

## **“Money and Inflation: A Functional Relationship”**

**March 2013**

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*Economic Education Group of the Federal Reserve Bank of St. Louis*

# PAGE ONE Economics

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NEWSLETTER

March ■ 2013

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## Money and Inflation: A Functional Relationship

Scott A. Wolla, Senior Economic Education Specialist

*"Economists like to argue that money belongs in the same class as the wheel and inclined plane among ancient inventions of great social utility. Price stability allows that invention to work with minimal friction."*

—Federal Reserve Chairman Ben S. Bernanke, February 24, 2006

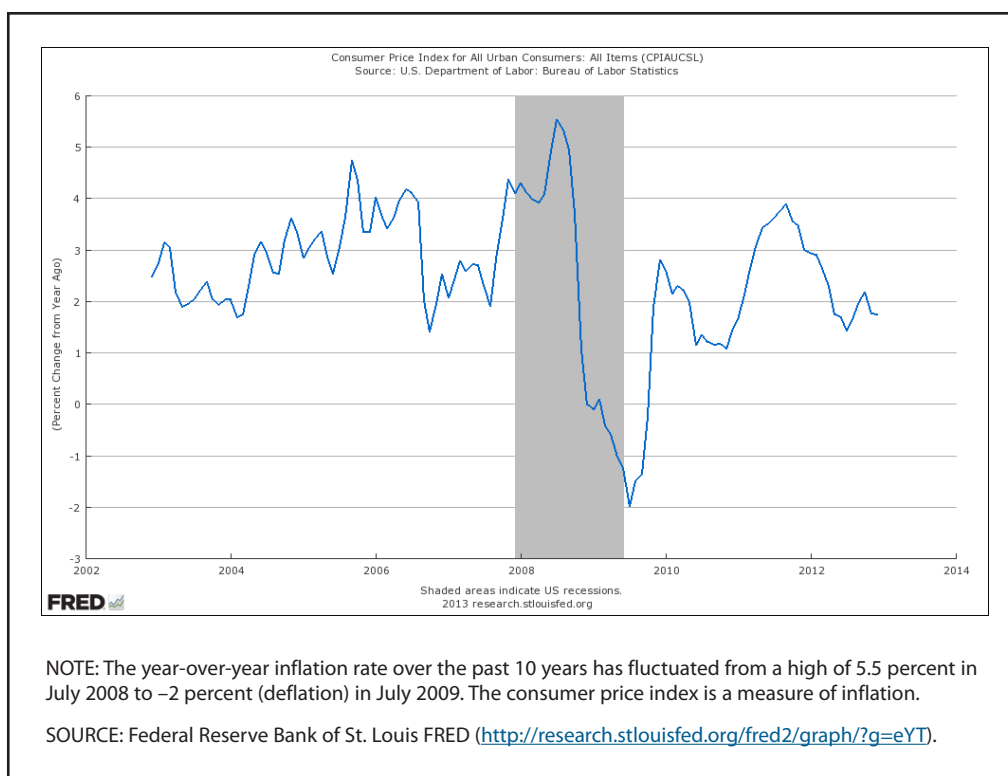
In its broadest sense, **money** is anything generally accepted in exchange for goods and services. In other words, money is defined by the functions it serves in the economy. In fact, while money has taken many forms over the ages—cowry shells, furs, beads, even large stone wheels—useful forms of money share three basic functions.

First, money is a **store of value**, which means that it holds its value over time. You can put money in a drawer today and spend it next year, when it will buy approximately the same amount of goods and services (minus inflation). Second, money is a **unit of account**, which means it is a standard measure of value. Listen to a conversation between two people about a recent purchase and you are sure to hear prices quoted in terms of money, not as hours worked or the equivalent value of the purchase in corn (or some other commodity). Third, money is a **medium of exchange**, which means it is generally accepted as a method of payment. I accept my paycheck in U.S. dollars because I know dollars are readily accepted for payment at the grocery store, gas station, and nearly anywhere I want to buy goods and services.

### Money Versus Barter

You might not think of it often, but money facilitates transactions in amazing ways. Think of conducting an economic transaction without money—a situation called **barter**. For barter to work properly, you would need to find someone with the good or service you want; in turn, that person would need to want to trade for what you have to offer. A difficult task to be sure. The situation in which two people want to barter with each other is known as the **double coincidence of wants**. Imagine an accountant who needs her car fixed. Under a barter system she would need to find someone who needed some tax advice in exchange for car repairs. She might find it difficult, and time consuming, to make such a transaction. Such searches for barter partners are inefficient and wasteful.

So, how does money solve the double coincidence of wants problem? In an economy based on money, the accountant provides her accounting services to whoever is willing and able to pay money for them. She then uses the money she earned to pay for car repair services from a mechanic, who is more than willing to accept cash for car repairs. Both parties to the transaction are willing to exchange goods or services for money. In the end, everyone involved is more



readily satisfied. Using money allows a more efficient outcome because it cuts down on **search costs**, and it allows workers to specialize in what they do best.

## Money and Inflation

Even when you have money available to purchase goods and services, as in the accountant/mechanic example, money's ability to serve its functions has limits. High rates of **inflation**, for example, make money less useful in many ways. First, when inflation rates are very high, the longer you hold money as cash, the more value it loses, so you attempt to spend it immediately rather than hold it. In this situation, money does not function as an effective store of value. In fact, if people expect high rates of inflation and the rate of their transactions increases as a result, inflation will increase even further. Second, if inflation rises to very high rates, money's usefulness as a unit of account diminishes. If prices are changing rapidly, communication between buyers and sellers becomes complicated. Comparing prices becomes complex if all prices are rising rapidly. Third, inflation reduces the usefulness of money as a medium of exchange. In the case of extreme inflation (hyperinflation), people may abandon the use of one currency for a more stable one. In Zimbabwe, for example, the inflation rate rose from 24,411 percent in 2007 to an estimated 89.7 sextillion (89,700,000,000,000,000,000) percent in November 2008 (Waller, 2011). Hyperinflation was so problematic that people abandoned the Zimbabwean dollar, preferring to conduct transactions in U.S. dollars or South African rand. The Zimbabwean currency became nearly useless as money and was removed from circulation in 2009 (Central Intelligence Agency, 2013). However, a market in Zimbabwean dollars has since developed for currency collectors and souvenir seekers—you can buy a Zimbabwean \$100 trillion dollar bill for approximately 5 U.S. dollars (McGroarty and Mutsaka, 2011).

So, if high inflation is bad, is an inflation rate of zero best? What is the optimal inflation rate? The Federal Reserve has determined that a 2 percent rate of inflation is most consistent with its **dual mandate** (the goals created for it by Congress) of maximum employment and **price stability**. Two percent is considered a low rate of inflation, which only slightly distorts the functions of money discussed previously. And, if the inflation rate is stable, people come to build 2 percent into their expectations of future prices, and wages and interest rates can adjust accordingly.

If the low inflation rate of 2 percent is good, why not have an even lower rate of zero? When the inflation rate is less than 2 percent, the danger of **deflation** exists. Falling prices might sound appealing, but falling prices would likely lead to falling wages as well—and deflation is associated with very weak economic conditions (Board of Governors of the Federal Reserve System, 2013).

An inflation rate greater than zero maintains an “inflation buffer,” which reduces the chances of deflation should the economy start to weaken (Bernanke, 2010). On the other side of the Fed’s dual mandate (maximum employment), it is generally agreed that economic growth and employment are enhanced when inflation is low and stable (Bernanke, 2006).

## Conclusion

Money facilitates transactions in ways that keep the economy functioning well, but not so well when inflation is high and volatile. In contrast, a low and stable rate of inflation helps ensure that money performs its functions efficiently. ■

## REFERENCES

Bernanke, Ben S. “The Benefits of Price Stability.” Speech presented at The Center for Economic Policy Studies and on the occasion of the Seventy-Fifth Anniversary of the Woodrow Wilson School of Public and International Affairs, Princeton University, Princeton, New Jersey, February, 24; 2006; <http://www.federalreserve.gov/newsevents/speech/bernanke20060224a.htm>.

Bernanke, Ben S. “Monetary Policy Objectives and Tools in a Low-Inflation Environment.” Speech presented at the Revisiting Monetary Policy in a Low-Inflation Environment Conference, Federal Reserve Bank of Boston, Boston, Massachusetts, October 15, 2010; <http://www.federalreserve.gov/newsevents/speech/bernanke20101015a.htm>.

Board of Governors of the Federal Reserve System. “Why Does the Federal Reserve Aim for 2 Percent Inflation Over Time?” *Current FAQs*, January 3, 2013; [http://www.federalreserve.gov/faqs/economy\\_14400.htm](http://www.federalreserve.gov/faqs/economy_14400.htm).

Central Intelligence Agency. “Zimbabwe.” *The World Factbook*, January 22, 2013; <https://www.cia.gov/library/publications/the-world-factbook/geos/zi.html>.

McGroarty, Patrick and Mutsaka, Farai. “How to Turn 100 Trillion Dollars Into Five and Feel Good About It.” *Wall Street Journal*, May 11, 2011; <http://online.wsj.com/article/SB10001424052748703730804576314953091790360.html>.

Waller, Christopher J. “Independence + Accountability: Why the Fed Is a Well-Designed Central Bank.” *Federal Reserve Bank of St. Louis Review*, September/October 2011, 93(5), pp. 293-301; <http://research.stlouisfed.org/publications/review/11/09/293-302Waller.pdf>.

## GLOSSARY

**Barter:** Trading goods and services for other goods and services without using money.

**Dual mandate:** The Federal Reserve's responsibility to use monetary policy to promote maximum employment and stable prices.

**Double coincidence of wants:** Each participant in an exchange is willing to trade what he or she has in exchange for what the other participant is willing to trade.

**Deflation:** A general, sustained downward movement of prices for goods and services in an economy.

**Inflation:** A general, sustained upward movement of prices for goods and services in an economy.

**Medium of exchange:** Anything generally accepted in exchange for goods and services.

**Money:** Anything generally accepted in exchange for goods and services. Money serves as a store of value, unit of account, and medium of exchange.

**Price stability:** A low and stable rate of inflation maintained over an extended period of time.

**Search costs:** The financial and opportunity costs consumers pay when searching for a counterparty in a transaction.

**Store of value:** The ability of a currency, commodity, or other type of capital to retain its worth over time.

**Unit of account:** A common measurement used to compare the value of goods and services.

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Name\_\_\_\_\_ Period\_\_\_\_\_

Federal Reserve Bank of St. Louis *Page One Economics Newsletter*:  
"Money and Inflation: A Functional Relationship"

After reading the article, answer the following questions.

1. How does money solve the double coincidence of wants problem that arises in a barter system?

2. In the table below, describe each of the functions of money and how inflation reduces the ability of each of these functions.

Function	Description of function	How inflation reduces this function
Store of value		
Unit of account		
Medium of exchange		

3. Why is an inflation goal of 2 percent better than zero percent?

## Teacher's Guide

### Federal Reserve Bank of St. Louis *Page One Economics Newsletter*: "Money and Inflation: A Functional Relationship"

After reading the article, answer the following questions.

**1. How does money solve the double coincidence of wants problem that arises in a barter system?**

In a barter system, you would need to find someone with the good or service you want; in turn, that person would need to want what you have to offer. In a money-based economy, people sell their labor for wages (money) and buy the goods and services they want with money. Finding people willing to trade goods and services in exchange for money is easier than barter—it reduces search costs.

**2. In the table below, describe each of the functions of money and how inflation reduces the ability of each of these functions.**

Function	Description of function	How inflation reduces this function
Store of value	Money holds its value over time.	Inflation is a general, sustained upward movement in prices for goods and services in the economy—that is, inflation reduces the purchasing power of money. So, during periods of inflation, money is a less effective store of value.
Unit of account	Money is a standard measure of value.	If all prices are rising rapidly, comparing prices becomes complex and money is less useful to measure value.
Medium of exchange	Money is widely accepted as a method of payment.	If a country's inflation becomes extreme (hyperinflation), its currency will be less appealing to buyers and sellers; another country's currency may become preferable as a more effective and stable medium of exchange.

**3. Why is an inflation goal of 2 percent better than zero percent?**

Two percent is considered a low rate of inflation, which only slightly distorts the functions of money. When the inflation rate is less than 2 percent, the danger of deflation exists—and deflation is associated with very weak economic conditions. An inflation rate greater than zero maintains an "inflation buffer," which reduces the chances of deflation should the economy start to weaken.

## For Further Discussion

Review these main points from the essay and lead a discussion using the questions provided below.

- Money has existed in nearly all societies for thousands of years and has taken many forms.
- Without money, people would have to barter for goods and services.
- Barter is trading goods and services for other goods and services without using money.
- Barter requires a double **coincidence of wants**, a situation in which each participant in a transaction is willing to trade what he or she has in exchange for what the other participant is willing to trade.

Lead your students in a discussion using the following questions and responses.

### Lesson One: Barter imposes search costs that make trade very difficult.

1. Tell your students that you want to hire someone to mow your lawn, but you have only paper clips—lots and lots of paper clips—to offer as payment. You are willing to pay 5,000 paper clips each time your lawn is mowed. You predict you will need your lawn mowed every week during the spring and summer and less often in the fall.
2. Ask the students who will accept your offer of 5,000 paper clips in exchange for each lawn mowing. (It is likely no students will volunteer.)
3. Ask the students if paper clips have value. (Yes; in fact, tell the students that 5,000 paper clips have an approximate monetary value of \$30.)
4. Ask the students why they are not willing to mow your lawn in exchange for paper clips. (They likely do not want 5,000 paper clips; they can't use that many paper clips; it would be difficult to exchange the paper clips for other things they want.)
5. Ask the students if they think it would be difficult for you to find someone who will trade paper clips for lawn mowing. (Yes; people who mow lawns might not want 5,000 paper clips.)
6. Tell the students that **search costs** are the time and effort a person spends looking for someone to trade with. Define search costs as the opportunity costs of searching for a counterparty in a transaction. For example, finding someone to mow my lawn for paper clips might require me to advertise, which entails a financial cost. Or it might require me to spend time interviewing several people before I find someone willing to mow for paper clips. That time could have been spent with friends or earning income. In other words, there are opportunity costs.
7. Tell the students that a double coincidence of wants makes barter difficult. Tell the students that a medium of exchange—a single item that both people want that could be used to facilitate the trade—might make the process easier.
8. Ask the students if they can think of items that might fit this description. (Money)
9. Ask the students whether they would mow a lawn for \$30. (Several volunteers will likely emerge.) Remind them that those 5,000 paper clips have a retail value of approximately \$30 and ask why they would accept \$30 but not \$30 worth of paper clips. (Again, people who mow lawns might not want 5,000 paper clips.)



10. Ask the students to summarize how a money-based economy reduces search costs. (It is easier to find someone to mow a lawn for \$30 than for 5,000 paper clips. People will readily accept money because it is a good medium of exchange—they know that other people will also readily accept it for goods and services they need.)

## **Lesson Two: Money allows for degrees of specialization that would not occur in a barter economy.**

Suppose Mr. Smithton has developed highly specialized skills. He is an engineer who designs a microscopic part used in disk drives of large industrial computers. His employer is one of the few companies in the world that produces this vital part and it is very profitable as a result. Because his skills are highly specialized and valuable, his company pays him a large salary to perform his duties.

Now, imagine Mr. Smithton has these same skills in a barter economy. In a barter economy, he must trade his highly specialized skill for food and housing.

1. Ask the students if they can think of any food producers (farmers) who might have food to offer Mr. Smithton in return for talents designing highly engineered microscopic parts. (Probably not)
2. Ask the students if they can think of any landlords who will rent an apartment to Mr. Smithton in exchange for his talents. Why not? (Probably not. Unless a landlord also owns a large industrial computer manufacturing firm, he or she would probably not want his skills.)
3. Remind the students that search costs are the time and effort a person spends looking for someone to trade with. In this case, Mr. Smithton might spend hours or days trying to find someone who will trade goods and services he wants in exchange for his specialized engineering skills.
4. Ask the students if search costs are likely to be higher or lower than average for a person with highly specialized skills. (Search costs are likely to be very high for workers with highly specialized skills.)
5. Ask the students how a person with more generally appealing skills such as a baker, carpenter, or plumber might fare in a barter economy. (They would probably find it easier to barter with their skills. In other words, their search costs would be lower than for those with more specialized skills.)
6. Ask the students what might happen to the incentives for people to develop specialized skills in a barter economy. (Because people with highly specialized skills might have the most difficulty finding trading partners, there would be an incentive for people to develop more general skills. In fact, as an engineer Mr. Smithton might have such difficulty trying to find food that he would reduce the time he spends engineering to spend more time gardening.)
7. Think about highly specialized surgeons or the people who fix sophisticated computers. Do we generally regard specialized skills as good for the economy? (Workers with highly specialized skills are important to the development of new technologies that increase productivity, produce jobs, and potential economic growth. They are very important to the economy. Imagine all of the specialized labor involved in the design and production of an automobile. It is doubtful that something as complex as an automobile could exist in a barter-based economy.)

## **Conclusion**

While we may take money for granted, it is truly amazing. Money acts as a medium of exchange. This allows people to make transactions for goods and services in ways that minimize search costs and encourage workers to develop highly specialized skills that create benefits for a growing economy.

## **Common Core State Standards**

### **Grades 6-12 Literacy in History/Social Studies and Technical Subjects**

- **Key Ideas and Details**

RH.11-12.1: Cite specific textual evidence to support analysis of primary and secondary sources, connecting insights gained from specific details to an understanding of the text as a whole.

RH.11-12.2: Determine the central ideas or information of a primary or secondary source; provide an accurate summary that makes clear the relationships among the key details and ideas.

- **Craft and Structure**

RH.11-12.4: Determine the meaning of words and phrases as they are used in a text, including analyzing how an author uses and refines the meaning of a key term over the course of a text (e.g., how Madison defines *faction* in *Federalist* No. 10).