Lecture Notes on Phillips Curve

Pınar Deniz

Phillips curve

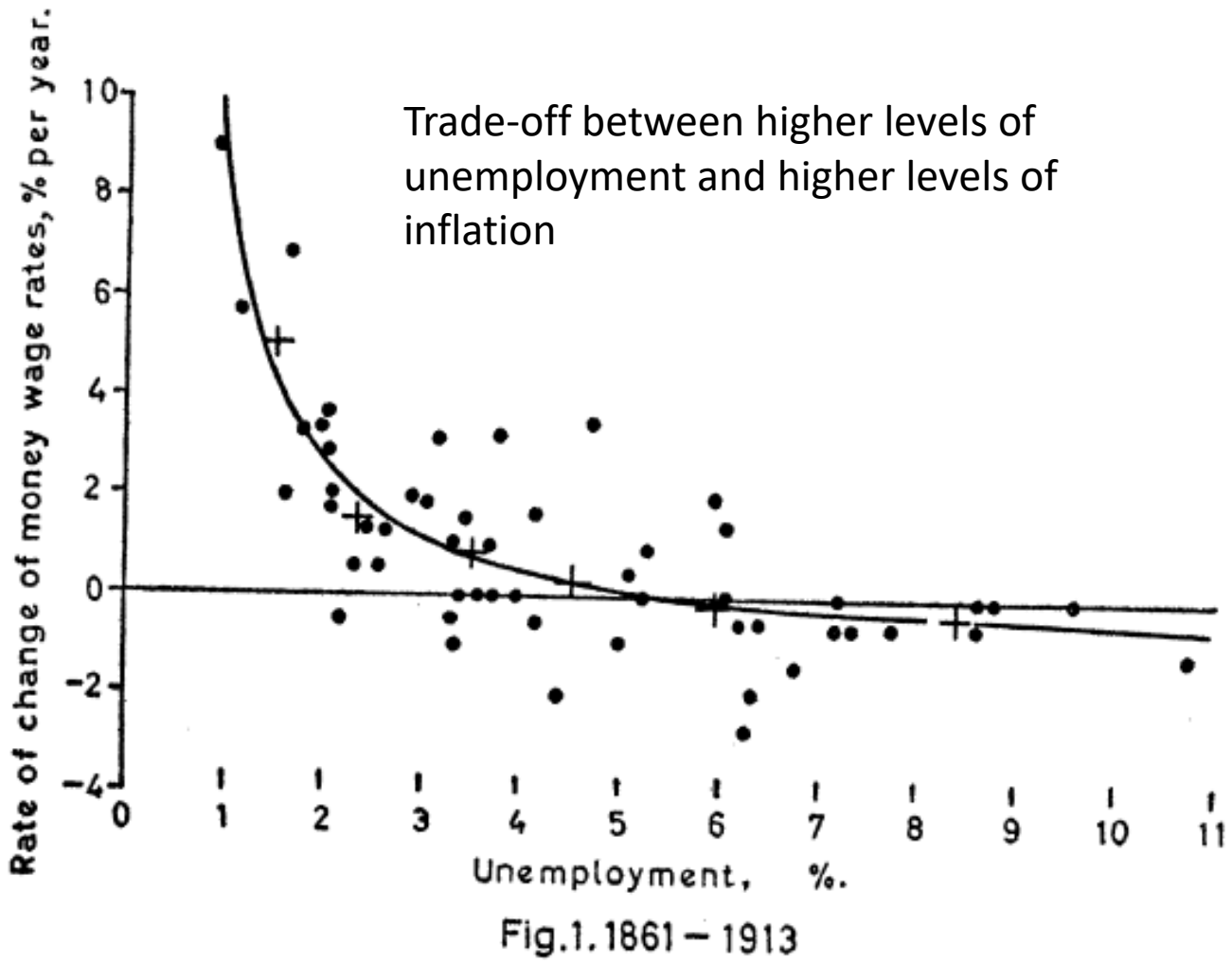


Fig.1. 1861 – 1913

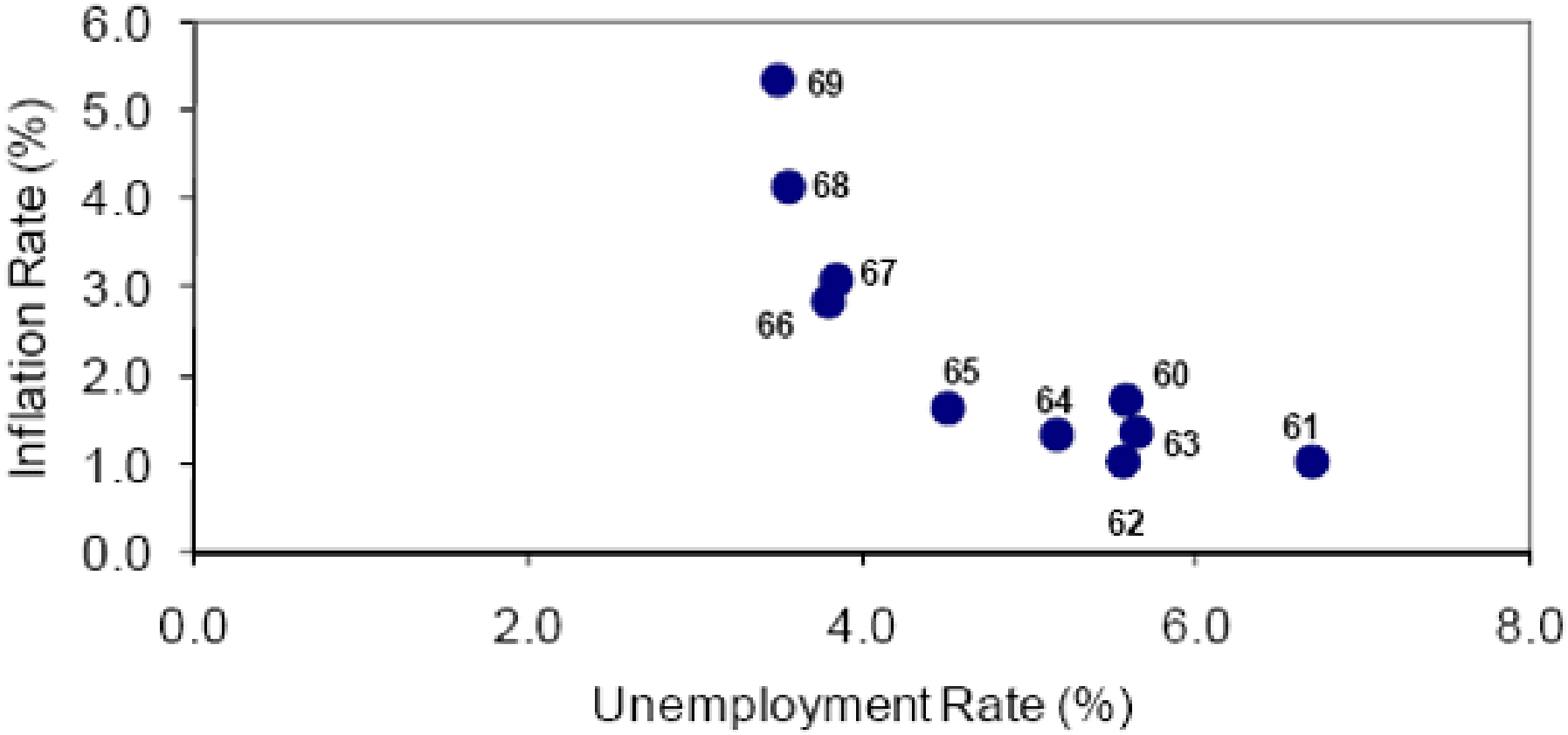
Trade-off between higher levels of unemployment and higher levels of inflation

When u is lower, labor market become tighter and firms must raise wages fastly to attract the most suitable labor from other firms.

When demand for labor is low and unemployment is high, workers are reluctant to offer their services at wages lower than the prevailing wage rates, hence wage rates fall but fall slowly.

This reflects a nonlinear theoretical link between u and wage rates. (asymmetry)

Data in the 1960s clearly supported the idea of a Phillips curve



Replication of the analysis for US data

Data Source: [U.S. Bureau of Labor Statistics]

https://www.frbsf.org/education/publications/doctor-econ/2008/march/phillips-curve-inflation/

Quotation from Roger A. Farmer:

- Keynesian economists embraced the curve, which they saw as empirical evidence in support of their argument for the importance of government intervention in the choice between fighting inflation and fighting unemployment.

- Keynesian fiscal policies continued to be widely accepted throughout the 1940s, 1950s, and 1960s. But they encountered resistance in the 1970s, when both unemployment and inflation were unacceptably high, a condition that became known as "stagflation."

- Because of the apparent failure of the Phillips curve to explain stagflation, a new theory arose known as the "natural rate hypothesis." by Edmund Phelps of and Milton Friedman.

https://www.bls.gov/opub/mlr/2015/book-review/the-economy-applying-theory-to-reality.htm

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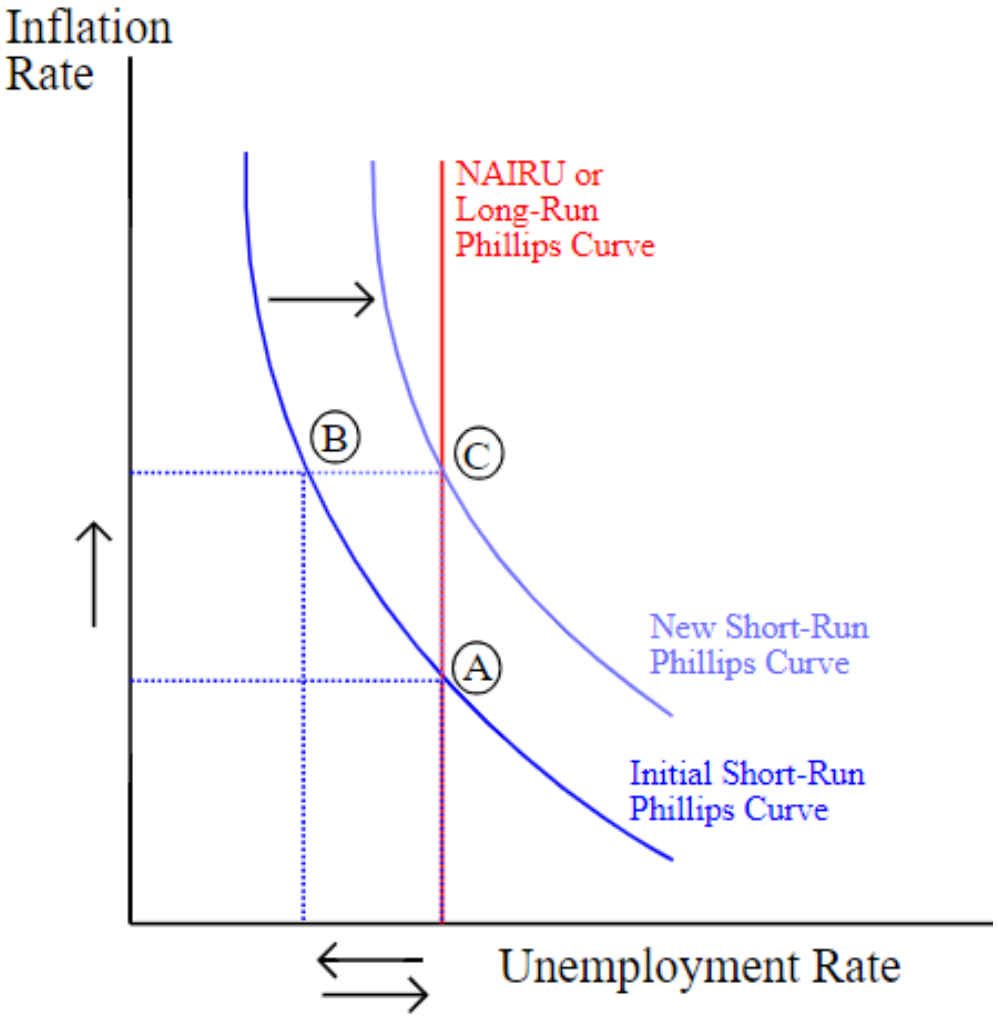


<u>In the short run, classical Phillips curve holds but not in the long run</u>.

The explanation for the stagflation period was that inflation expectations were shifting the Phillips curve to rightwards so that inflation and unemployment rate were raising at the same time.

The adjustment to the natural level of unemployment is as follows:

- A=>B:

When government intervenes the economy and raises aggregate demand, it also raises inflation. Hence this mechanism shows the short run movement along the Phillips cuve

- B=>C:

In the long run, however, workers anticipate the decline the purchasing power of their wages. Hence, they renegotiate with the employees by asking for nominal wages reflecting the their expected inflation rate so as to keep their real wages the same. As nominal wages rise, costs of the firms rise (lowers profits), hence, firms decrease level of production and employ less.

- As a result, the economy reflects higher inflation but no change in unemployment rate in the long run.

I Discovered the Phillips Curve: "A Statistical Relation between Unemployment and Price Changes" Author: Irving Fisher (1973)

I Discovered the Phillips Curve

Irving Fisher

Yale University

EDITORIAL NOTE.—It is not generally known that the first statistical investigation of the relationship between inflation and the unemployment rate was performed not by A. W. Phillips in 1958 but by Irving Fisher in 1926. The editors are pleased to celebrate the forty-seventh anniversary of Fisher's seminal discovery by reprinting it in its entirety (by permission of the *International Labour Review*). They are grateful to Professor Jacob Mincer of Columbia University, who accidentally discovered it on a recent archaeological expedition. (The article was independently discovered by A. Donner and J. F. McCallum, who cited it in their "The Phillips Curve: An Historical Note," *Economica* [August 1972], pp. 322–23.)

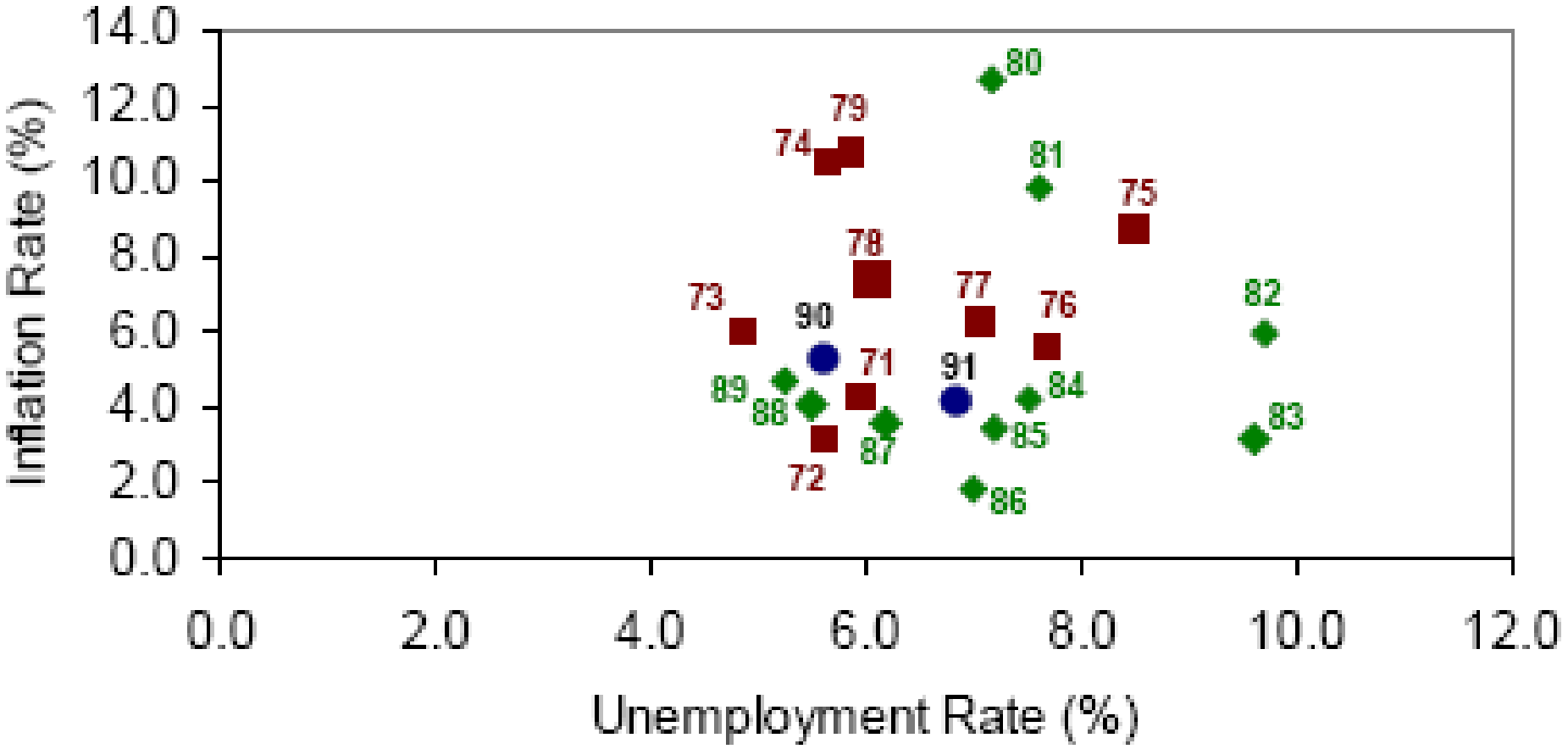
A Statistical Relation between Unemployment and Price Changes

Professor Irving Fisher

Professor of Economics, Yale University

The possible relation between changes in the price level and changes in the volume of employment, much discussed by economists at the present time, has already been debated in the pages of the Review. *In the present article Professor Fisher, one of the foremost authorities on monetary problems and for years a protagonist of stabilisation, removes the question from the sphere of controversy to that of exact statistical research. He has*

Data post-1970s data were quite different



U.S. CPI Inflation and Unemployment Rates in 1971-1991

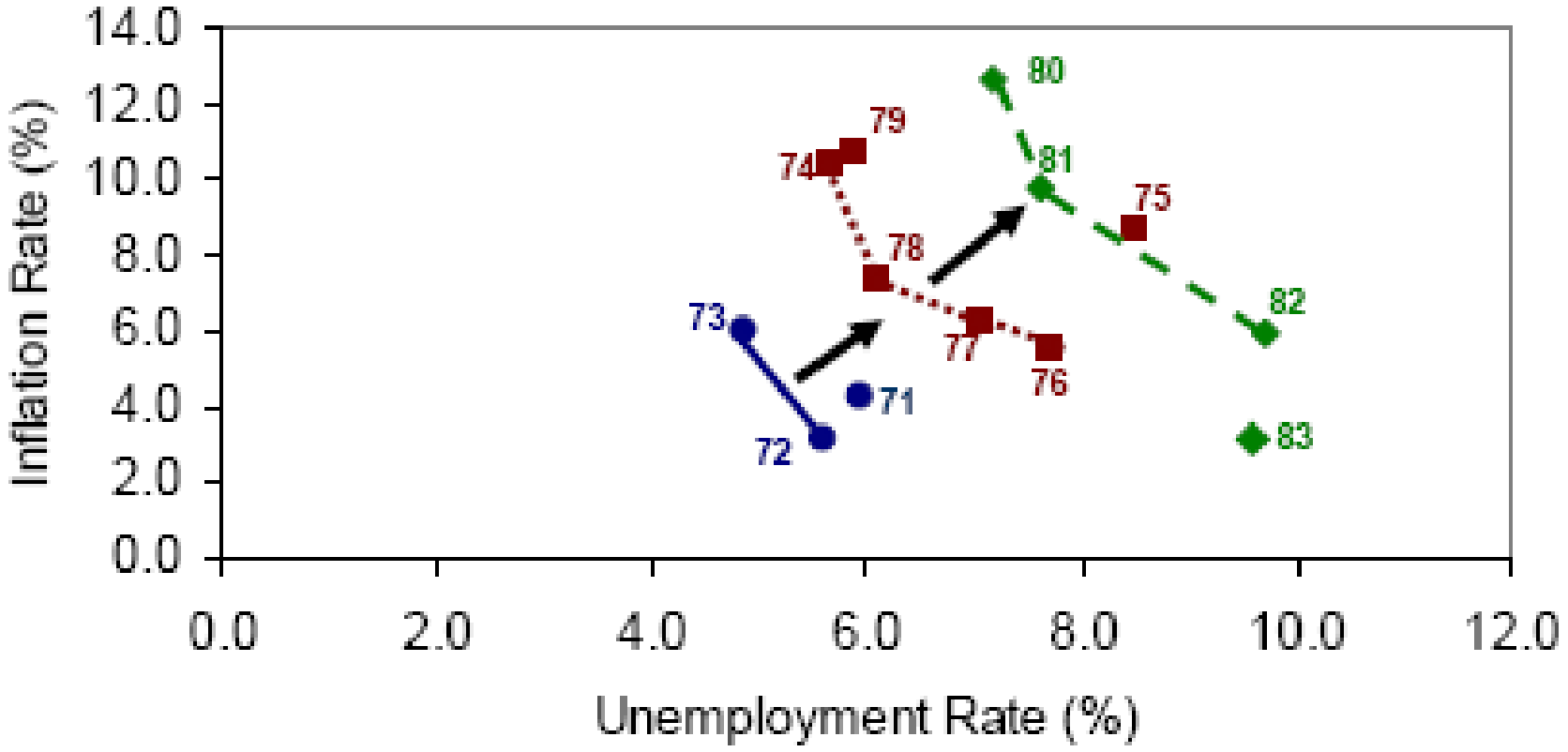
Data did not show a smooth relationship between inflation and unemployment in the long run. However, these data did show that the possibility of a short-run trade-off remained. As a result, the distinction between the short-run and the long-run Phillips curves was born.

The short-run Phillips curve began to include expected inflation as a determinant of current inflation and, therefore, was labeled the "expectations-augmented Phillips curve."

Data Source: *U.S. Bureau of Labor Statistics*

https://www.frbsf.org/education/publications/doctor-econ/2008/march/phillips-curve-inflation/

If you look carefully, you might notice three somewhat smooth Phillips curves are hiding: one for 1971-1973, one for 1974-1979, and one for 1980-1983.



Data Source: [U.S. Bureau of Labor Statistics]

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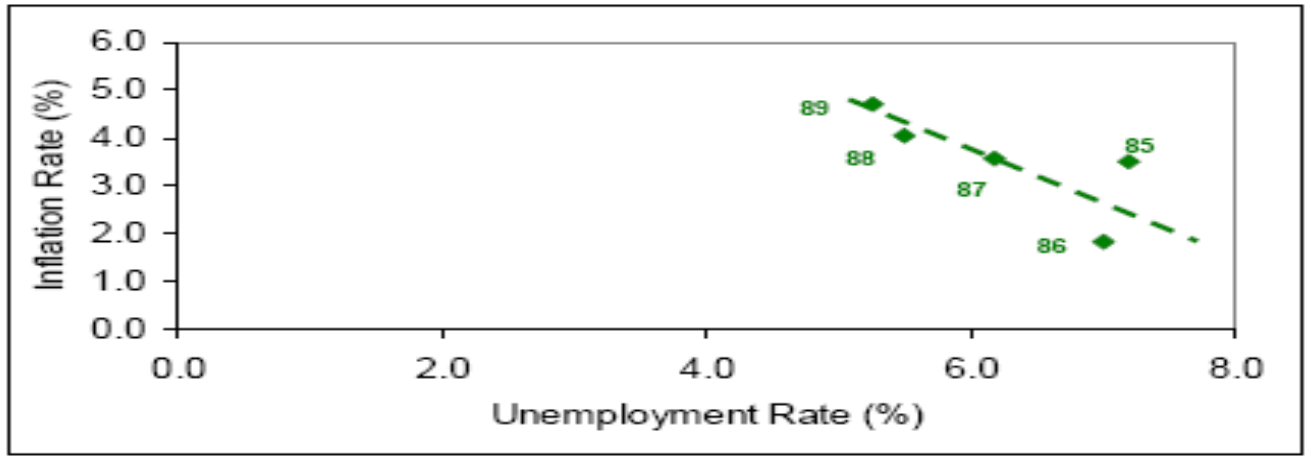
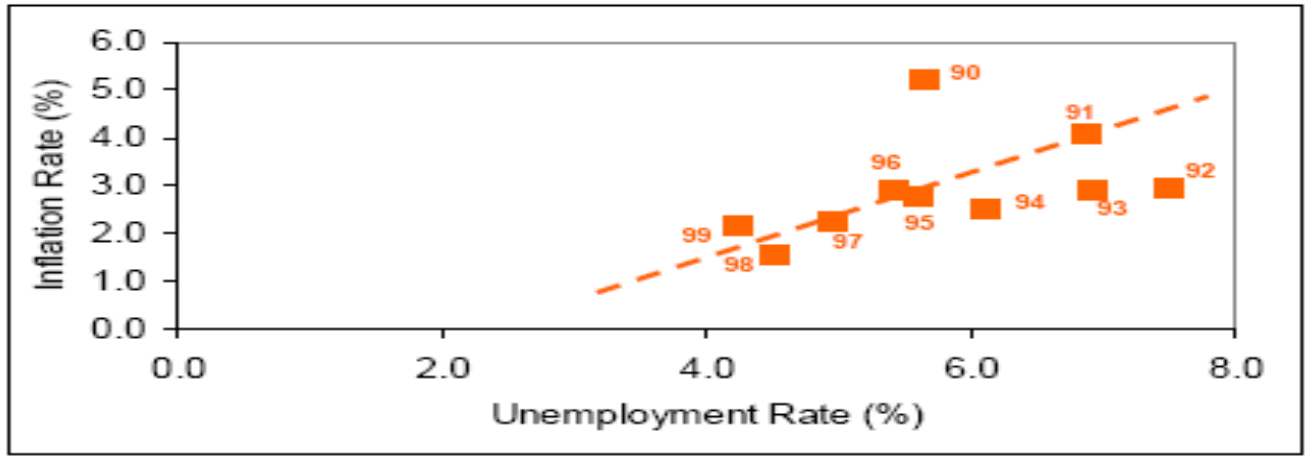
Janet Yellen
(Speech from September 24, 2015)

- ‘To summarize, this analysis suggests that economic slack, changes in imported goods prices, and idiosyncratic shocks all cause core inflation to deviate from a longer-term trend that is ultimately determined by long-run inflation expectations. As some will recognize, this model of core inflation is a variant of a theoretical model that is commonly referred to as an *expectations-augmented Phillips curve.’*





FEDERAL RESERVE BANK OF SAN FRANCISCO

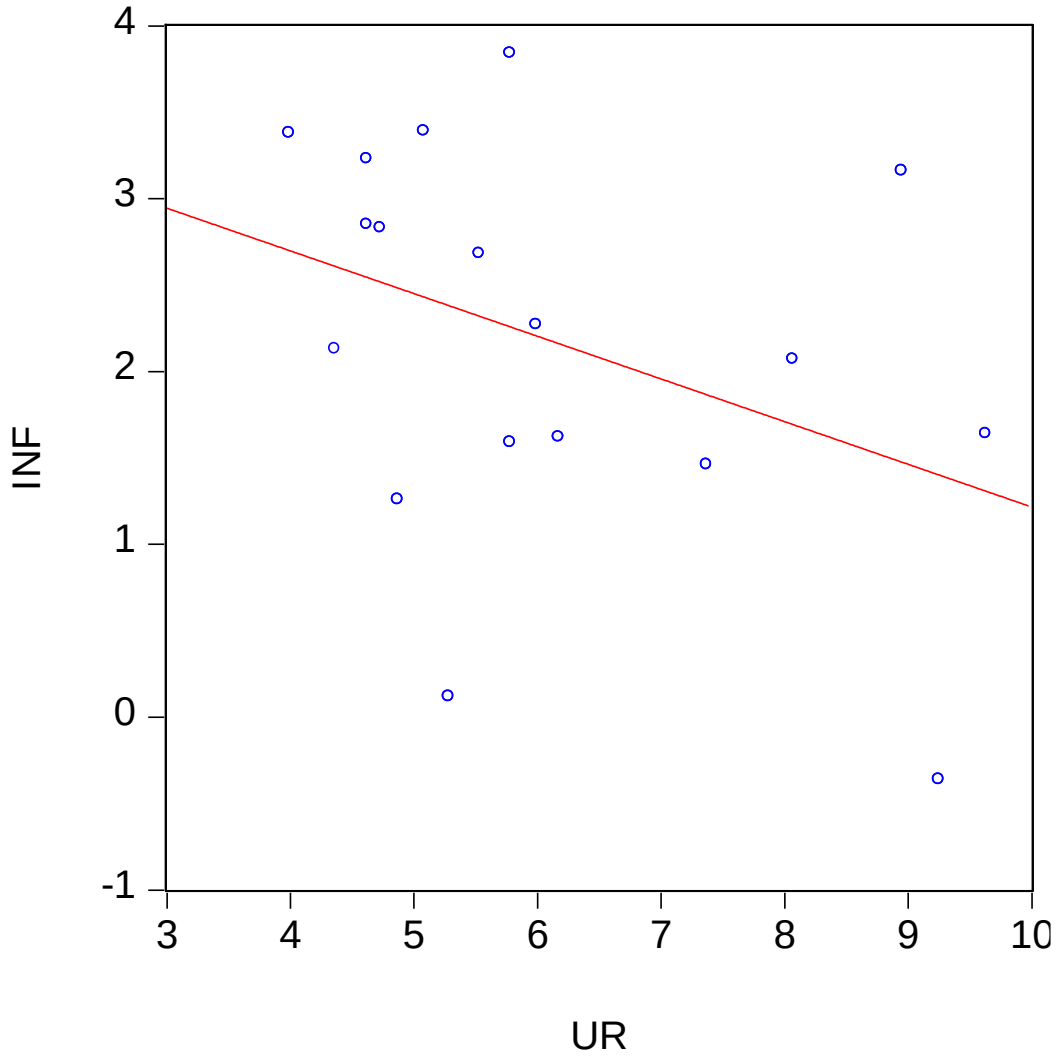
(DATA FROM 1985 TO 2007)

The figure might be interpreted as suggesting a downward relationship between inflation and unemployment in the 1980s and 2000s, but an upward relationship in the 1990s.

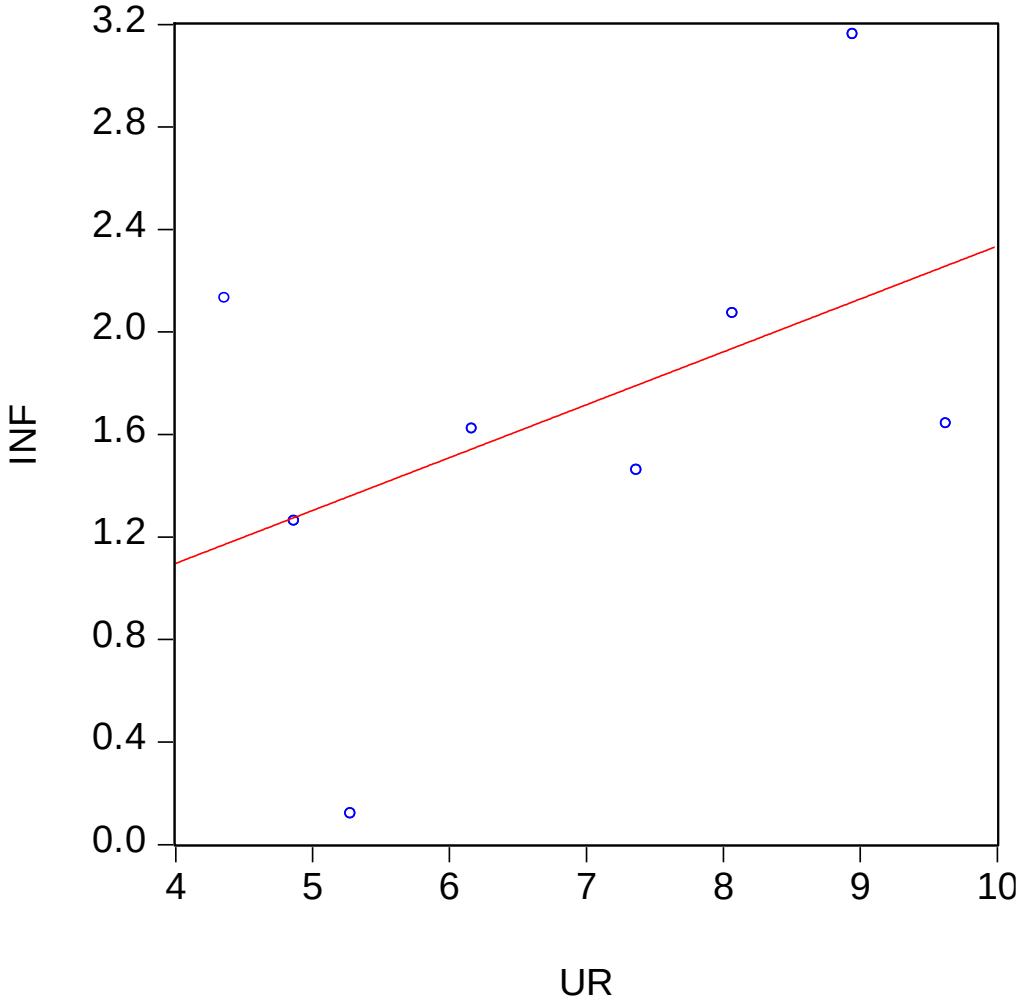
An upward relationship contradicts the Phillips curve theory of a tradeoff between unemployment and inflation.

- There are several explanations for why the 1990s were characterized by *both* lower inflation and falling unemployment rates.
  - One has to do with <u>increased competition</u> in many U.S. industries, which kept producers from increasing prices as much as they would have in the absence of tight competition.

https://www.frbsf.org/education/publications/doctor-econ/2008/march/phillips-curve-inflation/



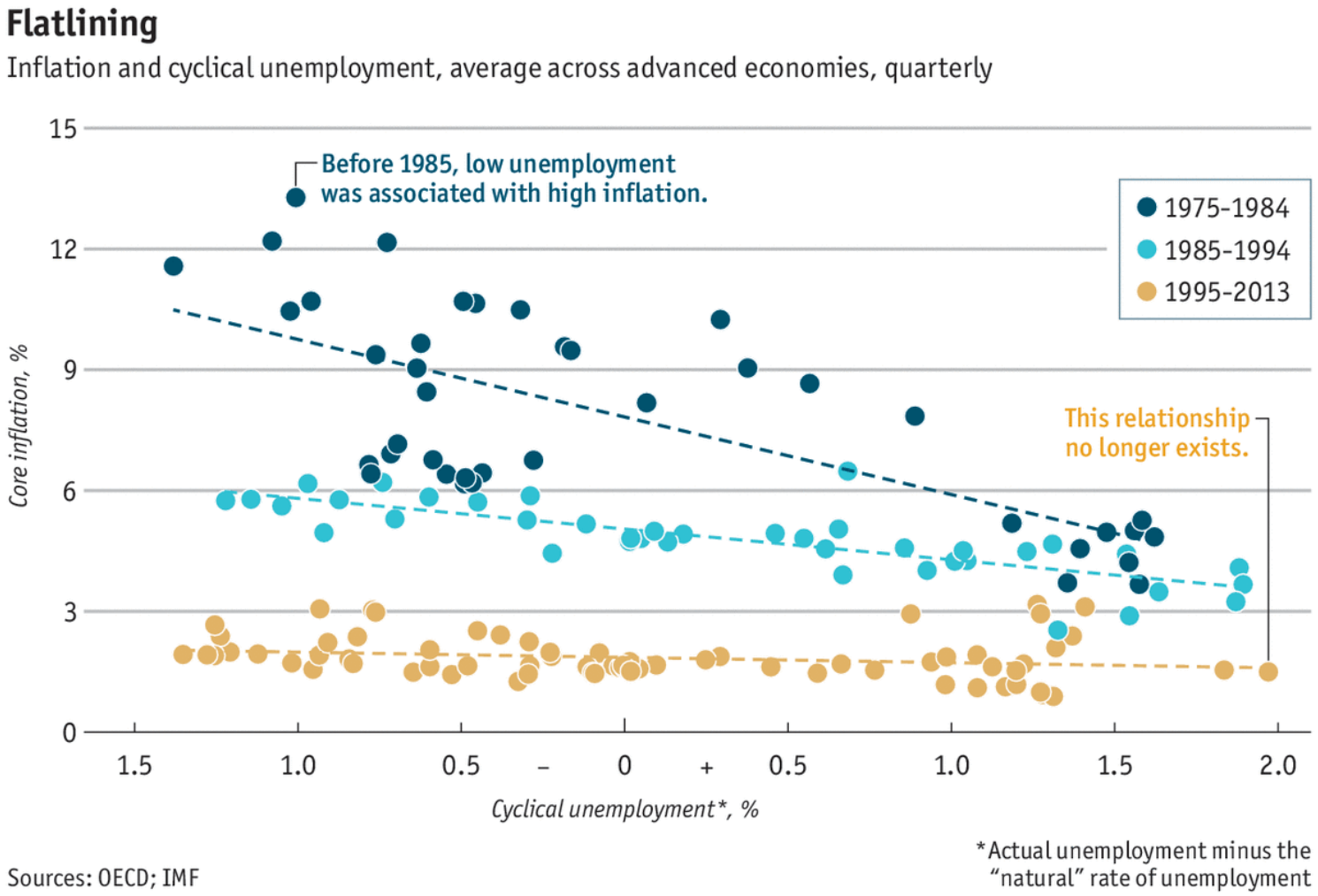
US data for 2000-2017 period



US data for 2010-2017 period

- The modern Phillips curve tells us that inflation is guided by three forces:
  - expected inflation,
  - the deviation of unemployment from its natural rate (sometimes referred to as the unemployment gap),
  - supply shocks

The Economist: "The Phillips curve may be broken for good" (Nov 1st 2017)

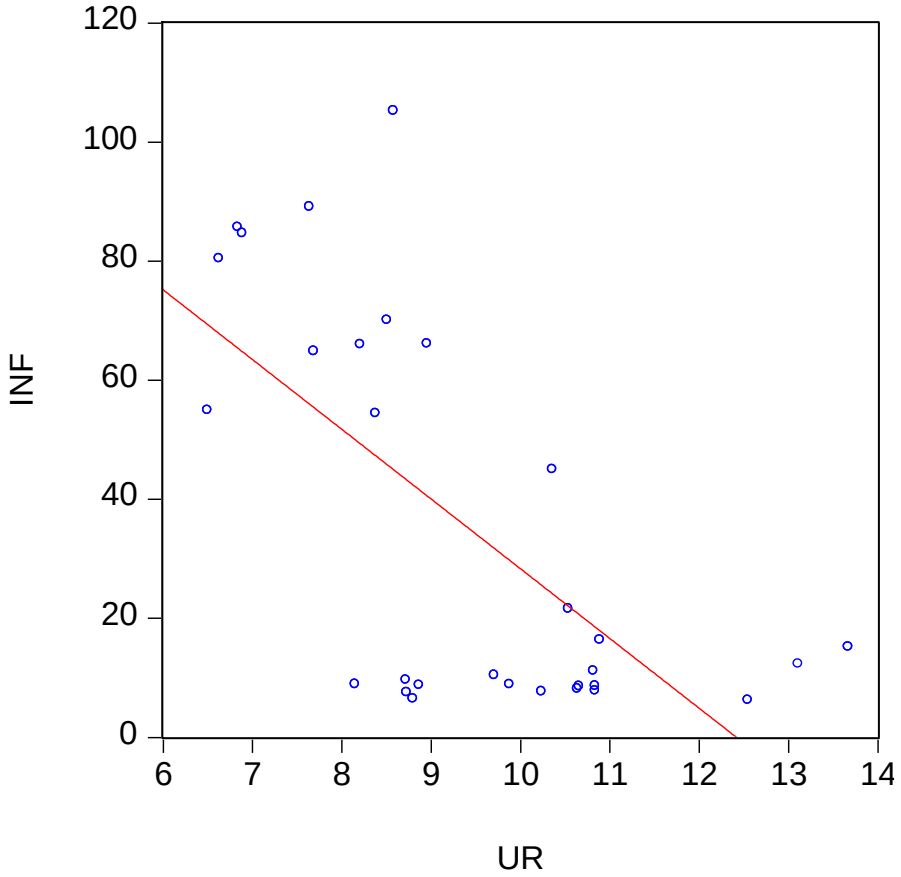


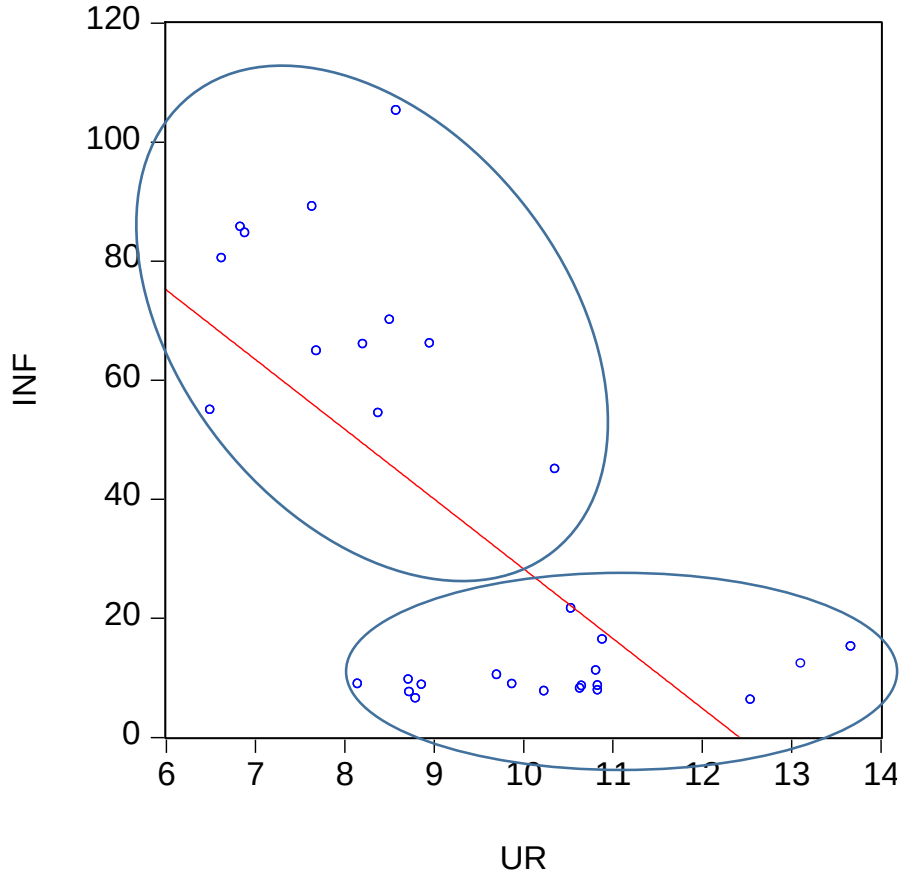
"Since 2010, as the unemployment rate has fallen steadily from 10% to 4.4%, inflation has hovered between 1% and 2%. This has prompted observers like Larry Summers of Harvard University to argue that the Phillips curve has "broken down".

For all its empirical flaws, many central bankers remain loyal to Phillips's teachings. "

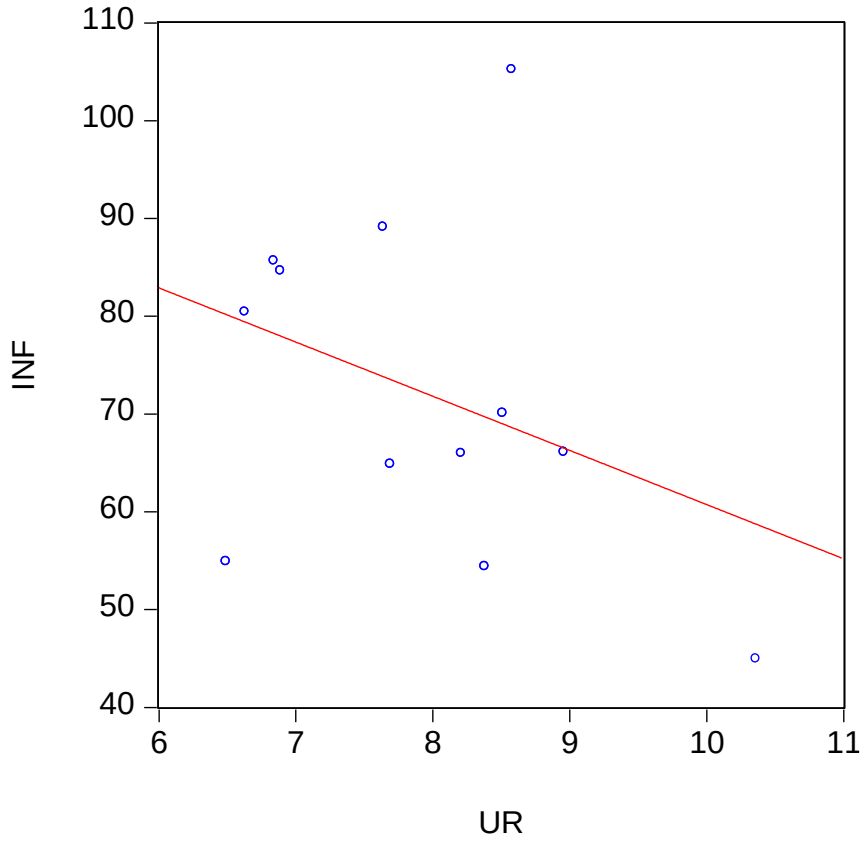
What about Turkey?

- Data available between 1991-2020 from World Bank



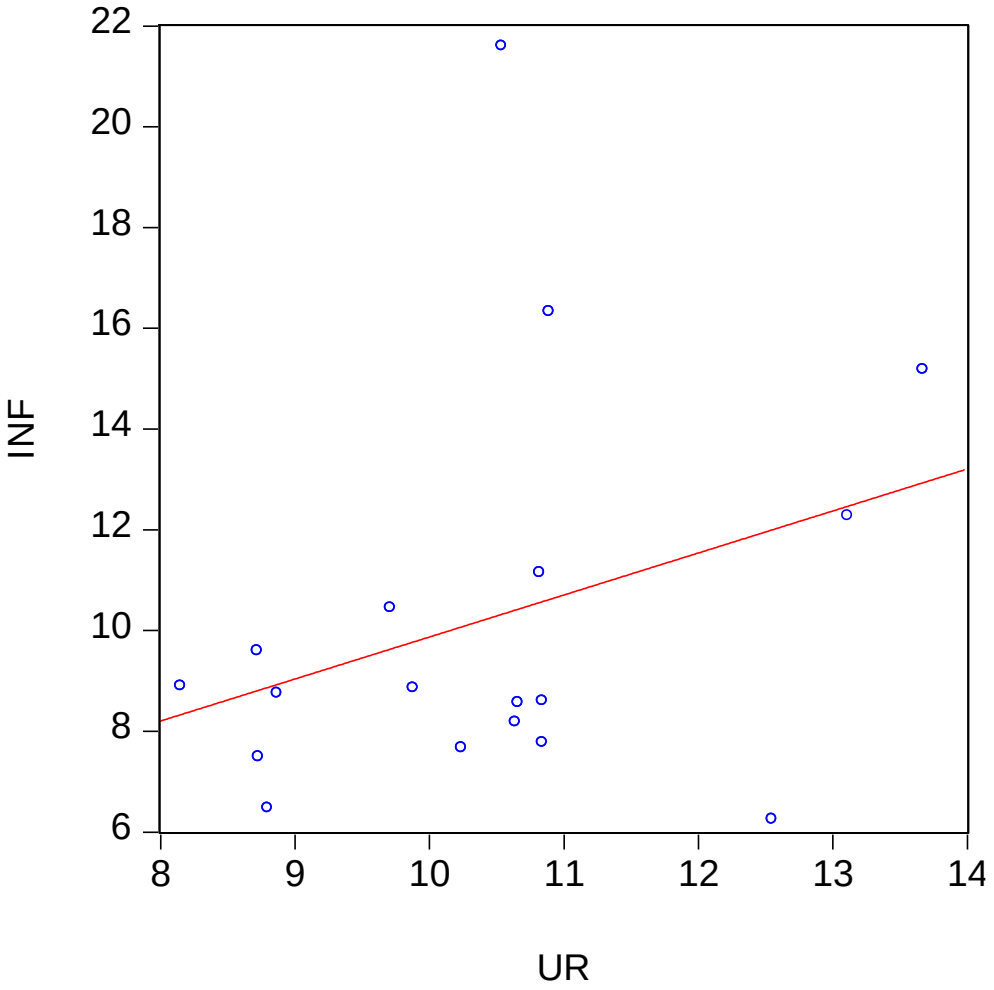


1991-2002 period for Turkey



High UR belong to the crisis periods

2003-2020 period for Turkey



- Phillips curve seems to not fit to Turkish case. Why?
- Is it because Phillips curve is not working?
- OR
- Is it because there are some other outside effects that eliminate the negative link?
- The main question is: **Does Phillips curve make sense logically?**

References

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