingered on until late 2012. Recovery has begun but has remained slow, and we will never return to the glory days of the late 1950s and the 1960s.

I think a long-term tug-of-war has been going on between the Fed and the banks, and the fight worsened the choice between recovery versus inflation. The fight shows the difference between money (nominal) terms versus real terms based on exchange ratios, the importance of knowing about real terms so as to do economics adeptly, and the importance of money terms in the minds of banks and people. Even with interest rates low, a recovery depends on banks loaning out their stocks of wealth, and on banks writing off bad loans to house buyers and/or re-financing. Banks refuse to write-off and/or refinance under the terms proposed by state officials. Banks will not make new loans at the unusually low rates of interest. Bank officers intensely dislike reporting losses on their regular quarterly statements - even if everybody knows the losses are largely “paper”, are necessary, and do not put the banks at risk. The banks would not have to endure paper losses if the overdue inflation would kick in. The money (“nominal”) price of houses would rise, probably by double, even if the real price (exchange ratios) of houses fell in relation to the prices of other goods such as cars and electronics. The banks could refinance the houses at a real loss but a paper gain, and so not have to report any losses on their statements. At the same time, interest rates would rise. Banks could make loans at the higher rates, expecting the higher rates would be “locked in” for later when inflation came under control. Of course, the inflation that is needed to escape in this way would devastate the recovery and the country for a while. Not making loans on their reserves is a form of blackmail by the banks on the Fed. In the meantime, the banks still make profits through previous investments and the channels that funnel wealth. If the Fed and the banks stay at odds long enough, the economy will slowly recover, and we will have steady slower inflation. Eventually the real and money prices of houses will come together at a price that allows banks to “move” the houses without taking a loss in their reports. Eventually interest rates will rise enough so that banks will make loans. In 2012, it seems to have begun already but I don't know how long it will take.

(Suppose an over-financed house cost \$300,000 in 2008. The real value of the house is about \$200,000. To “move” the house and restore the economy, the bank would have to take a loss of \$100,000. Then Inflation kicks in, doubling the prices of all other goods, but raising the money price of the house to \$400,000. A TV set that had sold for \$500 now sells for \$1000. The house did not double in money price but its money price is still greater than what it was before. Now the money price of the house and its real exchange ratio price coincide. Now the house can “move” at its real-and-money price. The bank does not have to take a paper loss. It can sell the house at \$400,000 and say it still did make a gain even though, in real terms of real exchange ratios, the bank lost. Not only banks would like this; a lot of house buyers would like this avenue of escape as well.)

I could not invent two scenarios to better show how the Fed has some power but only limited power, and how state officials, their clients, and their managers, use the Fed to make up for their own bad policies.

Nothing much fundamental has changed since the crisis began. The basic underlying causes for the problem are still in place, except, at least for a while, Americans know better than to invest in real estate they cannot afford. It is not clear where else they can invest, if ever again they have very much disposable income to invest. Slowly the economy has gotten better, and eventually Americans will forget the crisis and what caused it. I do not know if it is only a matter of time until we face another crisis based on another bubble.

Schools of Theory about Money. This section does not give a full account of the schools, and I am sure each school will claim injustice. I give the accounts because the reader will encounter the terms. Except for the Classical economists, these schools developed either in response to the Great Depression and to social problems, or as a backlash to the response. They differ in their attitude toward state interference.

Classical School. People do not ordinarily think of Classical thought as a school but the ideas that it offers amount to a school. They have been stated so often that they only need to be listed here:

- The rate of interest mediates to keep savings equal to investment.
- Money is only a “veil” that hides the real transactions that occur beneath. Its own characteristics are negligible.
- Despite being a veil, money is a transparent medium. People want money only to use it.
- Savings and investment respond about in proportion to the rate of interest.

Following John Maynard Keynes. The Great Depression required strong action right away, especially because savings, investment, and the rate of interest did not act as in the Classical model. Keynes said that the business cycle happened for reasons intrinsic to the economy and not just as a result of state interference in the economy, although state interference could make things worse. Keynes and his followers advocated various interventions based on their ideas about the relations of savings, investment, and interest in various ranges of the money market. I go into details in the next chapter.

Monetarists, Following Milton Friedman. Milton Friedman was in the generation after Keynes, coming into prominence in the 1950s. He was the leading speaker for Conservative economics from the 1950s through the 1980s. He said that state monetary policies cause the business cycle, and cause almost everything else that is wrong with the economy as well. He offered some impressive historical evidence for his case. Since state policies caused the problem in the first place, we did not need strong policies to cure the problem as suggested by Keynes, but rather we needed to undo the policies and the harm. He advocated the dissolution of central banks, including the Fed, and the return of the money market to the free market. If dissolution was not possible, then he advocated an absolute minimalist policy for the Fed, similar to what it evolved in practice over time. He advocated that the Fed increase the money supply only at the same rate as natural growth. He advocated that the Fed never cooperate with state officials so as to sustain inflation. I agree with these last suggestions.

Austrians and Libertarians. Austrians and Libertarians are similar to Monetarists except they refuse to compromise on the Fed. They insist on full privatization. They offer these points:

(1) When the state interferes, the interference usually causes some redistribution of wealth. The redistribution usually helps financial institutions and state officials while it usually hurts consumers and most other kinds of firms.

(2) Business cycles result from state-induced increases in the money supply. On this point, many monetarists agree.

(3) Fractional reserves are only possible through state interference. If the state did not intervene to support a fractional-reserve banking system, banks would revert to a more stable system on their own, which system would maintain nearly full reserves.

(4) We do not need a central bank. Banks would develop a stable system on their own without state interference. Many monetarists agree on this point. A central bank might increase instability because it sustains fractional reserves and it excuses interference.

(5) The economy does not need symbolic money. The economy can run entirely on full commodity money such as silver. Full commodity money avoids the problems of fractional reserves and state interference. The economy might run better on full commodity money.

(6) The entire system of fractional reserves, symbolic money, and central banks is unstable and is unsustainable even by the state. Eventually it should change.

Rational Expectations. The ideas for this school had been developing since After World War II in response to various state intrusions into the economy but the school coalesced in the 1970s in opposition to state ideas to cure unemployment through steady inflation. This school emphasizes that people and business firms can anticipate almost all state policies, and can act to protect themselves from the effects. In protecting themselves, they usually neutralize the intended results of the state policies. If business firms expect an increase in the money supply with a possible decrease in the rate of interest, they act in ways that cause the rate of interest not to decrease as much as anticipated. If firms expect inflation then their actions to protect themselves have the unintended but unavoidable result that unemployment does

not get better (firms do not deliberately maintain unemployment). People can “expect” the effects of government policies, and they respond “rationally” to neutralize the policy, hence the name of the school. Most changes in the economy are limited in scope, and eventually play themselves out. Any change that lasts, such as continual induced inflation, can be fully expected and fully neutralized. The effect of anticipating and neutralizing changes is the same as the end result in Hume’s parable. The ability to respond to policies and to neutralize the effects of policies makes money a neutral medium again, so this school is also sometimes called the New Classical School.

Rational Expectations, Monetarists, and Austrians are all Conservative and all oppose state interference, yet they do not agree. Rational Expectations sees state actions as annoying, useless, and expensive but not very effective or disruptive, and as not changing the essential neutrality of currency. In contrast, Monetarists and Austrians see state actions as positively harmful and as never leading to a neutral currency. I cannot go further into the issues between them here.