POWELL CENTER FOR
ECONOMIC LITERACY

Lesson Plan

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Money Management and Imperial Power

Time Required

2 days

Economic Concepts

Inflation
Money Supply
Velocity of Money

Overview

The following lesson integrates principles of macroeconomics in the teaching of world history. The lesson develops an analysis of historical events based on a monetarist view of macroeconomic management. The topics selected for analysis include causes of the rise and fall of great powers and the role of macroeconomic management in establishing hegemonic power during the evolution of the modern world system of international relations. These topics are related to central themes of global education.

Objectives

- Students define inflation and hyperinflation and identify likely causes of each.
- Students use empirical data to construct a model of economic explanation.
- Students state and explain the equation of exchange and the quantity theory of money.
- Students use the quantity theory of money in formulating explanations of historical events.
- Students use monetarist theory in analyzing macroeconomic policy prescriptions.
- Students use the theory of money to explain the relationships of global interdependence.
- Students evaluate an international monetary system based on the gold standard.
- Students speculate about economic reasons for the rise and decline of great powers.

Materials and Handouts

- 2 balloons
- Handout 1 **Hyperinflation in Germany in 1923**
- Handout 2 **The Decline of the Roman Empire**

- Handout 3 **The Decline of the Spanish Empire**
- Handout 4 **The Decline of the Chinese Empire and the Expansion of the British Empire**
- Handout 5 **Hegemony through the Balance of Payments?**

Teaching Activity

Inflation, Deflation, and Hyperinflation

Introduce the concept of inflation by citing a list of prices from an old *Statistical Abstract of the United States*. For example, you might use the following list of 1940 prices — potatoes: 2 cents/lb., flour: 4 cents/lb., milk (delivered fresh!): 25 cents/half a gallon, chuck roast: 22 cents/lb., the median cost of a house: $2,900, the median monthly rent: $24.

Define *inflation* as a sustained rise in the average level of prices. Enhance the definition by blowing up a balloon and explaining that it represents the level of prices. Once the balloon is inflated, let it go and ask the students what happened. (*Deflation*.)

Inflate the balloon again until it bursts and ask the students what happened. (*Hyperinflation led to an economic breakdown*.)

Ask the students to consider briefly whether all inflation is undesirable. In discussing their answers, establish the following points:

- High inflation is undesirable; it distorts price signals and leads to a misallocation of resources. When inflation is high, producers find it hard to tell if a rise in the price of a product reflects general inflation or an increase in demand for that product. High rates of inflation are therefore bad for economic growth and jobs.
- Low inflation is desirable for the opposite reasons.

For a lucid discussion of the desirability of low inflation, direct the students to "How Low Can You Go?" *The Economist*, November 9, 2000.

State that you are about to demonstrate one of the causes of inflation.

Building the Model of the Quantity Theory of Money

Give each student a small amount of token money (for example counters or beans), and announce that in this activity each token will be worth $5. Keep track on the board of the total amount of money you have handed out by writing, "Money Supply: $100."

Auction off a candy bar, a bag of candy, or an apple. Only token money can be used during this and subsequent auctions.

Keep track on the board of the final sale price of the candy bar in this auction by writing, for example:

1st Auction	Money Supply: $100	Price of candy bar: $15

Allow the students to keep the money they have not spent; increase the money supply by handing out additional token money to them — a few more counters per student. Keep track of the new amount of money supply on the board. Auction off a second bar of candy (or similar item) and repeat the prior steps.

Expand the money supply further by handing out additional token money. Then run a third and final auction, repeating prior steps. Your board may look like this:

1st Auction	Money Supply: $100	Price of candy bar: $15
2nd Auction	Money Supply: $200	Price of candy bar: $38
3rd Auction	Money Supply: $500	Price of candy bar: $120

Ask the students to describe and explain what happened during this activity. In discussing their answers note that the price of the auctioned item increased as a result of an increase in the money supply because the students spent the additional money.

Ask the students to consider whether the final sale price of the candy bar in the third auction would have been different had 1,000 candy bars been offered for sale instead of only one. They will probably answer that the price would have been much lower. Emphasize the underlying point: increasing the money supply is apparently inflationary when the rise in the money supply exceeds the increase in the number of goods.

Ask: "If you were to assemble data which may provide you with evidence that changes in the money supply are linked to changes in the level of prices, what data would you gather?" When discussing answers suggest, for example, inflation rates and money supply growth rates or inflation rates and value of the money supply over a period of time. You may choose a time series as in the table below.

	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
M1 billion $	$724.4	749.9	787.0	794.2	825.8	897.3	1,025.0	1,129.8	1,150.7	1,129.0	1,081.1
Inflation rate	1.9	3.6	4.1	4.8	5.4	4.2	3.0	3.0	2.6	2.8	3.0
Information obtained from www.whitehouse.gov/fsbr/esbr.html.											

M1 is a measure of the money supply. It includes currency (coins and paper money) held by the public and deposits at the banks such as checking accounts.

You may also choose to share with the students diagrams based on such statistics. All current textbooks for introductory macroeconomic courses contain an array of such diagrams. See for example, Mankiw, N.G., *Principles of Macroeconomics*, New York: Harcourt College Publishers, 2001. Particularly relevant is Mankiw's chapter on money growth and inflation.

Tell the students that one theoretical model formally expresses the relationship between money supply and inflation. This model is called the equation of exchange. Write the equation on the board as follows: **M x V = P x Q**.

Explain the symbols. **M** is the money supply, the total quantity of currency (coins and paper money) held by the public and deposits at banks. **V** is velocity, the average number of times a unit of money is spent during a time period. **P** x **Q** is the total value of spending required to purchase the economy's output; **P** represents the average price, and **Q** represents the units of total output.

Show the students how the equation works by discussing the following problem: "Yahooland, a hypothetical economy, produces one product only, bread. Each month 100 loaves are produced. By the end of each month, Yahooland's consumers purchase all the bread produced. Throughout last year, the average price of the loaf of bread remained stable at $1."

Ask: "What was the value of the total spending required to purchase last year's output of this economy?" *Answer: 100 loaves x 1 dollar x 12 months = 1,200 dollars.*

Ask: "Given that Yahooland's money supply (M) equals $100, how many times on average, must each dollar have changed hands (V) in Yahooland last year?" *Answer: 12 times, since 1,200 = 12 x 100.*

Ask: "Suppose that the people of Yahooland learned of an imminent attack to be launched against them by a warring neighbor state. In response, the consumers of Yahooland hide away — remove from circulation — half of the nation's money supply. Assuming that prices and the economy's total output remain the same, how would the velocity of circulation (V) have to change so that consumers could purchase Yahooland's total annual output?" *Answer: Since M = 50, V will have to double in value (V = 24) to enable consumers to spend $1,200, the value of the total annual output.*

Hyperinflation in Germany (1923)

Distribute Handout 1, **Hyperinflation in Germany in 1923**. Discuss possible reasons for hyperinflation in Germany in 1923. During the discussion, note that Gutman's diary documents an increase in the velocity of circulation, which followed an expansion of the money supply when the German government attempted to pay its bills by printing money. (Note: Here, M and V both rise; at other times, they might move in opposite directions. Teachers should not infer from this text any "normal" or causal relationship between V and M.)

Tell the students that you want them to consider some additional examples of the management of the money supply and the consequences of different policy decisions. You will provide examples of historical events and ask the students to predict what consequences might follow from different policy decisions related to those events. You also will invite the students to speculate about similarities among great empires in history.

Distribute Handout 2, **The Decline of the Roman Empire**, and discuss the question it poses. Note that the emperor mentioned here is Caracalla (211-217 A.D.). Ill advised by his economic advisors, he did debase the empire's gold and silver coins, thus undermining the stability of the value of the currency. The result was that good money was driven out by bad money (Gresham's law), while the velocity of circulation of bad money increased — bringing about rapid inflation and further reducing real wages. The political effect was further dissatisfaction among the mercenary troops. The end of the Roman Empire is partly attributed to bad management of the money supply.

Distribute Handout 3, **The Decline of the Spanish Empire**. Discuss the question it poses. Enrich likely answers by providing the following information, which you may choose to deliver as a mini lecture. The treasure of the Americas provided Spain with purchasing power, which ultimately stimulated the development of England, France, Holland and other parts of Europe. Spain's gains were only temporary because it spent the bullion of the Americas to buy consumption goods, which these other nations exported. Further, Spain's windfall gains led the government to pursue a war-mongering policy, which drained the Spanish treasury. By the beginning of the 18th century, as stocks of bullion were depleted in the mines of Mexico and Peru, the momentum of the Spanish economy evaporated. The artisans and entrepreneurs Spain needed to sustain its economic growth were insufficient to generate wealth to counterbalance the government's debt and the expenditure needed to sustain a plethora of priests, lawyers and bureaucrats. Spain's economy therefore declined absolutely and relative to the other leading nation states of Europe. For further discussion of the impact of American bullion on Europe's economic growth, see Ferdinand Braudel, *The Mediterranean and the Mediterranean World in the Age of Philip II*, Los Angeles: University of California Press, 1996.

Expansion of the money supply does not guarantee prosperity in the long run. The economy's output in the long run is determined by supplies of capital and labor and the available production technology for turning capital and labor into output. This is a fundamental assumption of the "quantity theory of money."

State that the quantity theory of money shows how changes in the money supply (M) are related to changes in the economy's output (Q) in the short run, and to changes in the level of prices (P) in the short run and in the long run. Note that Q represents the "real output," as opposed to the "nominal output" (P x Q). The real output is expressed in constant dollars.

Pose the following question: "The equation of exchange, M x V = P x Q, is a representation of the quantity theory of money. If V fluctuates whenever M changes, will changes in M have an impact on the nominal output?" *Answer: If V increases as M increases it will magnify M's impact. If V falls while M increases, it will reduce or even cancel out M's impact. The teacher is reminded once again that there is no "normal" relationship inferred between M and V.*

Ask: "Apart from the assumption that the economy's output in the long run is determined by real factors and not money, what other assumptions must hold for this theory to hold?" *Answer: For changes in M to cause changes in P and Q, the velocity*

(V) has to remain stable and must not be affected by changes in the money supply (M). And evidence indicates that velocity is usually resistant to change.

Quantity Theory of Money and Imperial Power

State that you are about to demonstrate how the quantity theory of money helps us understand some aspects of the concept of global interdependence. This concept lies at the heart of globalization, a historical process (or set of processes) of gradual transformation of the modern world into the contemporary system of international economic, political and social relations. The challenge of global interdependence is that it affects state power of nation-states directly and unevenly. The quantity theory of money helps us understand some aspects of globalization as a process of historical transformation of state power. For a detailed analysis of this topic the students may visit the following Web sites:

- www.polity.co.uk/global/summary.htm
- www.theglobalsite.ac.uk/globalization//

Distribute Handout 4, **The Decline of the Chinese Empire and the Expansion of the British Empire**, and discuss the question it poses. Use the following information to direct a class discussion.

When gold and silver are the only forms of international payment, a trade deficit reduces the money supply of any nation whose imports are greater than its exports. England found itself in this position. Its trade deficit had to be financed with an outflow of bullion since the Chinese were not interested in purchasing English goods and did not want to buy England's financial assets — capital that could have been used for payments in lieu of money.

Ask: "Since bullion made up England's money supply, what must have been the effect of its outflow on the level of prices? Why?" *Answer: In accordance with the quantity theory of money, a reduction in the money supply must have reduced spending and consequently the price level (deflation).*

Ask: "What were the likely effects of these changes on sales revenues and business profits?" *Answer: It is likely that both revenues and profits fell. Note: some perceptive students might note that profits might have remained steady if input prices fell along with goods prices.*

Ask: "Under these circumstances what is likely to have happened to the output of the English economy?" *Answer: It must have been reduced; businesses must have reacted to the fall in revenues and profits by cutting down production and laying off workers.*

The British government gave in to the entreaties of opium traders (such as the firm of Jardine Matheson) and vigorously defended the opium trade to the point of declaring war against China. By now, it should be obvious why. Revenues from exports of opium paid for imports of silk and tea. Britain was defending its balance of payments, its monetary stability, and the prosperity of its national economy.

If you have covered in your lessons the market for loanable funds, you may add the following points to your discussion. Otherwise introduce directly the question in the next paragraph. You may point out that lower spending could lead to a decrease in savings and therefore in loanable funds, resulting in higher interest rates and a tightening of credit. Advocates of the quantity theory of money (monetarist tradition) would add that an unanticipated fall in prices increases real wages (the purchasing power of wages) and provides an incentive to reduce costs by laying off workers. For these reasons a fall in the economy's output — in the **short run** — would be expected.

Ask: "Would the gold standard have had any merits?" If the class does not see any merits, ask: "If gold served as the international medium of exchange and a government allowed prices to rise relative to prices in other nations, what would you expect to be the effect on its imports? Why?" *Answer: Its imports would rise relative to its exports since foreign goods would be cheaper. The nation would experience a "deficit in its balance of payments."*

Ask: "What would be the effect of the balance of payments deficit on this nation's money supply and the level of prices?" *Answer: Both would fall.*

Ask: "Do you see any merit in maintaining a gold standard?" *Answer: One merit is that the gold standard promoted long-term price level stability within countries and internationally. Downside: countries on the gold standard did experience short-term price instability.*

Announce that finally you would like the class to consider how monetary management and the international monetary system may combine to vest one country with hegemonic power. Define "hegemony" as dominance of leadership, especially by one nation over others.

Distribute Handout 5, **Hegemony through the Balance of Payments?** Ask the class to read it. Discuss the answer to the question posed on the handout as follows.

Ask: “When nations operate under the gold standard their balance of payments deficits result in a fall of their money supply. Would this also happen when nations operate under a gold-exchange standard?” *Answer: Yes, except in one case: the country that issues the reserve currency would not experience a reduction in its money supply.*

Ask: “Some economic historians have called this an ‘extraordinary privilege’ for the reserve currency-issuing nation. In what sense do you think this would be a privilege?” *Answer: The reserve currency-issuing nation would be the only one that could pay its international bills by printing money and running balance of payments deficits.*

Ask: “Would the reserve currency-issuing nation be likely to abuse this privilege?” *Answer: Yes. It would be tempted to increase its prosperity and to finance the expansion of its economy simply by printing money.*

Ask: “If the reserve currency-issuing nation abused this privilege, how would other nations respond?” *Answer: They would seek guarantees — for example, high interest rates for holding funds denominated in the reserve currency. Alternatively, they could demand to be paid in gold.*

Ask: “Do you see any problems arising from such circumstances?” *Answer: The system would work only if the reserve currency-issuing nation pursued and was able to implement a policy of economic stabilization, for itself and the world economy. This would be a difficult task, especially given the likelihood that it would abuse the privilege to which we referred earlier.*

Allow the students to speculate on the likely problems that may befall an international monetary system based on a gold-exchange standard. Conclude by suggesting that the students research the reasons for the collapse of the Bretton Woods system in 1971. The reasons are clearly stated in a number of studies including Benjamin J. Cohen’s well-known paper available at the following Web site: www.polsci.ucsb.edu/faculty/cohen/inpress/bretton.html.

Write the following proposition on the board: “Economic theory is a necessary tool of historical understanding.” Allow students to reflect on the usefulness of economic theory in promoting historical understanding and ask the class to write an argument in favor of the proposition, referring to evidence from the various examples you used during this lesson.

HANDOUT 1

Hyperinflation in Germany in 1923

Discuss possible reasons for hyperinflation in Germany in 1923.

Price in marks of a loaf of bread in Berlin

December	1918	0.54
December	1921	3.90
December	1922	163.50
August	1923	69,000.00
October	1923	1,743,000,000.00
November	1923	201,000,000,000.00

From the diary of W. Gutman, August, 1923

"At eleven o'clock in the morning ... everybody gathered in the factory forecourt where a five-ton lorry was drawn up loaded brimful with paper money. The chief cashier and his assistants climbed up on top. They read out names and just threw out bundles of notes. As soon as you caught one you made a dash for the nearest shop and just bought anything that was going."

Excerpt from W. Gutman and P. Meehan, The Great Inflation*, London: Saxon House, 1975, p. 28.*

Handout # 2

Question on the decline of the Roman empire.

You are a Roman emperor in the year 212 AD. Constant attacks of the enemies of Rome have reduced trade resulting in a considerable loss of revenue for the imperial government. To protect the empire you have employed thousands of mercenaries who demand to be paid in hard cash - gold or silver. You find you are running short of precious metals. Your economic advisors - having never had the opportunity to read the works of Milton Friedman - suggest that you should remint the gold and silver coins you have in your vaults, adding base metals. Should you follow their advice? What might be the effects of such a policy?

HANDOUT 3
The Decline of the Spanish Empire

In the late 1400s and early 1500s. Spain acquired lands in the New World that contained vast quantities of gold and silver. Between 1503 and 1650, some 16 thousand tons of silver and 185 tons of gold were shipped to Spain from the New World. Notwithstanding this tremendous infusion of precious metals, Spain's economic growth was subsequently curtailed, and by the middle of the 18th century Spain had been transformed from a superpower to a second rate world power. After reading the following quotation, suggest an explanation of the decline of the Spanish empire. In your response, include your thoughts as to how the inflow of gold and silver (additions to Spain's money supply) ought to have been managed and how it ought to have been spent. In 1675 A.D., Alfonso Nunez de Castro, a Spanish aristocrat expressed the views of the Spanish elite with regard to the use of the silver and gold as follows:

"Let London manufacture those fabrics of hers to her heart's content; Holland her chambrays: Florence her cloth; the Indies their beaver and vicuna; Milan her brocades; Italy and Flanders their linens, so long as our capital can enjoy them; the only thing it proves is that all nations train journeymen for Madrid and that Madrid is the queen of Parliaments, for all the world serves her and she serves nobody." C. Chipola, Before the Industrial Revolution: European Society and Economy, London: Methuen,l976, p, 25.

HANDOUT **4**

The Decline of the Chinese Empire and the Expansion of the British Empire

Until the Opium Wars of the middle of the 19th century, China had stayed on the periphery of the world economy following a policy of self-sufficiency and of supreme isolation.
European powers -primarily Britain -used military aggression to force China to become a participant in the opium trade and to permit establishment of European trading posts on its soil, granting special privileges to European and American merchants. The Opium Wars signaled the end of the imperial power of the Manchu Dynasty and the beginning of the disintegration of the Chinese empire. The island of Hong Kong was ceded to England by the treaty of Nanking (1842 A.D.) which concluded the first round of hostilities of the Opium Wars. The following problem situation invites you to consider the importance of trade and the management of the money supply as factors related to the decline of the Chinese empire.

You are "Her Britannic Majesty," the empress of a glorious 19th-century imperial power that trades with China. Your subjects have developed quite a taste for tea, which has to be imported from China. To the dismay of your economic advisors, the Chinese, under the guidance of their government, are supremely uninterested in your trade goods and demand to be paid in silver or gold for the tea they export to your empire. This is a matter of grave concern to all of your esteemed ministers who are well acquainted with the quantity theory of money! The world economy's monetary system is based on the "gold standard": Silver or gold bullion is the only form of international money acceptable in the world economy at this time.

Your merchants inform you that the only good which the Chinese will exchange for tea is opium. Luckily, the British Empire can produce masses of opium in one of its far off regions, India. Cultivation of opium poppies begins in earnest, with your tacit support. Although the imperial government of China objects, opium is smuggled into China by means of fast ships and bribed Chinese officials. Your merchants have formed a small enclave in Canton, and for several years they are able to exchange opium for tea and silver which is then exported to Britain (even though the imperial government has declared the exportation of silver to be illegal). Eventually, in 1839, the Chinese government intervenes and expels your merchants from Canton.

How do you react? Justify your response with appropriate reference to the management of the money supply. Consider the implication of the quantity theory of money for an economy which has to pay for its imports with silver and gold bullion.

HANDOUT 5
Hegemony through the Balance of Payments?

During the first World War, European powers printed money to finance their enormous expenses. This policy fatally disrupted the classic gold standard monetary system. For several years only the U S dollar remained tied to gold. Dollar credits became the means by which the Allies financed international transactions outside their imperial systems. Under these circumstances the international monetary system became a "gold exchange standard" with the dollar being the currency held by the members of the system as a "reserve currency" -that is, a currency in place of gold. In due course, the British pound joined the dollar. The pound had been a reserve currency within the orbit of the British Empire. With the pound as a reserve currency, London remained a major center of international financial activity. The whole system was formally acknowledged in the Genoa agreement of 1922.

In July 1944, representatives of 44 countries meeting at Bretton Woods, N.H., drafted and signed the Articles of Agreement of the International Monetary Fund. The agreement set up an international monetary system based on fixed exchange rates against the U.S. dollar at a price of $35 per ounce. The system was based on a "gold-exchange standard." Member states held their international reserves in the form of gold or dollar assets and had the right to sell dollars to the Federal Reserve for gold at the official price. Economists have argued that the country that issues the reserve currency enjoys an extraordinary privilege: it is vested with power of hegemony in the international monetary system. Naturally it is prone to abuse that power.

Do you agree? Explain your reasons.