LECTURE 7
Monetary Factors in the Great Depression

February 12, 2013
Announcements

• Problem Set 1 was handed out on Thursday. It is due on Thursday, February 14, at the start of lecture.

• Problem sets will not be accepted after the start of lecture.

• State of the Union Address is this evening at 6 p.m.
I. Monetary Arrangements in the 1920s
Early Federal Reserve

• Still learning its job.
• Initially NY Fed was dominant.
• Famous head, Benjamin Strong, died in October 1928.
• Starting in 1929, conflict between NY Fed, Board of Governors, and other FR banks.
• Friedman and Schwartz argue Fed was dysfunctional in early 1930s.
Gold Standard

• System of fixed exchange rates.

• Price-specie flow mechanism: if prices fall in one country, gold (specie) will flow to that country leading to growth and inflation.

• Gold standard under pressure in 1920s. Many countries are low on gold reserves.

• U.S. unwilling to play managerial role.
II. Monetary Contraction in 1928
Stock prices begin to rise rapidly in 1927 and 1928.
High-powered money fell in 1928.

Table 2
Alternative measures of U.S. monetary policy.

<table>
<thead>
<tr>
<th>Year</th>
<th>Rate of growth of prices (CPI) (1)^a</th>
<th>Rate of growth of high-powered money (2)^b</th>
<th>Rate of growth of nominal money (M1) (3)^c</th>
<th>Rate of growth of nominal money (M2) (4)^d</th>
<th>Rate of growth of real money (M1/CPI) (5)^e</th>
</tr>
</thead>
<tbody>
<tr>
<td>1919</td>
<td>+14.1%</td>
<td>+10.1%</td>
<td>+15.7%</td>
<td>+16.0%</td>
<td>+1.6%</td>
</tr>
<tr>
<td>1920</td>
<td>+14.7%</td>
<td>+10.2%</td>
<td>+9.8%</td>
<td>+13.5%</td>
<td>[−4.9%]</td>
</tr>
<tr>
<td>1921</td>
<td>[−11.5%]</td>
<td>[−9.7%]</td>
<td>[−11.9%]</td>
<td>[−7.5%]</td>
<td>[−0.4%]</td>
</tr>
<tr>
<td>1922</td>
<td>[−6.5%]</td>
<td>[−3.5%]</td>
<td>+3.1%</td>
<td>+4.4%</td>
<td>+9.6%</td>
</tr>
<tr>
<td>1923</td>
<td>+1.8%</td>
<td>+5.6%</td>
<td>+4.7%</td>
<td>+7.9%</td>
<td>+2.9%</td>
</tr>
<tr>
<td>1924</td>
<td>+0.3%</td>
<td>+2.5%</td>
<td>+2.5%</td>
<td>+4.3%</td>
<td>+2.2%</td>
</tr>
<tr>
<td>1925</td>
<td>+2.6%</td>
<td>+1.4%</td>
<td>+8.8%</td>
<td>+9.3%</td>
<td>+6.2%</td>
</tr>
<tr>
<td>1926</td>
<td>+0.8%</td>
<td>+2.5%</td>
<td>+2.8%</td>
<td>+4.3%</td>
<td>+2.0%</td>
</tr>
<tr>
<td>1927</td>
<td>[−1.9%]</td>
<td>+1.5%</td>
<td>[−1.1%]</td>
<td>[+1.9%]</td>
<td>[+0.8%]</td>
</tr>
<tr>
<td>1928</td>
<td>[−1.2%]</td>
<td>[−1.2%]</td>
<td>[−0.1%]</td>
<td>[+3.3%]</td>
<td>+1.1%</td>
</tr>
<tr>
<td>1929</td>
<td>[0.0%]</td>
<td>[−0.7%]</td>
<td>[+1.6%]</td>
<td>[+0.1%]</td>
<td>+1.6%</td>
</tr>
<tr>
<td>1930</td>
<td>[−2.6%]</td>
<td>[−2.8%]</td>
<td>[−3.5%]</td>
<td>[−1.3%]</td>
<td>[−0.9%]</td>
</tr>
<tr>
<td>1931</td>
<td>[−9.4%]</td>
<td>+5.5%</td>
<td>[+5.7%]</td>
<td>[+6.2%]</td>
<td>+3.7%</td>
</tr>
<tr>
<td>1932</td>
<td>[−10.7%]</td>
<td>+6.4%</td>
<td>[−15.5%]</td>
<td>[−21.1%]</td>
<td>[−4.8%]</td>
</tr>
<tr>
<td>1933</td>
<td>[−5.5%]</td>
<td>+2.0%</td>
<td>[−6.1%]</td>
<td>[+13.6%]</td>
<td>[−0.6%]</td>
</tr>
</tbody>
</table>

Which framework to use – IS-MP or IS-LM?

- IS-LM because the Fed in the 1920s was closer to a money targeter than an interest-rate targeter.
The Effects of Decline in M in the Money Market Diagram

\[ \frac{M_1}{P}, \frac{M_0}{P} \]

\[ L(i,Y) \]

\[ i_0 \]

\[ i_1 \]
The Effects of Decline in M in the IS-LM Diagram
Nominal interest rates rose in 1928 and early 1929.
Monthly Industrial Production in the U.S.

Business cycle peak is in August 1929.
International Repercussions

• Other countries have to tighten along with the U.S. to prevent gold outflows.

• Effect is important, but not huge.
III. Monetary Factors and the 1929 Plunge
If the decline in $Y$ were due to further monetary contraction, would expect $r$ to rise.
Nominal and real interest rates in fact fell sharply in late 1929 and early 1930.
Explaining the fall in $Y$ and $r$ in late 1929 is likely shifted back.
IV. BANKING PANICS
Deposits in suspended banks surged during panics.

Source: Friedman and Schwartz, *A Monetary History of the United States*, 1963
The Effects of a Banking Panic in the Market for High-Powered Money

The diagram illustrates the relationship between the nominal money supply ($M_0/P$) and the interest rate ($i$) in the market for high-powered money. The demand for money ($L(i,Y)$) is shown by the blue line, which shifts from $L(i,Y)_0$ to $L(i,Y)_1$ as the interest rate changes from $i_0$ to $i_1$. The supply of high-powered money ($M_0/P$) is depicted by the red line, indicating the equilibrium in the market.
The Effects of a Panic in the IS-LM Diagram

The diagram illustrates the impact of a panic on the economy using the IS-LM model. Initially, the IS curve is IS₀ and the LM curve is LM₀, with equilibrium at r₀ and Y₀. The panic shifts the LM curve to LM₁, increasing the interest rate to r₁ and reducing output to Y₁.
Expected real rates rose during panics, nominal rates often fell.

How could we measure expectations of inflation?

• Newspapers or popular accounts.

• Use evidence from futures markets.

• Forecast inflation using data available at the time (lagged inflation, perhaps the money stock, etc.).
There was a large fall in expected inflation after 1930.

### Table 3—Actual and Expected Inflation, 1929–1933

<table>
<thead>
<tr>
<th>Quarter</th>
<th>MA(2) model</th>
<th>AR(1) model</th>
<th>Interest-rate model</th>
</tr>
</thead>
<tbody>
<tr>
<td>1929:1</td>
<td>−0.81</td>
<td>−2.73</td>
<td>−0.43</td>
</tr>
<tr>
<td>1929:2</td>
<td>−6.30</td>
<td>−2.09</td>
<td>−4.20</td>
</tr>
<tr>
<td>1929:3</td>
<td>2.27</td>
<td>0.55</td>
<td>−8.37</td>
</tr>
<tr>
<td>1929:4</td>
<td>7.03</td>
<td>4.17</td>
<td>0.10</td>
</tr>
<tr>
<td>1930:1</td>
<td>−2.83</td>
<td>−1.75</td>
<td>−5.32</td>
</tr>
<tr>
<td>1930:2</td>
<td>−8.09</td>
<td>−4.27</td>
<td>−3.99</td>
</tr>
<tr>
<td>1930:3</td>
<td>−0.13</td>
<td>−2.40</td>
<td>−3.98</td>
</tr>
<tr>
<td>1930:4</td>
<td>−1.46</td>
<td>−3.98</td>
<td>−3.29</td>
</tr>
<tr>
<td>1931:1</td>
<td>−8.96</td>
<td>−7.89</td>
<td>1.04</td>
</tr>
<tr>
<td>1931:2</td>
<td>−8.24</td>
<td>−9.60</td>
<td>−7.77</td>
</tr>
<tr>
<td>1931:3</td>
<td>−4.62</td>
<td>−8.69</td>
<td>−12.14</td>
</tr>
<tr>
<td>1931:4</td>
<td>0.08</td>
<td>−1.81</td>
<td>−10.29</td>
</tr>
<tr>
<td>1932:1</td>
<td>−5.46</td>
<td>−9.02</td>
<td>−18.08</td>
</tr>
<tr>
<td>1932:2</td>
<td>−12.43</td>
<td>−10.58</td>
<td>−12.96</td>
</tr>
<tr>
<td>1932:3</td>
<td>−3.60</td>
<td>−8.41</td>
<td>−12.20</td>
</tr>
<tr>
<td>1932:4</td>
<td>1.48</td>
<td>−3.94</td>
<td>−1.21</td>
</tr>
<tr>
<td>1933:1</td>
<td>−4.68</td>
<td>−6.48</td>
<td>22.07</td>
</tr>
<tr>
<td>1933:2</td>
<td>−10.48</td>
<td>−11.75</td>
<td>12.39</td>
</tr>
<tr>
<td>1933:3</td>
<td>7.07</td>
<td>3.51</td>
<td>−4.04</td>
</tr>
<tr>
<td>1933:4</td>
<td>22.97</td>
<td>16.62</td>
<td>4.47</td>
</tr>
</tbody>
</table>

Narrative Evidence from *Business Week*

- Expected deflation after mid-1930.
- Monetary developments and Fed policy were a key source of expectations of deflation.
- “Our idle gold hoard piles up without increasing the means of payment by credit expansion because of paralysis of banking policy, thus prolonging price deflation” (4/29/31, cover).
Real versus Nominal Interest Rates

\[ i = r + \pi^e \]

- \( i \) is the nominal rate
- \( r \) is the real rate
- \( \pi^e \) is expected inflation

\[ r = i - \pi^e \]
We subtract off $\pi^e$ from each point on the LM curve in terms of $i$ and $Y$ to get the LM curve in terms of $r$ and $y$. 
Fall in Expected Inflation in IS-LM

LM curve shifts up by the fall in $\pi^e$.
Effect of a Fall in Expected Inflation in IS-LM

- A fall in $\pi^e$ shifts the LM curve (in terms of $r$ and $Y$) up.

- The LM curve shifts up by the fall in $\pi^e$ ($\pi^e_0 - \pi^e_1$).
Impact of the Large Fall in Expected Inflation
(From Expected Inflation to Expected Deflation in 1931)
What happens to $i$ when there is a fall in expected inflation?

- $i = r + \pi^e$
- $r$ rises, which tends to increase $i$.
- $\pi^e$ falls, which tends to decrease $i$.
- $r$ rises by less than $\pi^e$ falls, so $i$ falls.
- A fall in expected inflation (to expected deflation) can help explain why real rates rose and nominal rates fell in the early 1930s.
Why didn’t the Federal Reserve do more to stop the panics and the decline in the money supply?

- Power struggle/ power vacuum within the Federal Reserve System.
- Bad model of the economy.
- Gold standard.
V. Gold Standard
The gold standard was the key transmission mechanism of U.S. shocks to the rest of the world.
Was the gold standard a constraint on Federal Reserve action?

• Eichengreen says Fed couldn’t expand M to deal with panics because it would call into question the U.S. commitment to the gold standard. Gold would flow out.

• Friedman and Schwartz disagree. U.S. had huge gold reserves.
October 1931

• One of Friedman and Schwartz’s crucial episodes.

• Britain goes off the gold standard in September 1931.

• Federal Reserve raises the discount rate 200 basis points to stem gold flow.

• Pretty clearly another contractionary monetary shock.
Discount Rate

Source: Friedman and Schwartz, *A Monetary History of the United States*, 1963
Effect of the rise in the discount rate (and fall in high-powered money) in October 1931
VI. CONCLUSIONS