

## The Theory of the Effects of an Increase in the Money Supply

### Outline

- A. The Market for Money Balances
  - 1. The Market for Money Balances
  - 2. The Decision to Hold Money Balances
  - 3. The Supply of and Demand for Money Balances
  - 4. Effects of an Excess of Money Balances on Money's Purchasing Power
  - 5. The Consumer Sovereignty Version of the Quantity Theory of Money
    - a. The Utility Derived from Holding Money
    - b. Money Holding by Producing Entrepreneurs
- B. Three Channels of Effects of an Increase in the Money Supply
  - 1. Decrease in the Purchasing Power of Money
  - 2. Effects on Final State of Rest Market Phenomena
    - a. Forced Saving
  - 3. Effects on Entrepreneur Calculation
- C. The Types of Money
  - 1. Gold Money
  - 2. Transferable Deposits
  - 3. Credit Money
  - 4. Government Money
  - 5. Credit Expansion

Mises used chapters 15 and 16 of his treatise *Human Action* (1966 – HA) to present the image of direct exchange. Then he introduced his theory of money and credit in chapter 17. He followed this with two chapters on time and interest. Then he completed his image of the [indirect exchange](#) economy with his chapter 20, in which he showed the effects of credit expansion. This corresponds to the step-by-step procedure that the economist must use in order to reach a position where he can evaluate intervention arguments that promote money supply increases and credit expansion. In the process, the essay presents Mises's newest theorems on the effects of credit expansion, which replace the theorems in his 1912 book.

The essay presents the theory of the effects of an increase in the money supply in the Mises tradition without specifying what money consists of. The first part describes the market for money balances and presents Part Two presents the theorems of the effects of a change in the demand for and supply of money balances. Part three describes the types of money. The purpose of the essay is to help prepare the reader to understand Mises's theory of the trade cycle.

## 1. THE MARKET FOR MONEY BALANCES

The individualist economists produced theorems to elucidate pure capitalism under direct exchange. Mises sought to incorporate money-related changes into these theorems in part 2 of his 1912 book. Although his effort was an advance on the theory of his day, he could not effectively complete the task until he had added time-related change, which he did not do until later. The missing element was the praxeological foundation for the phrase “scarcity of capital,” which he explicated in the treatise. A modern reader of his treatise must realize that his incorporation of money into the law of consumer sovereignty in that book was an advance on his early writings. She must also realize, as will be argued later, that his presentation of the new theorems was less clear to the modern reader than it could have been.

### **The Decision to Hold Money Balances**

The key to adding money is to assume, realistically, that holding money balances is expected by the money holder to yield benefit at each discernable time it is held. In a money economy, a person aims to acquire money in order to buy goods in the nearer and more distant future. For the more distant future goods, she aims to acquire money in order to save it. She may save it (1) by lending it out, (2) by purchasing capital goods, or (3) by holding it in the form of balances either privately or at a depository institution.

The actor plans to receive money at various future times. During a particular period,  $t = 0$ , she receives a particular amount. Planning to buy goods and to save at times  $t + a$ ,  $t + b, \dots, t + n$ ; she decides to hold money balances in accord with her plans. Everyone who receives money and who does not plan to spend it today is a money holder for the day.

Plans to spend that were made in the past may change. Even if the amount of money she receives does not change, an individual who planned to hold  $m$  amount of balances today may decide that she wants to hold  $m + x$  or  $m - x$ .

A person may, during any period, possess more or less money than she wants to hold. Either the amount of money she received may have changed unexpectedly or she may have revised her previous plans. If so, she will try to hold more or less.

### **The Supply of and Demand for Money Balances**

The money supply refers to the quantity of money balances that are being held during some period of time. Another way to define the money supply is to say that it is the money in circulation during that time. Since every piece of money in circulation must be held, the money supply always equals the amount of money balances that people hold. Each distinguishable piece of money is owned and held by someone.

<p><b>Money supply:</b> the amount of money balances that are being held during a period of time.</p>
---

An individual's demand for money balances during a period of time refers to the amount of money that she *wants* to hold during that period. As already pointed out, this amount may be less or greater than the money she expects to hold in light of money recently received and money holdings left over from a previous period. If the demand differs from expected holdings, the economist says that he has an excess or insufficiency of money balances. A person who has an excess of money balances wants to spend more and save more than if there was no excess. Conversely, a person who has an insufficiency wants to spend less and save less than if she had no insufficiency.

**Individual's demand for money:** the amount of money balances that an individual wants to hold during a given period.  
**Excess of an individual's money balances:** a situation in which the individual demands fewer money balances than she if there was no excess.  
**Insufficiency of an individual's money balances:** a situation in which the individual demands more money balances than if there was no insufficiency.

### Effects of an Excess of Money Balances on Money's Purchasing Power

Suppose that all money holders in an economy except one are currently holding exactly the amount of money balances that they want to hold. One money holder has an excess of money balances. He wants to increase his spending or saving. When he does this, he transfers the money to some other money holders. Since they already have just the amounts that they want, the economist deduces that the others will now have excess money balances. Assuming that their plans had not changed and that other things have not changed, they will increase their spending on consumer goods, their saving, or both. The increased spending and saving by the second set of consumers has an effect similar to that of the first consumer. As they dispose of these balances, they will transfer them to a third set of money holders. The third set will now have excess balances. And so on.

Thus, many people will ultimately increase their spending and saving. Due to the law of consumer sovereignty, the entrepreneur role is compelled by the profit motive to raise the prices of consumer goods and factors of production above what they would have been if there had been no excess. Prices in general rise; the purchasing power of money falls.<sup>1</sup>

If the one person in this example has an insufficiency of money balances, individuals as a group will spend and save less, *ceteris paribus*. Prices in general would fall; the purchasing power of money would rise. One might call this the *theorem of the effects of the elimination of differences between the money balances that people actually hold and the money balances that they want to hold on the purchasing power of money*. It is analogous to the theorem of the elimination of price differences.

Individuals have incentives to eliminate the differences between the amounts of money that they want to hold through time and the amount that they actually hold. As they act in accord with this incentive they cause the purchasing power of money to rise or fall.

---

<sup>1</sup>To say that prices in general rise does not imply that they rise uniformly or that all prices rise. Some prices may fall. See the subsection below entitled "Effects on Final State of Rest Market Phenomena."

### The Consumer Sovereignty Version of the Quantity Theory of Money

The theorem of excess money balances is the basis for theorems about the effects of a change in the money supply. The first of these theorems is the quantity theory of money. This theorem maintains that beginning with an initial state of rest, the action of causing an unexpected change in the quantity of money causes a sequence of actions that result in a final-state-of-rest height of purchasing power of money that is inversely related to the direction of the money supply change. For example, an increase in the money supply causes a decrease in the purchasing power of a given amount of money. The theory can be stated in the following way. Beginning with a state of rest, an increase (decrease) in the money supply, causes an excess (insufficiency) of money balances. As the consumers adjust by purchasing more (fewer) consumer goods and by saving, *ceteris paribus*, individuals acting in the entrepreneur role are motivated to take actions that cause the purchasing power of money to fall (rise).<sup>2</sup>

**The consumer sovereignty version of the quantity theory of money:** Beginning with a state of rest, a change in the money supply, other things equal, causes an excess (or insufficiency) of money balances. As more (less) spending and saving occur, the entrepreneur role takes actions that reduce (increase) the purchasing power of money.

Before Mises, the quantity theory of money was merely an expression of a regularity that had been observed in market interaction. It referred to a set of empirical observations. Today, modern professional economists often mean the same thing. The invention of the law of consumer sovereignty by the individualist economists blazed the trail for the consumer sovereignty foundation that Mises attempted to provide.<sup>3</sup>

Mises assumed in his initial presentation of the quantity theory of money that the increased consumer spending and saving that occur is not accompanied by an increase in the factors of production or technological advance. In order to present the theory in the simplest way, he assumed that the items and actions that could be employed as factors are the same in the initial state of rest, in the final state of rest, and during the period of adjustment. For the same reason, he assumed that there was no technological advance. If the increase in money supply was accompanied by an increase in factors or in their physical productivity, the change in spending and saving might be partly or fully offset. The theory would still be correct but it would not, by itself enable the economist to provide, a complete description of the effects of an unexpected increase in the money supply.

#### *The Utility Derived from Holding Money*

Properly defined, holding money cannot yield utility. Utility refers to satisfaction. Holding money does not yield satisfaction, except for the miser who is not in a position to earn interest by lending out the money. The satisfaction due to money holding comes from the expectation that more satisfying consumer goods or consumer goods at lower prices can be purchased in the future by

---

<sup>2</sup>In modern professional economics, the quantity theory of money refers to a relationship between aggregate statistics. The concept of the “velocity of circulation” is a part. Mises presents an excellent critique of this version of the quantity theory from the perspective of his own theory in his 1932 article (Mises 1932: 59-62). In this book the term “quantity theory of money” always refers to Mises’s version.

<sup>3</sup>As pointed out in the next section, he did not entirely succeed in this.

holding the money than by borrowing to buy them when they become available. It is an entrepreneur action carried out by a person who is also a consumer. In her act of speculating on her future wants the consumer goods that will be available to satisfy them, and their prices; she serves not only herself but producing entrepreneurs who come to expect that if they identify new wants, means of satisfying them, and lower factor costs; they can profit by making them available for sale.<sup>4</sup>

#### *Money Holding by Producing Entrepreneurs*

Producing entrepreneurs at all orders along the supply chains for factors of production cannot be certain of the prices they will receive for their products. In addition, they often cannot be certain of the exact times at which the products they plan to sell will be completed and ready for sale. They often maintain inventories of unsold items to avoid having to delay a sale due to an unexpected interruption to production. The uncertainty of the entrepreneurs about future prices means that they cannot rely completely on future revenue to assure that the suppliers of factors to their own production receive the incomes they expect at the times they expect them. Since these factor suppliers ordinarily lack expertise in predicting sales revenue, the producer entrepreneurs bear the uncertainty that the factor suppliers would otherwise have to bear. They do this by holding money balances to meet payrolls and expenses.

## 2. THREE CHANNELS OF EFFECTS OF AN INCREASE IN THE MONEY SUPPLY

The theory of the effects of increase in the money supply starts by considering the effects on entrepreneur actions. It does this through three distinct channels. First, it causes prices in general to rise and the purchasing power of money to fall in accord with the quantity theory of money described in Part Two. Second, it affects the distribution of income and wealth and, by so doing, changes consumer demands for goods. This, in turn, alters the final state of rest quantities of goods that are demanded and supplied. The entrepreneurs cause a tendency toward a different final state of rest than before the increase. Third, because the entrepreneurs use the prices of today as guides to future prices, it makes some production projects appear profitable that are not and others to appear unprofitable that are. Mises expressed this third effect by saying that the increase disrupts economic calculation. If the increase in money supply proceeds in a particular way, the entrepreneurial errors cause what Austrian economists have called a trade cycle. The aim of this part is to describe these three channels. It discusses each channel in turn.

### **Decrease in the Purchasing Power of Money**

The theory begins with an initial state of rest in which individuals hold money due to the benefits they expect to obtain from having money at their ready disposal. The amount that they hold exactly

---

<sup>4</sup>It follows that Mises was wrong to write in his 1912 book that the marginal utility to money holders of an increase in the supply falls when there is, *ceteris paribus*, an increase in the money supply (TMC: 139). He also uses the term marginal utility in the treatise discussion (HA: 448). One must regard this as a deviation from his usually careful distinction between the consumer role and the entrepreneur role. It is true that he only uses the term once and that he does not try to justify his usage. But there can be little doubt that its use is a source of ambiguity.

equals the money supply. In addition, all of the other conditions that describe the evenly rotating system are present. The change-provoking action is an increase in the money supply which causes an excess of money balances. As money holders spend more and save more, individuals acting in the entrepreneur role raise the prices of their finished products. Their actions, taken together, reduce the purchasing power of money. In the final state of rest, the purchasing power of money is lower than in the initial state of rest.

### **Effects on Final State of Rest Market Phenomena**

An increase in the money supply also introduces changes in the consumer demands for goods, including demands for near and more distant future goods. It cannot cause changes in preferences. But it can and does cause changes in demands for particular goods. It does this through its effects on the distribution of income and wealth. The following scenario describes how this occurs.

Beginning with an initial state of rest, a lending government or government money agency introduces new money by making loans to particular individuals. Suppose that the money agency lends to entrepreneurs. The entrepreneurs borrow in order to finance additional production projects. The borrowers tend to gain because they can profit from carrying out projects that otherwise would have been considered unprofitable. The owners of the factors that are specialized in helping to carry out the entrepreneurs' projects also tend to gain. Eventually, these gains will dissipate due to the fall in the purchasing power of money. However, their incomes and wealth increase before the purchasing power of money falls. Others, who are farther up the supply chains also tend to gain.

Still other entrepreneurs and factor suppliers tend to lose. The losers specialize in producing other products. They tend to lose because their incomes and wealth do not rise at first. The purchasing power of their money falls before they are in a position to earn enough to offset the loss. The demands for all goods tend to rise over time due to the general increase in money incomes. However, the distribution of wealth and income is different. As a result, the new money incentivizes entrepreneurs to cause a tendency toward a final state of rest that is different from what it would have been in the absence of the new money. The entrepreneurs tend to cause a different set of state-of-rest real market phenomena than would have existed in the absence of the change. The final state of rest quantities of goods and factors, are different.

**The final rate of interest:** the rate of interest in the final state of rest of the evenly rotating system.

This idea may be expressed by saying that in a changing economy, "money is not neutral" (HA: 416-19). That is, under capitalism, money is never neutral because every change in the money supply must alter the distribution of income and wealth.

### *Forced Saving*

It is important to recognize that changes in the wealth and income affect the amounts of funds that individuals save and, therefore, lend to producing entrepreneurs. For example, an increase in the money supply may lead some people with low time preference to earn a higher proportion of money income while some people with high time preference earn a lower proportion. This would raise the amount of money

**Forced saving:** an increase in saving caused by an increase in the money supply. The increase is assumed to first cause a change in the distribution of income and wealth which, by assumption, raises the proportion of total income that is saved as opposed to being spent on near future consumer goods.

saving and, *ceteris paribus*, reduce the market rate of interest. Mises called such an increase in saving “forced saving” (HA: 548).

### Effects on Entrepreneur Calculation

One of the tasks of the entrepreneur role as a speculator is to predict future prices. Whether an entrepreneur regards a project that was undertaken in the past as profitable depends, in part, on whether the selling price of the product is as high as she predicted it would be. In addition, it depends on the purchasing power of the profit income. In the initial state of rest, all material consumer goods are produced according to the law of consumer sovereignty. The factors of production are allocated in such a way that the money-evaluated wants of the consumer role are most efficiently met. There are no errors. Indeed there are no entrepreneurs to make them.

Beginning with an initial state of rest, new money is introduced. This activates the entrepreneur role to perceive profit opportunities. It is possible that some entrepreneurs will expect the purchasing power to fall and the distribution of wealth and income to change. In this case, they will direct that factors of production be expended to predict the new profit opportunities that such changed circumstances would motivate the entrepreneurs to cause. If no entrepreneurs have reason to think that the money supply has increased, they act as if these later effects will not occur. They employ factors and direct them, at first, based on the assumption that prices in general will not rise and that the patterns of demands for material consumer goods that emerge following the change in money supply will be the same as before it. Decisions made under these assumptions are bound to be erroneous. From the perspective of the law of consumer sovereignty, actions taken on the basis of false assumptions about the patterns of demand that will prevail in a final state of rest mis-allocate the factors of production.

During the period of adjustment, the function-performing entrepreneurs discover their initial errors and correct them. They continue to make changes until, in the final state of rest, all profit opportunities disappear and the factors of production are allocated once again according to the law of consumer sovereignty.

The Misesian economist calls the entrepreneur errors and correction of errors effects “economic calculation errors.” He says that the change in money supply distorts economic calculation.

**Money is not neutral:** the proposition that an increase or decrease in the money supply changes demands for goods and money balances because it changes the distribution of income and wealth and disrupts economic calculation.

**Economic calculation:** the decisions made by individuals acting in the entrepreneur role based on their predictions of the future prices of the goods they produce and of the factors they employ to produce them.

## 3. THE TYPES OF MONEY

An increase in the money supply always takes effect through the three channels described in Part Two. The theory is insensitive to the type of money that people use in exchange. The economist becomes concerned with the type of money when he turns to the task of evaluating intervention arguments concerning control over the money supply. Ever since people began to use money, the

leaders of government have asked whether they should intervene in some way. Such leaders, intellectuals and even economists have often recommended that the government should issue money and then take complete control over the amount that is issued. Many different intervention arguments have been advanced.

The theory required to evaluate such arguments has only been partly presented in this book up to this point. To complete it, time-related change must be added and the theory of the trade cycle must be developed. Still, it is useful to identify the types of money in preparation for the later discussion. There is a second reason to do this. Mises presented his theory of the effects of an increase in the money supply by assuming that money consists of two types of money – commodity money (gold) and transferable deposits issued by depository institutions. To help the reader who is already familiar with this theory understand the rationale for the approach taken in this book, a brief discussion of the different types will prove useful.

### Gold Money

The concept of gold money is straightforward. It is easy to imagine an economy in which gold is a medium of exchange. If, at first, no items were being used as money, one can identify profit opportunities for institutions that mint gold. The stamp imprinted by the mint would certify its purity. Users of gold coins in exchange could then be certain that if, for some reason, sellers would not accept such coins in future exchanges, they could sell their coins to ornament producers or industrial users, who would employ the raw gold as factors of production. Thus minting would make the gold less risky to use as a medium so long as counterfeiting was controlled.

Still, gold coins are not suitable for small exchanges and they provide good targets for robbers. Numbered gold certificates of various denominations are more convenient. Accordingly, one might expect that such certificates would ultimately replace the coins themselves in everyday exchange. Alternatively, a mint could mint coins from metals with lesser value, which it would agree to exchange at a fixed rate for gold coins. Still more convenient are transferable deposits.

### Transferable Deposits

The starting point for understanding transferable deposits is to conceive of an entrepreneur who provides *transferable deposit services*. Such an entrepreneur is called a depository institution. It provides the service of transferring ownership of money from one person to another. It accepts deposits of gold coins or its substitutes in deposit. As it does so, it promises, on demand, to transfer the ownership of the money to a person who the depositor specifies. If the recipient of the money is also a depositor, the money may never leave the institution.

Such transferable deposits would function as money in the same way as money that is not deposited. Sellers would just as readily accept a transferable deposit as coins in exchange for their products. Today the debit card is the best example of such services. When a depositor pays for a shirt by using her debit card, the depository institution is obligated by contract to transfer the legal right to the cash to the seller. Since different depositors

**Depository Institution:** a business firm that provides transferable deposit services. It accepts a money deposit from a customer. In return, it promises the customer that he can take the money, on demand, or that he can transfer ownership of it to another person whom he designates.

**Money substitute:** a legal right to transfer money that is held in a depository institution and that the institution actually keeps in its vaults.

may use different depository institutions, the transfer of ownership rights may require inter-institution relationships and occasional transfer of coins from one institution to another.

A depositor may change her mind and decide that instead of transferring her deposit to someone else, she will withdraw. To accommodate such changes of mind, the depository institution also grants the depositor the right to withdraw at any time, or on demand. In other words, it gives the depositor the right to redeem her deposit on demand.

When the first depository institution begins to supply transferable deposit services, the composition of the money supply changes. It consists at that point of coins plus transferable deposits. The deposited coins that used to be part of the money supply sit in the vaults (in reserve) of institutions. They are replaced by transferable deposits. Mises called the transferable deposits of this type “money substitutes.”

### Credit Money

So long as each depository institution holds all of its deposits in reserve – i.e., so long as it does not allow any of the deposited money to “leak” into circulation – its existence does not add to the money supply. The institutions merely perform the function of paying bills that the individuals themselves would have performed in the absence of the institution. However, if a depository institution issues promises to transfer more deposits than the coins it receives, it creates money. The new money is in the form of a person’s transferable deposits that are not backed by the deposits.<sup>5</sup> Mises called the additional money “credit money.” So long as the depository institutions keep some amount of gold in their possession in order to redeem deposits or to make transfers, then some of the transferable deposits are money substitutes. The rest is credit money.

**Credit money:** money issued by banks that is not backed by deposits.

**Credit expansion:** the issuance of credit money.

### Government Money

Governments were quick to get into the money-producing business. It is easy to understand why. Suppose that some sort of commodity money is already being used in exchange. Without a means of controlling counterfeiting, its use would, at best, be incomplete. As the monopolist over coercion and compulsion, the government is in the best position to deter such counterfeiting. Once government agents are used for this purpose, it becomes easy for them to get into the business of minting coins. The official government stamp on the coins, perhaps with a picture that represents the government, is an excellent way of sending a message to all prospective counterfeiters that they will be dealt with severely if they are caught.

When commodity money was first introduced, governments were monarchies and there were no printing presses. The gold money that was newly minted by a government expanded the sphere of capitalism that was under their rule. What better way for a monarch to advertise his sovereignty than to stamp a gold coin with the monarch’s picture! Moreover, if the conquered peoples had not yet introduced money, a government’s introduction of it would expand the sphere of capitalism and,

---

<sup>5</sup>For this situation to exist, depositors must have confidence that the deposited money will be transferred on demand. Such confidence may arise from repeated dealings. It may disappear if the financial institution fails to transfer ownership rights to cash as it promised.

correspondingly, the division of labor. The gold coins issued by governments were government money.

As more liberal and democratic governments emerged in the late 18<sup>th</sup> and 19<sup>th</sup> centuries, the tradition of government issue of coins carried over. Governments could have withdrawn from the business of coinage but they did not.

Another form of government money is *fiat money*. Fiat money is not backed by any commodity or redeemable into any commodity.

A government can always print fiat money. But it is not easy to persuade people to use it. Money users realize that governments can be overthrown or conquered by outsiders. Then, whatever promises are associated with it can become worthless. One way that governments have succeeded in causing fiat money to be accepted is through acclimation. The government first introduces paper as a substitute for, say, gold. It promises to trade each piece of paper for money for gold at a fixed rate and accumulates large stores of gold for that purpose. It gives everyone the legal right to withdraw the gold that is promised at any time. Then it faithfully keeps its promises for a time. After a while, when people have grown accustomed to using the paper, it suspends the right to withdraw.

So long as the government does not print too much additional paper money, people will continue to use it. To reinforce the use of its paper money, it can ban all gold sales and compel remaining holders of gold to exchange it at government offices for paper. After that people will only use the government money in exchange. The money supply will consist only of government fiat money.

Money that is printed by the government but that has no backing in gold or some other commodity is called *fiat money*. It bears a government stamp that indicates some special privilege such as a government's acceptance of it in the payment of debts. Other things equal, an increase in its amount has the same effects as an increase in credit money. Another name for fiat money is "fiduciary media."

<p><b>Fiat money:</b> government paper money that is not backed by gold or other commodity but that confers some special privilege on its holder. Also called fiduciary media.</p>
--

### Credit Expansion

Mises called the increase in money supply due to the issuance of credit money "credit expansion." Today, depository institutions are highly regulated and the deposits they receive from customers are fiat money. Whether they expand credit after they receive new deposits depends for the most part on whether the government's central bank permits it. Accordingly, it is broadly true that under modern conditions, government agents (officials at the central bank) control credit expansion. Through this control, the government can cause the money supply to increase or decrease without changing the amount of fiat money. When one says today that credit expansion causes a fall in the purchasing power of money, she has in mind a fall in purchasing power that is caused, *ceteris paribus*, by government agents. Also, when one writes that the government can finance its activities by "printing money," it may mean that it can do so by allowing greater credit expansion, so long as the depository institutions lend some or all of the additional credit money to the government.

---

[Other Austrian Economics Commentary](#)

**Please send feedback:**

**Email:** [gunning@nomadpress.com](mailto:gunning@nomadpress.com)

**[Go to Pat Gunning's Pages](#)**

---

#### REFERENCES

Mises, Ludwig von. (1953) *The Theory of Money and Credit* (new edition). New Haven: Yale University Press. (Originally published in German in 1912).

Mises, Ludwig von. (1966) *Human Action: A Treatise on Economics*. Chicago: Henry Regnery Company (First published in German in 1940).