The Friedman Forces in the Phillips Curve

Discussion prepared for 50th anniversary of Milton Friedman's 1968 presidential address at the AEA

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How did Friedman change our thinking?

<table>
<thead>
<tr>
<th>Pre-Friedman</th>
<th>Post-Friedman</th>
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<tr>
<td>• Main focus on inflation-unemployment trade-off</td>
<td>• Expectations were <em>central</em> to the theory</td>
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# The Centrality of Expectations

<table>
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<tr>
<th>Expectations</th>
<th>Friedman</th>
<th>Rational Expectations Revolution</th>
<th>Counter-revolution</th>
</tr>
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<tbody>
<tr>
<td>Adaptive?</td>
<td>Rational</td>
<td>Sticky information Rational Inattention Behavioral</td>
<td></td>
</tr>
<tr>
<td>Friedman, Phelps</td>
<td>Lucas, Sargent, Wallace, Barro</td>
<td>Mankiw-Reis, Sims, Woodford, Malmendier-Nagel</td>
<td></td>
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How did Friedman change our thinking?

Pre-Friedman

• Main focus on output-unemployment trade-off
• Expectations were “caveat” to Samuelson-Solow analysis
• IS-LM gives at best a secondary role to expectations

Post-Friedman

• Expectations were *central* to the theory
• Long-run outcomes invariant to monetary policy ("natural rate" hypothesis)
Contrasting Views on Natural Rate Hypothesis

• Blanchard (2017):
  – Surveys evidence on growth surrounding disinflations.
  – Long-term effects of unemployment suggestive of hysteresis effects

• Hall-Sargent:
  – “Hypothesis…has prevailed over the last half-century based on the broad sweep of evidence from many economies over many years.”
  – Lucas (1973) gave “strong support” based on data
What did Lucas (1973) Do?

• Compared Argentina and Paraguay to 16 low inflation volatility countries
  – Real growth no hither in Argentina and Paraguay
  – Nominal growth has less explanatory power for real growth

• But hyperinflations are a blunt test

• Monetary policy is not the only thing different in Argentina and Paraguay

• Our standards of empirical proof have risen
Blanchard (2017)

Figure 3:

Disinflation recessions - Change in Unemployment rate
(Average unemployment rate x to y years after the recession - Average unemployment rate 2 to 2 years before the recession)
Phillips Curve

\[ \pi_t = \kappa(u_t - u^*) + \beta E_t(\pi_{t+1}) \]

- Mankiw-Reis: Key role of expectations term
- Hall-Sargent: “Traditional” term in the Phillips curve has little power in forecasting inflation
- Important consequences for estimating Phillips curves
What do we learn from disinflations?

• Sargent (1982) points out that a credible disinflation may require *no* increase in unemployment (true in the Calvo model)
  – Dramatic evidence favoring this four hyperinflations

• Implies that disinflation episodes may be *completely* uninformative about slope of the Phillips curve

• What about the Volcker disinflation?
Inflation and Inflation Expectations
Phillips Curve Slope Estimates

\[ \pi_t = \kappa u_t + \beta E_t(\pi_{t+1}) \]

Slope Coefficients (\( \kappa \)) from Different Specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Pre-2008</th>
<th>Post-2008</th>
<th>Missing Disinflation?</th>
</tr>
</thead>
<tbody>
<tr>
<td>4-quarter PCE inflation, SPF exp.</td>
<td>-0.09</td>
<td>-0.06</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>(0.05)</td>
<td>(0.06)</td>
<td></td>
</tr>
<tr>
<td>4-quarter core PCE, SPF exp.</td>
<td>0.27</td>
<td>-0.08</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>(0.03)</td>
<td>(0.05)</td>
<td></td>
</tr>
<tr>
<td>Quarterly PCE, SPF exp.</td>
<td>-0.29</td>
<td>0.02</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>(0.07)</td>
<td>(0.12)</td>
<td></td>
</tr>
<tr>
<td>Quarterly PCE, 4-quarter lagged exp.</td>
<td>-0.31</td>
<td>0.10</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>(0.05)</td>
<td>(0.16)</td>
<td></td>
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Phillips Curve Scatter Plot
Can We Reject the Phillips Curve?

• Hall and Sargent argue we can (at least the “traditional” part)

• But a neoclassical model would predict a large response of prices to economic slack (i.e. a vertical Phillips curve)
  – Seems like a worse fit to the data (unless most variation in u is driven by supply shocks)

• $\kappa$ close to zero suggests “hyper-Keynesian” world

• Is this a rejection of the Phillips curve or a Phillips curve on steroids?
Have the Millennials Forgotten Friedman

- Most recent analyses of the “missing disinflation” don’t put much weight on the expectations term

- Christiano et al, Beraja et al, Gilchrist et al.: Supply-shock explanations for missing disinflation
  - Beraja et al: no expectations term in Phillips curve
  - Christiano et al: no change in inflation target since 1950

- Yet, role of expectations term may be crucial in reconciling Volcker disinflation and recent moderate inflation (despite high unemployment)
CPI and Long-Term Inflation Forecasts

![Graph showing CPI and Long-Term Inflation Forecasts](image.jpg)

- **CPI RS-Constant Methodology**
- **SPF CPI Long-Term Forecast**