Chapter 35: The Short-run Tradeoff Between Inflation and Unemployment
Principles of Economics, 6th Edition
N. Gregory Mankiw
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1. Introduction
   a. Two closely watched indicators of economic performance are inflation and unemployment.
   b. In the long run, inflation and unemployment are largely unrelated problems
   c. In the short run, just the opposite is true.
   d. This is an interesting case of the development of ideas.
   e. At one time, people were told and wanted to believe that deficits cause inflation which in turn reduces unemployment.
      i. The economic equivalent of a free lunch.
      ii. Unfortunately, it was not true.

2. The Phillips Curve
   a. Origins of the Phillips curve, which is a curve that shows the short run tradeoff between inflation and unemployment. P. 786
         (1) He demonstrated a relationship between nominal wage changes and unemployment.
         (2) Mankiw states that nominal wage changes and inflation are the same thing, but that is not true as wages can increase without inflation when labor productivity is increasing.
         (3) The results observed by Phillips was due to the much of the period one of the gold standard, so people expected stable prices.
            (a) Any deviations from those prices were unanticipated and, therefore, caused changes in output and employment.
      ii. Samuelson and Solow’s 1960 article.
         (1) There was no theoretical basis for why an increase in the average level of prices should have any effect on a market that normally would only change due to a relative price change.
            (a) Microeconomic theory would anticipate that unemployment would go up if the relative price of labor rose.
      iii. Figure 1: The Phillips Curve. P. 787
   b. Aggregate Demand, Aggregate Supply and the Phillips Curve
      i. The Phillips curve simply shows the combination of inflation and unemployment that arise in the short run as shifts in the AD curve move the economy along the SRAS curve.
         (1) Figure 2: How the Phillips Curve Is Related to the Model of Aggregate Demand and Aggregate Supply. P. 788
3. Shifts in the Phillips Curve: The Role of Expectations
   a. The Long Run Phillips Curve
      i. Friedman and Phelps’ 1968 response.
         (1) They argued that the monetary authority can control
             nominal, but not real, variables.
             (a) Therefore, the real output level is independent of the
                 price level and the LRAS is vertical.
             (b) There is a natural rate of unemployment that is not
                 “natural.”
         (2) They assumed a very intellectually courageous position
             because the data continued to support the Phillips curve.
         (3) However, they argued that Phillips curve as presented was
             irrational and, therefore, not consistent with economic
             theory.
         (4) They argued that unemployment tends toward its normal
             level that they called the natural rate of unemployment.
             (a) It is not a fixed number that is influenced by the costs
                 and benefits of unemployment such as unemployment
                 compensation.
      ii. Figure 3: The Long Run Phillips Curve. P. 790
      iii. Figure 4: How the Long Run Phillips Curve Is Related to the
            Model of Aggregate Demand and Aggregate Supply. P. 791
      iv. In the long run, the Phillips Curve is vertical.
      v. Just as the AS curve slopes upward only in the short run, the tradeoff
          between inflation and unemployment holds only in the short run.
      vi. Just as the LRAS curve is vertical, the LR Phillips Curve is also
          vertical.
   b. Reconciling Theory and Evidence
      i. Friedman and Phelps introduced a new variable into the analysis:
         expected inflation.
      ii. The Fed’s ability to create unexpected inflation by increasing the
          money supply exists only in the short run.
      iii. The Phillips, Samuelson and Solow results follow from the periods
           that they observe being ones during which people expected stable
           prices and any deviation was unexpected.
   c. The Short Run Phillips Curve
      i. \[ \frac{U}{L} = \left( \frac{U}{L} \right)_0 - \alpha \left( \text{inflation}^{\text{actual}} - \text{inflation}^{\text{expected}} \right) \]
         (1) Therefore, the unemployment rate \( \frac{U}{L} \) only decreases
             when the actual inflation rate is greater than the expected
             rate.
         (2) In the short run, expected inflation is given.
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ii. **Figure 5: How Expected Inflation Shifts the Short Run Phillips Curve.** P. 794

iii. Friedman and Phelps concluded that policymakers do face a tradeoff between inflation and unemployment, but only a temporary one.

iv. If policymakers use this tradeoff, they lose it.

d. **The Natural Experiment for the Natural Rate Hypothesis**

i. **Def:** Natural rate hypothesis is the claim that unemployment eventually returns to its normal, or natural, rate, regardless of the rate of inflation. P. 794

ii. *It is interesting to see how people can misinterpret data.*

(1) **Figure 6: The Phillips Curve in the 1960s.** P. 795

(2) **Figure 7: The Breakdown of the Phillips Curve.** P. 796

4. **Shifts in the Phillips Curve: The Role of Supply Shocks**

a. *Only the government has the power to cause major disturbances in the economy.*

b. *Even recent dramatic increases in energy prices and declines in housing prices have had only a limited effect on the economy.*

c. **Def:** A supply shock is an event that directly alters firms’ costs and prices, shifting the economy’s AS curve and thus the Phillips Curve. P. 796

d. **Figure 8: An Adverse Shock to Aggregate Supply.** P. 797

e. In the 1970s, the Fed accommodated the supply shock with higher money growth, the increased expected inflation.

f. **Figure 9: The Supply Shocks of the 1970s.** P. 798

5. **The Cost of Reducing Inflation**

a. **The Sacrifice Ratio**

i. **Figure 10: Disinflationary Monetary Policy in the Short Run and Long Run.** P. 799

ii. **Def:** Sacrifice ratio is the number of percentage points of annual output lost in the process of reducing inflation by 1 percentage point. P. 800

b. **Rational Expectations and the Possibility of Costless Disinflation**

i. *Normally, disinflation (or deflation) increases unemployment because workers overestimate inflation and, therefore, they underestimate their real wages, which results in higher unemployment.*

ii. *With rational expectations, if workers believed that the government was pursuing a disinflation policy, they would base their decisions on future expectations rather than past data, thereby, estimating...*
real wages more accurately and with effect on unemployment.

iii. Def: Rational expectations is the theory according to which people optimally use all the information they have, including information about government policies, when forecasting the future. P. 800

iv. How quickly the SR tradeoff disappears depends on how quickly expectations adjust.

c. The Volcker Disinflation

i. Imposed a substantial cost on society in the form of high unemployment because of past lies by the Fed, the public did not believe that the Fed was actually pursuing a disinflation policy.

ii. Figure 11: The Volcker Disinflation. P. 802

iii. There are two reasons not to reject the conclusions of the rational expectations theorists too quickly.

(1) Even though the Volcker disinflation did impose a cost of temporary unemployment, the cost was not as large as many economists had predicted.

(2) Even though Volcker announced that he would aim monetary policy to lower inflation, much of the public did not believe him.

d. The Greenspan Era

i. Because economists are such bad forecasters, there are some clear lessons.

(1) Reasonable growth of the money supply will limit inflation.

(2) The Fed needs to be ready to respond to shocks.

ii. Bad forecasting is not due to poor theory, but the inability to guess what politicians and the weather will do.

iii. Figure 12: The Greenspan Era. P. 803

e. The Phillips Curve during the Financial Crisis

i. Figure 13: The Phillips Curve during the Recession of 2008-2009. P. 804

ii. In the News: Do We Need More Inflation? P. 805

6. Conclusion

a. Friedman emphasized that the tradeoff is not between inflation and unemployment, but between unanticipated inflation and unemployment.

7. Summary