

*Money Makes the World Go Round:
The Role of the Federal Reserve*
Taking Conference Content Back to the Classroom

Finding Economics Where You Live

Dr. Anne Macy
Associate Professor of Finance
West Texas A&M University

June 8, 2007

Situation

The hardest problem students have with monetary policy, interest rates, and inflation is that they have not been buyers for a long enough time period to see the prices change and the amount that \$1 buys change.

Four examples that show the effects of inflation and monetary policy on everyday life:

- Inflation at the Movies
- Inflation & Interest Rates and Borrowers & Lenders
- Inflation and Interest Rates in Songs
- Interest Rate Changes and the Stock Market

Inflation at the Movies

Steven Spielberg is probably the most famous living director in the world and one of the most accomplished of all-time. His movies have domestic box office earnings of over \$3 billion and global earning over \$6 billion.

Listed below are the movies Spielberg has directed and domestic box office revenue in current year dollars. List in order the five Spielberg movies with the highest box office performance and the five in with the lowest performance in real dollars (1983 as a base).

Total Gross Revenue in Millions for Spielberg Movies (Year Released and CPI in that Year with 1983 = 100)

\$260 for Jaws (1975 with CPI at 54.0)
\$162 for Close Encounters of the Third Kind (1977 with CPI at 61.0)
\$32 for 1941 (1979 with CPI at 72.6)
\$242 for Raiders of the Lost Ark (1981 with CPI at 91.6)
\$400 for E.T. The Extra-Terrestrial (1982 with CPI at 97.5)
\$140 for The Color Purple (1985 with CPI at 107.8)
\$22 for Empire of the Sun (1987 with CPI at 113.6)
\$191 for Indiana Jones and the Last Crusade (1989 with CPI at 124.0)
\$44 for Always (1990 with CPI at 130.7)
\$102 for Hook (1991 with CPI at 136.2)
\$357 for Jurassic Park (1993 with CPI at 144.4)
\$185 for Schindler's List (1993 with CPI at 144.4)
\$229 for The Lost World (1997 with CPI at 160.5)
\$44 for Amistad (1998 with CPI at 163.2)
\$216 for Saving Private Ryan (1998 with CPI at 163.2)
\$78 for AI: Artificial Intelligence (2001 with CPI at 177.1)
\$132 for Minority Report (2002 with CPI at 179.9)
\$164 for Catch Me if You Can (2003 with CPI at 184.0)
\$77 for The Terminal (2004 with CPI at 188.9)
\$234 for War of the Worlds (2005 with CPI at 195.3)
\$47 for Munich (2005 with CPI at 195.3)

Quiz:

Which movies are clearly in the top 5? Which movies are clearly in the bottom 5?

Answer:

Total Gross Revenue in Millions for Spielberg Movies (Year Released and CPI in that Year with 1983 = 100)

\$260 for Jaws (1975 with CPI at 54.0) = $260/54.0(100)$ = **\$481.5 million**

\$162 for Close Encounters of the Third Kind (1977 with CPI at 61.0) = $162/61.0(100)$ = **\$265.6 million**

\$32 for 1941 (1979 with CPI at 72.6) = $32/72.6(100)$ = **\$44.1 million**

\$242 for Raiders of the Lost Ark (1981 with CPI at 91.6) = $242/91.6(100)$ = **\$264.2 million**

\$400 for E.T. (1982 with CPI at 97.5) = $400/97.5(100)$ = **\$410.3 million**

\$140 for The Color Purple (1985 with CPI at 107.8) = $140/107.8(100)$ = **\$129.9 million**

\$22 for The Empire of the Sun (1987 with CPI at 113.6) = $22/113.6(100)$ = **\$19.4 million**

\$191 for Indiana Jones and the Last Crusade (1989 with CPI at 124.0) = $191/124.0(100)$ = **\$154.0 million**

\$44 for Always (1990 with CPI at 130.7) = $44/130.7(100)$ = **\$33.7 million**

\$102 for Hook (1991 with CPI at 136.2) = $102/136.2(100)$ = **\$74.9 million**

\$357 for Jurassic Park (1993 with CPI at 144.4) = $357/144.4(100)$ = **\$247.2 million**

\$185 for Schindler's List (1993 with CPI at 144.4) = $185/144.4(100)$ = **\$128.1 million**

\$229 for The Lost World (1997 with CPI at 160.5) = $229/160.5(100)$ = **\$142.7 million**

\$44 for Amistad (1998 with CPI at 163.2) = $44/163.2(100)$ = **\$27.0 million**

\$216 for Saving Private Ryan (1998 with CPI at 163.2) = $216/163.2(100)$ = **\$132.4 million**

\$78 for AI: Artificial Intelligence (2001 with CPI at 177.1) = $78/177.1(100)$ = **\$44.0 million**

\$132 for Minority Report (2002 with CPI at 179.9) = $132/179.9(100)$ = **\$73.4 million**

\$164 for Catch Me if You Can (2003 with CPI at 184.0) = $164/184.0(100)$ = **\$89.1 million**

\$77 for the Terminal (2004 with CPI at 188.9) = $77/188.9(100)$ = **\$40.8 million**

\$234 for War of the Worlds (2005 with CPI at 195.0) = $234/195.3(100)$ = **\$119.8 million**

$\$47$ for Munich (2005 with CPI at 195.0) = $47/195.3(100)$ = **$\$24.1$ million**

a. Five Highest box office performance in real 1983 dollars (in order)

1. 1975 Jaws - \$481.5 million
2. 1982 E.T. - \$410.3 million
3. 1977 Close Encounters of the Third Kind - \$265.6 million
4. 1981 Raiders of the Lost Ark - \$264.2 million
5. 1993 Jurassic Park - \$247.2 million

b. Five Lowest box office performance in real 1983 dollars (in order)

1. 1987 Empire of the Sun - \$19.4 million
2. 2005 Munich - \$24.1 million
3. 1998 Amistad - \$27.0 million
4. 1990 Always - \$33.7 million
5. 2004 Terminal - \$40.8 million

Inflation & Interest Rates and Borrowers & Lenders

A common question students have is "why does the Federal Reserve focus so much on inflation and interest rates?" Most students are concerned with finding a job and think that the Fed should focus on unemployment.

Deflation is the overall decline in the price level.

- Too few dollars chasing too many goods.

Inflation is the overall rise in the price level.

- Too many dollars chasing too few goods.

Is it better to have inflation or deflation? It depends upon who you are.

1. **Creditors** or **savers** loan money that they have saved to other people and businesses. In return, they are paid set interest and principal payments by the borrower to pay off the loan.
2. **Debtors** or **borrowers** borrow the money from the creditors and repay the loans over time.

Consider Lisa the Lender and David the Debtor.

1. David borrows \$100 from Lisa and agrees to repay her \$105 at the end of the year. David uses the money to buy ten CDs that cost \$10 each. Lisa charges David 5% or \$5 because she is giving up the right to the \$100 for a year.
2. If inflation is zero during the year and David repays Lisa the \$105, Lisa has received her \$100 back plus the extra \$5 for taking on the risk. Since there was no inflation during the year, the \$100 still buys the ten CDs; it hasn't lost any value.
3. If inflation is 3% over the year and David repays Lisa the \$105, Lisa can still buy the ten CDs for \$103 but she only receives \$2 for taking on the risk. She loses. If Lisa had known that there would be inflation, she should have charged David 8% (5% + 3%) or \$108. While Lisa loses, David gains for he repays Lisa with money that is worth less. David should have to pay Lisa \$108 but only has to pay her \$105 because that is what they agreed to at the beginning of the year.
4. If inflation is actually a deflation of 2%, David repays Lisa \$105 but the CDs now only cost \$98. Lisa gets her \$100 back plus the additional \$5. Since the \$100 is now worth more, Lisa gains. David had to repay Lisa with money that is worth more.

David should have had to repay Lisa \$98 plus the \$5 to make Lisa just as wealthy as she was at the beginning of the year; instead he repays an additional \$2.

Inflation helps the borrower and hurts the lender. Deflation helps the lender and hurts the borrower.

Which is better is determined by who you are.

Inflation is included in the interest rate. As inflation increases, the interest rate will increase. However, the buying power of the \$1 decreases.

Consider these four people:

- Beth is graduating from high school and will be going to college next fall. She needs a car to go to school and work. She will have to borrow money to go to college and buy a car (\$15,000). Beth works at the mall and earns about \$1000 a month. Beth is a new borrower.
- Brad just graduated from college and has a new job. Brad will start paying back his college loan. Brad earns about \$2,500 a month. Brad is an existing borrower.
- Steve finished college ten years ago. He has paid off his student loan and car loan. Steve earns about \$3,500 a month. He is now starting to save for a down payment for a home. Steve is a new saver.
- Sarah has been out of college for over a decade. She earns about \$4,500 a month. She has been saving regularly using Certificates of Deposit. Sarah is an existing saver.

The interest rate on current car loans is about 7%. The interest rate on existing college loans are about 6% while the rate on new college loans is about 6.8%. Savings accounts are earning about 3.65%. Certificate of deposit rates are around 4.75%. Let's say that inflation is 3% and has been 3% for many years. (<http://www.bankrate.com/>)

Quiz:

If inflation is higher than expected (4%), who wins and who loses?

Answer:

A higher inflation rate will increase interest rates.

- Beth
 - The rate on the car loan will increase from 7% to about 8%. At 7%, for a 5-year car loan, Beth pays about \$297. At \$297 a month for 60 months, the car will cost Beth \$17,820. At 8%, the monthly payment is \$304 and the cost of the car will be \$18,240. The car will cost \$420 more.
 - The student loan rate will rise from 6.8% to about 7.8%. If Beth borrows \$20,000, her monthly payment on a ten-year student loan after graduating from college will increase from \$230 a month to \$240.
- Brad
 - Brad is paying back a loan at 6%. The interest rate should be closer to 7% because inflation is higher. Brad gets to pay back with cheaper money. Of course, products and services Brad wants to buy are increasing in price.
- Steve
 - Steve gets to earn about 4.65% in his savings account instead of 3.65%. However, because prices are rising by 1% more than expected, he doesn't gain in purchasing power. While the amount in his account will increase faster, prices are also rising absorbing the gain.
- Sarah
 - Sarah has saved her money in a Certificate of Deposit at 4.75% but new CD's are paying a higher rate, closer to 5.75%. The interest rate on CD's is fixed over the life of the CD. Sarah's interest rate won't rise until her current CD matures and she renews. Thus, while Sarah's money is locked up she is earning less and her purchasing power is reduced.

Notice how no one really wins with higher than expected inflation because everyone's purchasing power is reduced for a certain level of income. The Federal Reserve focuses on the inflation rate and interest rates because they affect every person.

Inflation and Interest Rates in Songs

Inflation and interest rates show up in songs. Any time in U.S. history that there has been high inflation or interest rates, there have been songs written about it.

The average interest rate on the 10-year Treasury note rose 2% between 1979 and 1980 from 9.43% to 11.43%. By 1981, the rate increased to 13.92%. The average didn't fall below 10% until 1986. Compare this to the current rate of about 5%.

- Imagine how hard it would be to pay back a loan that was at a rate double and triple what it is today.

Rain On The Scarecrow By **John Cougar Mellencamp** (1985)

Scarecrow on a wooden cross Blackbird in the barn
Four hundred empty acres that used to be my farm
I grew up like my daddy did My grandpa cleared this land
When I was five I walked the fence while grandpa held my hand

Rain on the scarecrow Blood on the plow
This land fed a nation This land made me proud
And Son I'm just sorry there's no legacy for you now
Rain on the scarecrow Blood on the plow
Rain on the scarecrow Blood on the plow

The crops we grew last summer weren't enough to pay the loans
Couldn't buy the seed to plant this spring and the Farmers Bank foreclosed
Called my old friend Schepman up to auction off the land
He said John it's just my job and I hope you understand
Hey calling it your job ol' hoss sure don't make it right
But if you want me to I'll say a prayer for your soul tonight
And grandma's on the front porch swing with a Bible in her hand
Sometimes I hear her singing "Take me to the Promised Land"
When you take away a man's dignity he can't work his fields and cows

There'll be blood on the scarecrow Blood on the plow
Blood on the scarecrow Blood on the plow

Well there's ninety-seven crosses planted in the courthouse yard
Ninety-seven families who lost ninety-seven farms
I think about my grandpa and my neighbors and my name
And some nights I feel like dyin' Like that scarecrow in the rain

Rain on the scarecrow Blood on the plow
This land fed a nation This land made me proud
And son I'm just sorry they're just memories for you now
Rain on the scarecrow Blood on the plow
Rain on the scarecrow Blood on the plow

Rain on the scarecrow Blood on the plow
This land fed a nation This land made me proud
And Son I'm just sorry they're just memories for you now
Rain on the scarecrow Blood on the plow
Rain on the scarecrow Blood on the plow

John Cougar Mellencamp was a founding member of Farm Aid in 1985 (<http://www.farmaid.org>). In the early 1980s, the interest rates were extremely high and agriculture prices were low. Farmers were producing but the price of the grains was so low that they were not able to make the loan payments. Many farmers lost their farms during this time period.

Mellencamp is from Indiana and he saw how devastating it was to farmers and to small towns for the farmers to be forced into bankruptcy. Mellencamp was at the height of his popularity and his songs regularly promoted small town values and small town people. This song became a rallying cry for small town America.

In the first two stanzas, notice how Mellencamp contrasts the idea that the farm is central to the family and the family's heritage: "*I grew up like my daddy did, My grandpa cleared this land*" and "*And son I'm just sorry there's no legacy for you now*" but that the farm is gone: "*Four hundred empty acres that used to be my farm*".

Farmers are proud that they feed a nation and a world. It is part of their cultural identity. "*This land fed a nation. This land made me proud.*"

The third stanza tells the story:

The crops we grew last summer weren't enough to pay the loans - if supply increases without an equal increase in demand, the price will fall - farmers are regularly punished for high yields.

Couldn't buy the seed to plant this spring and the Farmers Bank foreclosed - bank wouldn't loan any more money. Also, many small banks were being purchased by large, national banks during this time period. Larger banks not from the area are less likely to make farm loans because of the higher risk of farm loans.

*Called my old friend Schepman up to auction off the land
He said John it's just my job and I hope you understand
Hey calling it your job ol' hoss sure don't make it right
But if you want me to I'll say a prayer for your soul tonight* - friends were forced to sell each other's land. In many rural areas there is still animosity towards auction houses. I went to many of these sales in South Dakota and there is nothing more depressing than watching a family's belongings being sold.

*And grandma's on the front porch swing with a Bible in her hand
Sometimes I hear her singing "Take me to the Promised Land"
When you take away a man's dignity he can't work his fields and cows* - economics tells us that if it is not financially viable, the workers should find something else to do that is financially viable. This is easier said than done. Farmers tend to love the land and can't imagine doing anything else. Farmers also tend to have a strong faith but it was tested during the 1980s farm crisis.

The fifth stanza discusses the tremendous sense of loss after a bankruptcy.

*Well there's ninety-seven crosses planted in the courthouse yard
Ninety-seven families who lost ninety-seven farms
I think about my grandpa and my neighbors and my name
And some nights I feel like dyin' Like that scarecrow in the rain*

Overall, the song tells the story about the individuals who were hurt by the rising and high interest rates of the early to mid 1980s. By 1985, interest rates were starting to fall but it was too late for the farmers. They had fallen behind on the payments and any increase in production basically was offset by a fall in price. Farmers tend to carry a very high debt level both in land mortgages and annual lines of credit for planting. If income isn't high enough to offset the fixed interest payments, the farmers become behind on their loans. The song is a cautionary tale of the risks of high interest rates and how it affects the individual.

Inflation Blues

Written by Alger "Texas" Alexander, Louis Jordan, T Southern
(the actual year it was written was not able to be verified but most sources
indicate it was originally written in the Great Depression and altered during
WWII)

Sung by various blues artists including Louis Armstrong and B. B. King

Hey Mr. President
All your congressmen, too
You got me frustrated
And I don't know what to do
I'm trying to make a living
I can't save a cent
It takes all of my money
Just to eat and pay my rent
I got the blues
Got those inflation blues

You know, I'm not one
Of those high brows
I'm average Joe to you
I came up eating cornbread
Candied yams and chicken stew
Now you take that paper dollar
It's only that in name
The way that buck has shrunk
It's a lowdown dirty shame
That's why I got the blues
Got those inflation blues

Mr. President
Please cut the price of sugar
I wanna make my coffee sweet
I wanna smear some butter on my bread
And I just got to have my meat
When you start rationing
You really played the game
And things are going up
And up and up and up
And my check remains the same
That's why I got the blues
Got those inflation blues

During the Great Depression, one usually thinks about the high unemployment rate and decreasing prices. However, there were times when food and gasoline prices rose during that decade. For example, in 1934 the unemployment rate was over 20% and the inflation rate was over 7%. During WWII, food and gasoline prices rose again and there was rationing of staples.

"I'm trying to make a living, I can't save a cent, It takes all of my money, Just to eat and pay my rent." -- The first stanza discusses how working people are trying to earn a living but wages are so low that all the money is used to buy food and pay rent.

"Now you take that paper dollar, It's only that in name, The way that buck has shrunk, It's a lowdown dirty shame." -- The second stanza defines inflation and that the dollar isn't worth anything and won't buy what it used to.

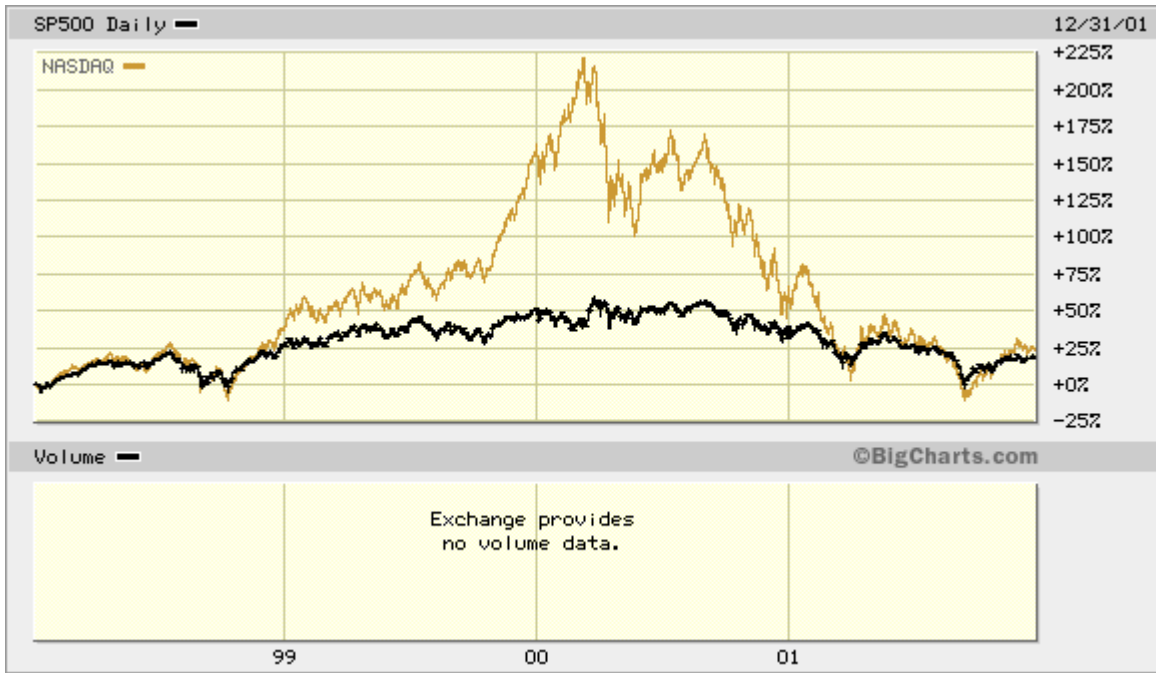
"Please cut the price of sugar, I wanna make my coffee sweet, I wanna smear some butter on my bread, And I just got to have my meat." - Even the prices of basic foods were unaffordable for many families. The average income at this time was about \$1400 a year. Milk cost 56 cents, bread cost 9 cents a loaf and round steak 42 cents a pound. Today, the average income is around \$42,000. Milk costs about \$3.25 a gallon, bread is \$1.50 a loaf and round steak is \$4.30 a pound. Incomes have risen by 30 times but milk by about 6 times, bread by 16 times and round steak by 10 times. To think of it another way, if a family drank one gallon of milk a week, milk would cost 2.1% of the family's income during the Great Depression and only 0.4% of a current family's income.

"When you start rationing, You really played the game, And things are going up, And up and up and up, And my check remains the same." - The federal government rationed some products such as gasoline to try to allow everyone to have access to it. However, the rationing just drove the price up farther and increased bribes and scams. As the prices rose, wages fell making it ever more difficult for a family.

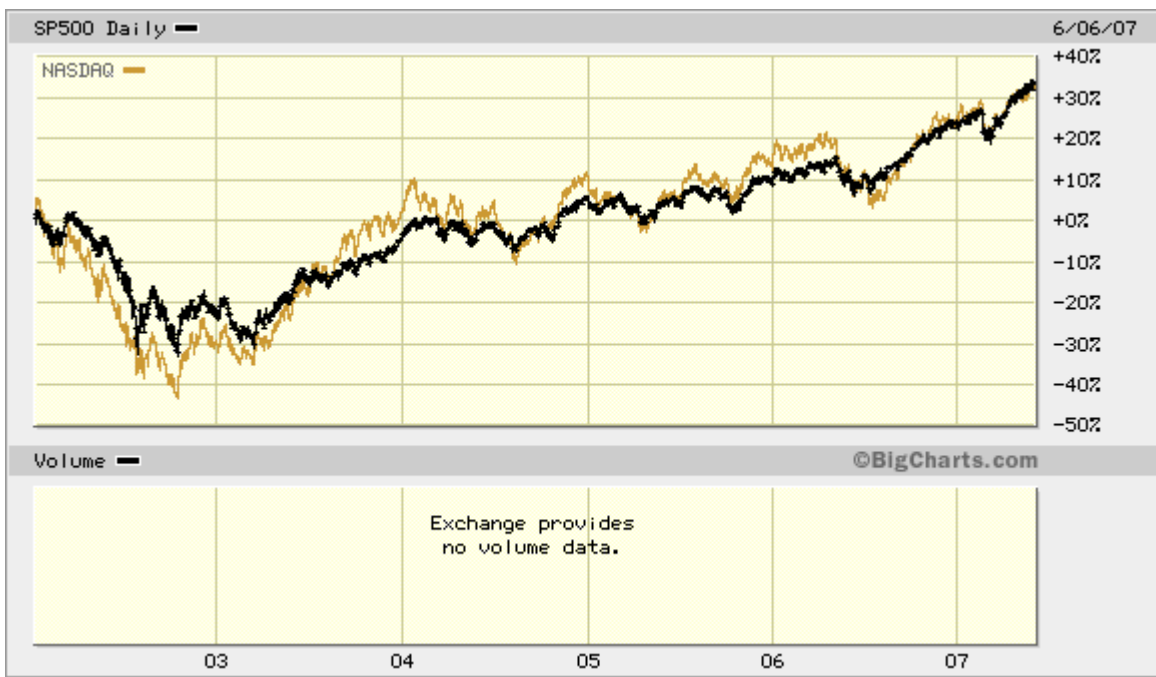
Throughout the entire song there is a sense of frustration that the government doesn't care about the average person. *"You got me frustrated, And I don't know what to do" and "You know, I'm not one, Of those high brows, I'm average Joe to you."*

Interest Rate Changes and the Stock Market

Changes in the interest rate affect the stock market.



Date	Interest Rate Change	S&P 500 index Change	Nasdaq index Change
11/17/1998	-1/4%	+0.76%	+1.9%
6/30/1999	+1/4%	+2.2%	+2.2%
8/24/1999	+1/4%	-0.1% (-3.2% in five days)	+2%
11/16/1999	+1/4%	+1.2%	-0.8%
2/2/2000	+1/4%	+1.1%	+3.4%
3/21/2000	+1/4%	+3%	+3.5%
5/16/2000	+1/2%	-1.2%	-1.9%
1/3/2001	-1/2%	+5%	+14.1%
1/31/2001	-1/2%	+0.5%	+0.4%



Date	Interest Rate Change	S&P 500 index Change	Nasdaq index Change
11/6/2002	-1/2%	-2.3%	-3%
6/25/2003	-1/4%	+1%	+2%
6/30/2004	+1/4%	-1.1%	-1.6%
8/10/2004	+1/4%	-0.2%	-1.4%
	13 raise increases		
5/10/2006	+1/4%	-1.5%	-2.8%
6/29/2006	+1/4%	+2.2%	+2.9%

The relationship between interest rate changes and the stock market indexes is not consistent. It has to do with expectations. Usually the stock markets react negatively to interest rate increases. However, if the rate increases are expected or even desired, the market can react positively.