

Discussion of Larry Ball's Hysteresis in Unemployment

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Ball's Paper

$$\pi_t - \pi_{t-1} = \alpha (u_t - u_t^*)$$

- $\pi_t - \pi_{t-1}$: *change* in inflation
- u_t : unemployment rate
- u_t^* : NAIRU

Key Points of Ball's Paper

$$\pi_t - \pi_{t-1} = \alpha (u_t - u_t^*)$$

- u_t^* affected by monetary policy
 - That is, inflation shocks affect long run output
- Policy-invariant Phillips curve

Messages of Ball's Paper

- Monetary policy has large long run real effects
- Phillips curve is policy-invariant

Messages of Standard Models

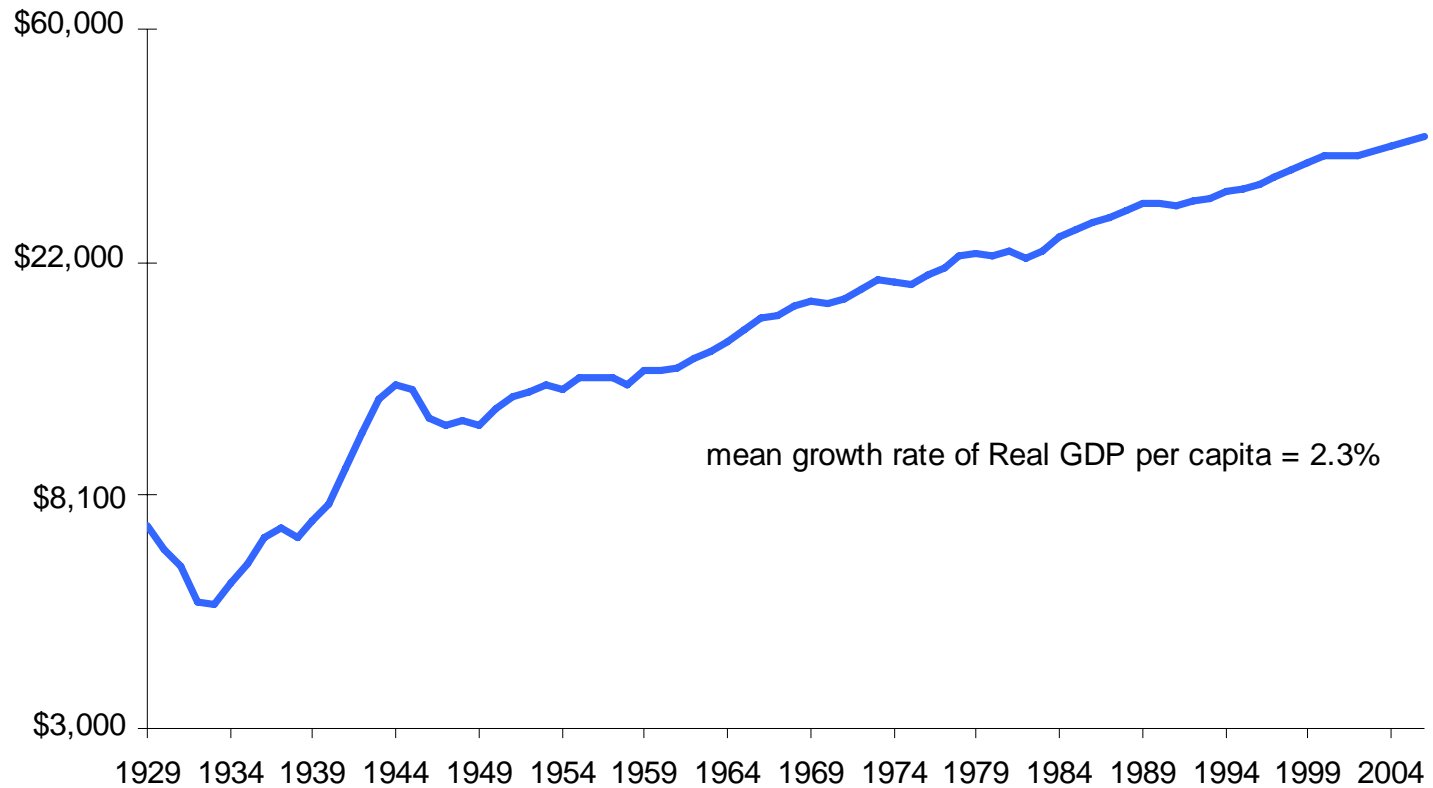
- Monetary policy has small long run real effects
- Phillips curve is not policy-invariant

Where Do Standard Messages Come From?

- Data show
 - No permanent effects of fluctuations
 - Modest effects of inflation in long run
 - No stable short run Phillips curve

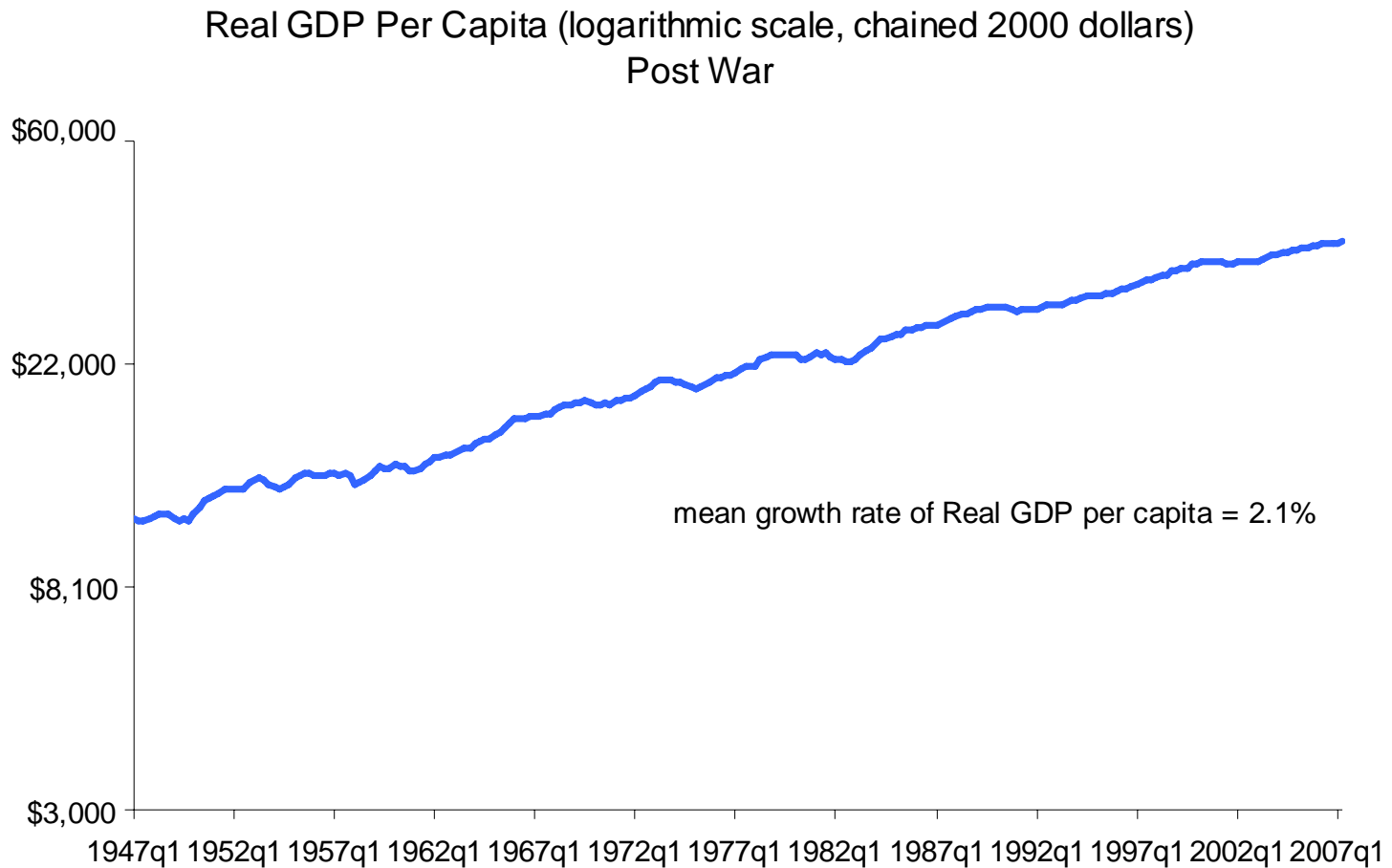
No Permanent Effects of Fluctuations

US Real GDP Per Capita (logarithmic scale, chained 2000 dollars)
1929-2006



Source: BEA

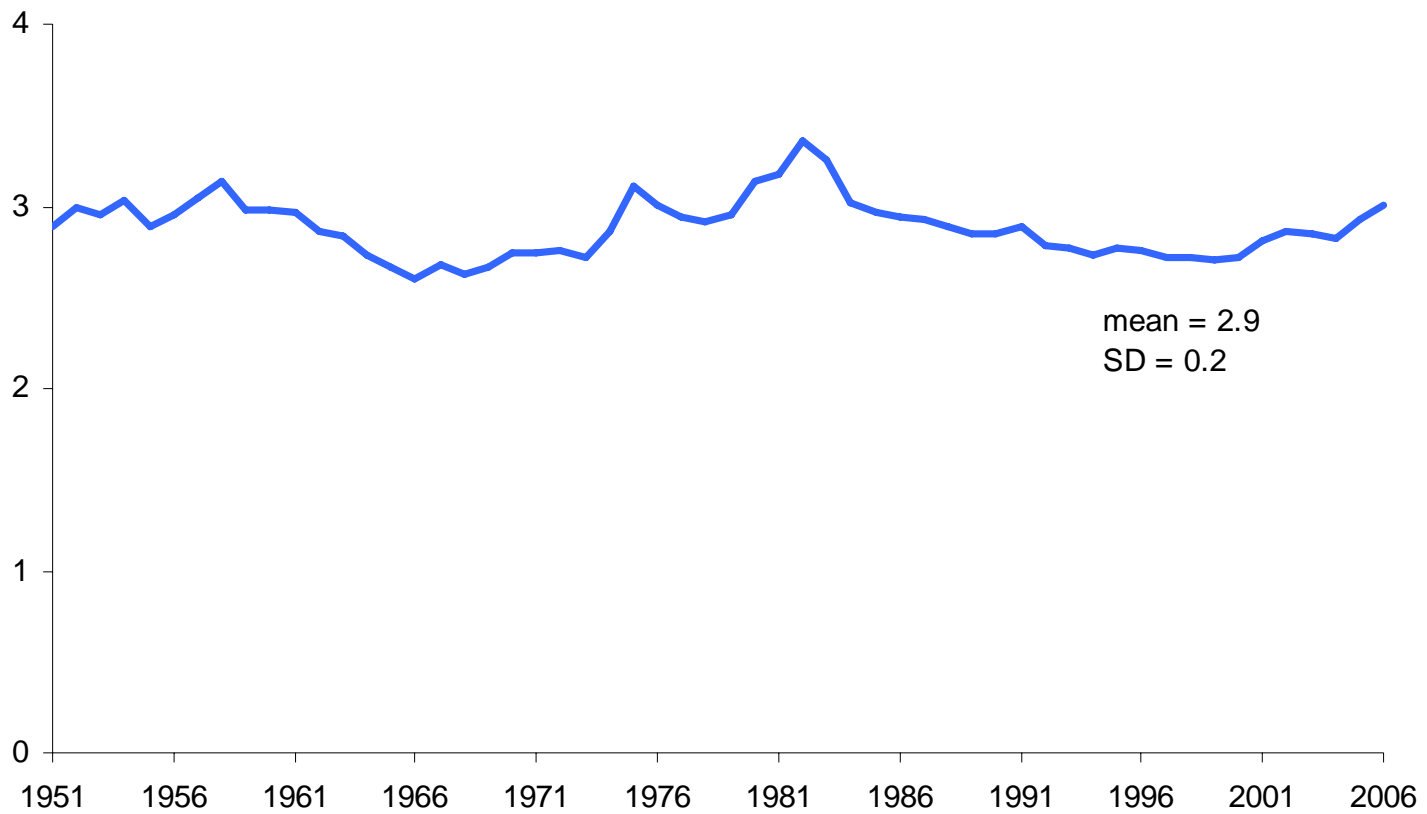
No Permanent Effects of Fluctuations



Source: BEA

No Permanent Effects of Fluctuations

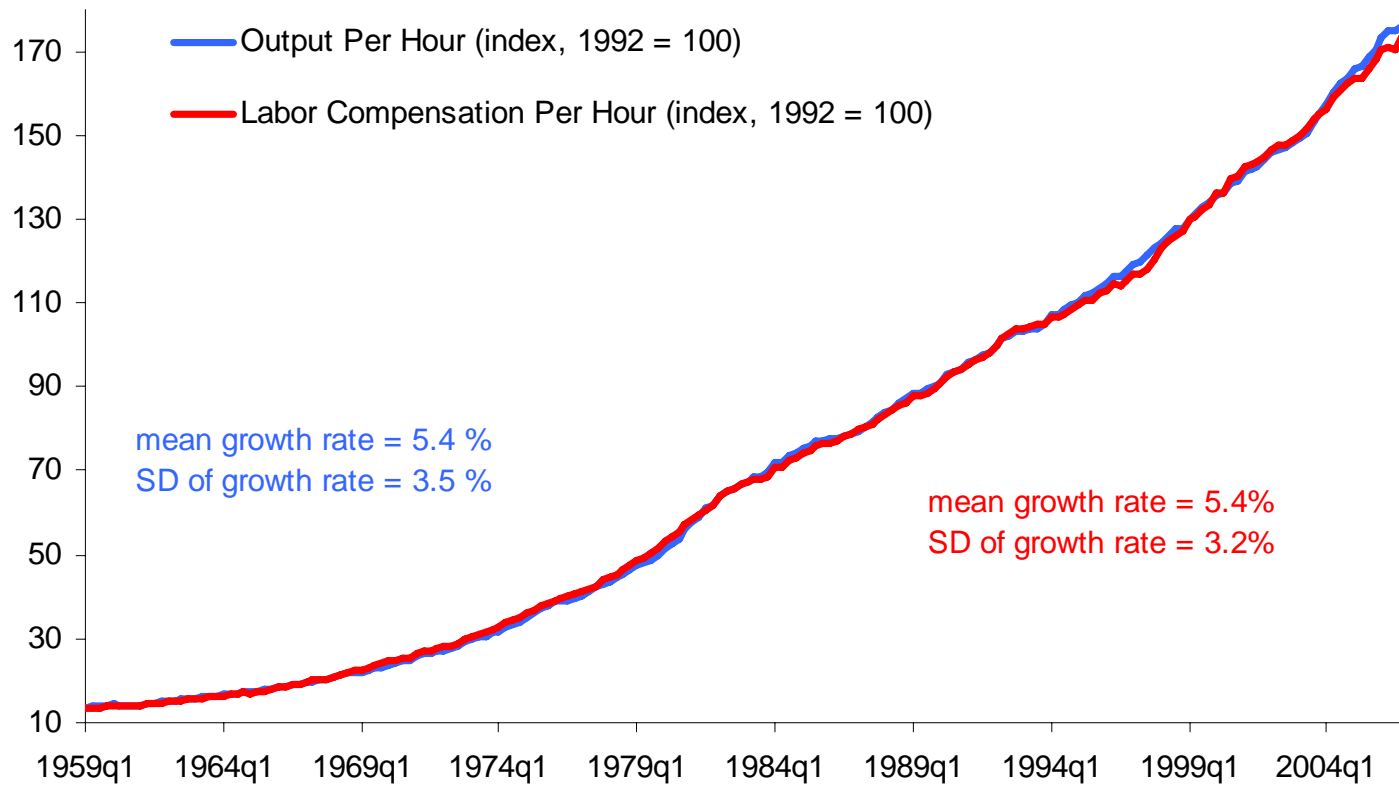
Capital/Output Ratio



Source: BEA

No Permanent Effects of Fluctuations

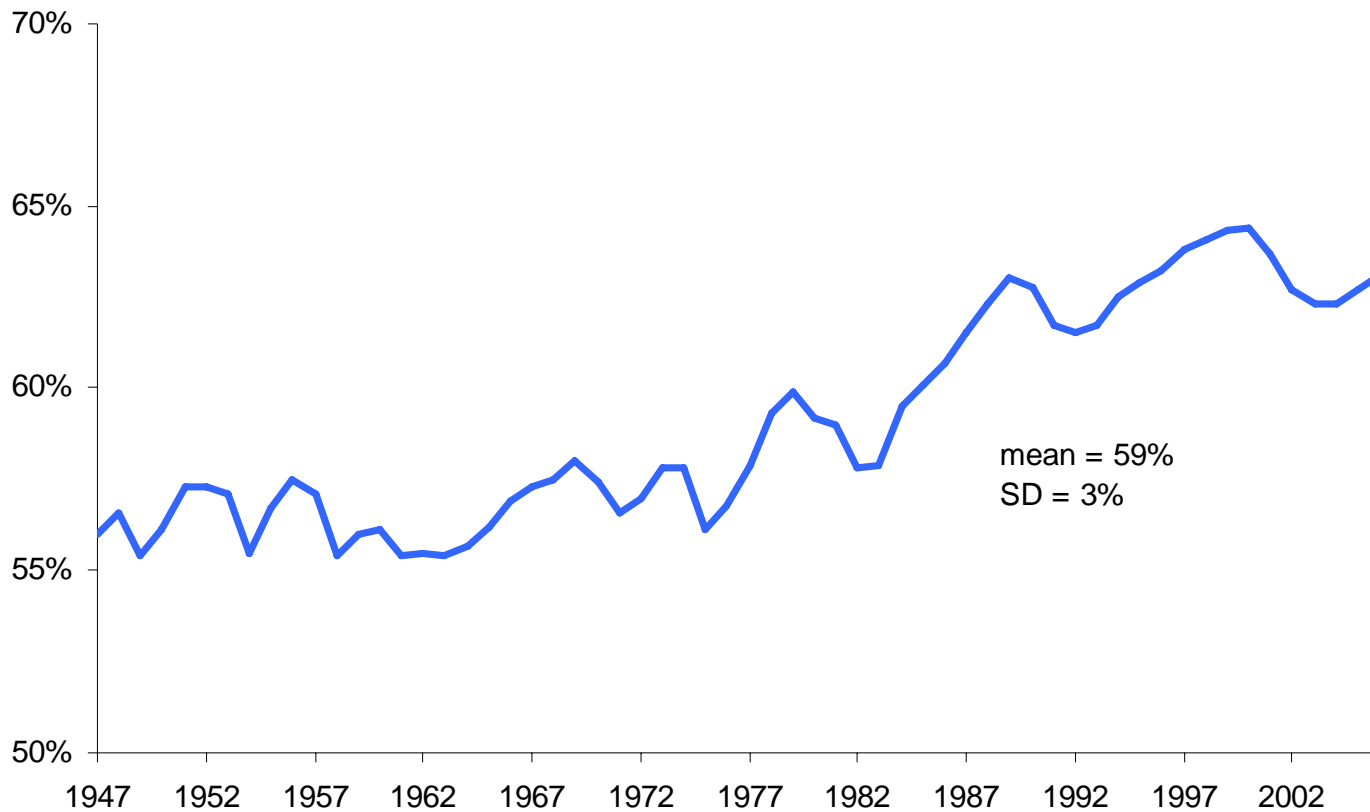
Output Per Hour and Compensation Per Hour



Source: BEA, U.S. Census Bureau

No Permanent Effects of Fluctuations

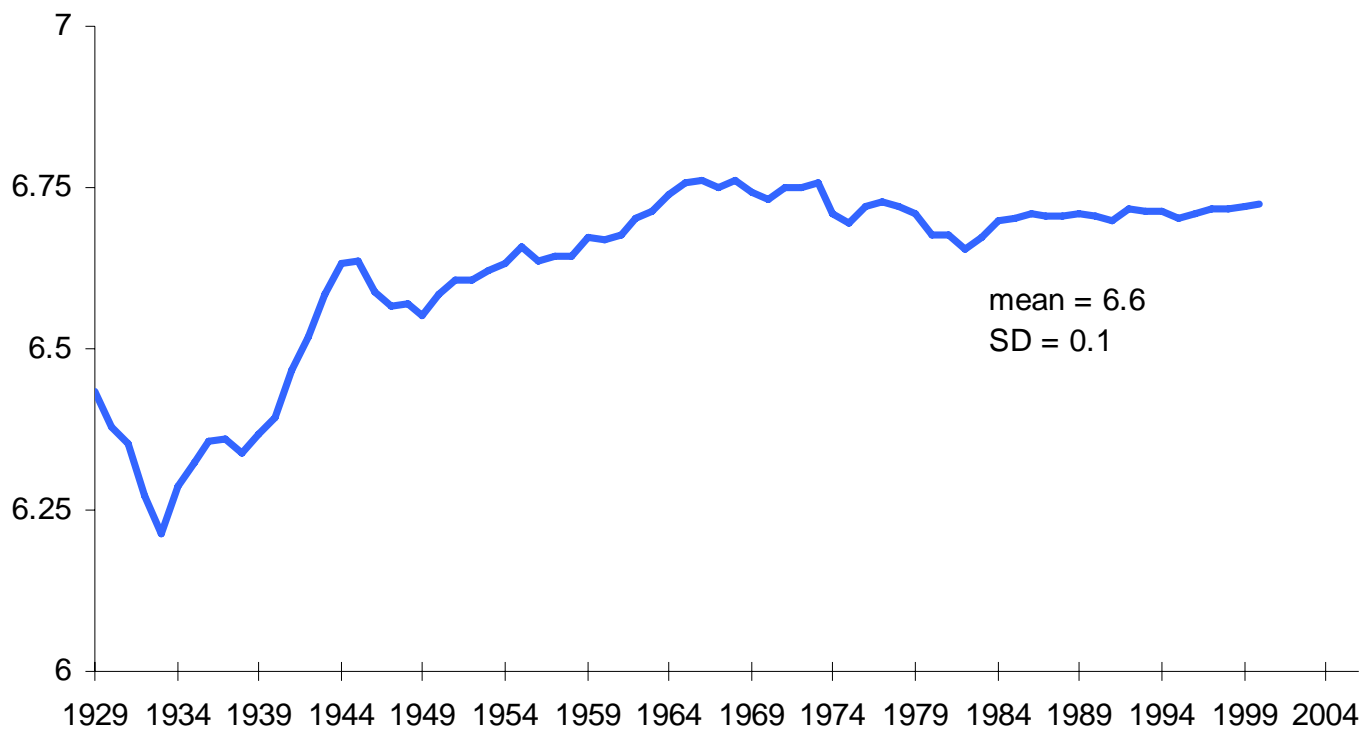
Employment Rate



Source: Economic Report for the President 2007

No Permanent Effects of Fluctuations

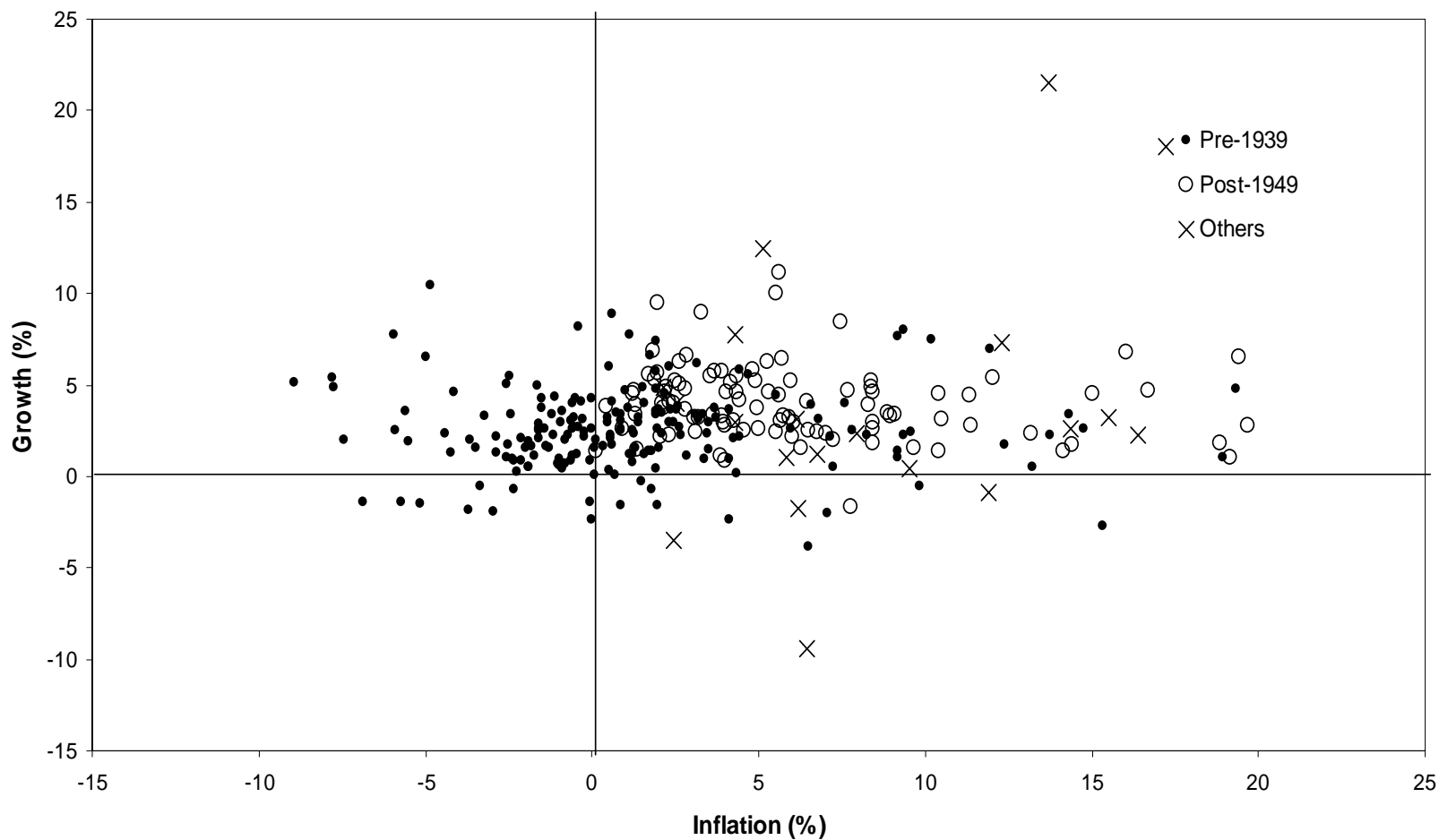
Logarithm of U.S. Total Factor Productivity
(2% trend removed)



Source: Chari, Kehoe, McGrattan (2007)

Modest Effects of Inflation in Long Run

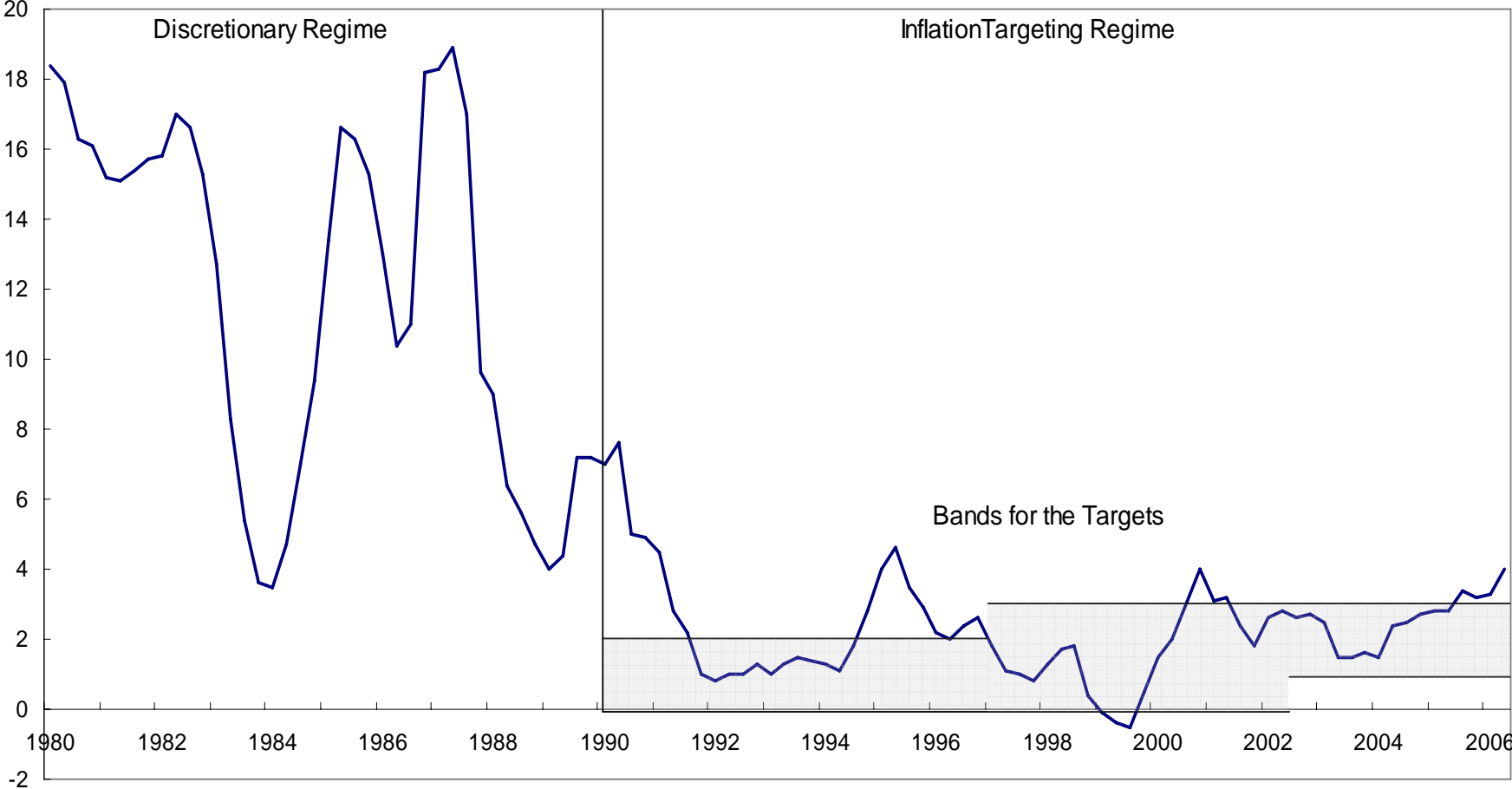
Average Inflation and Real Output Growth in 15 Countries, 1820-2000



Source: Atkeson & Kehoe (2004)

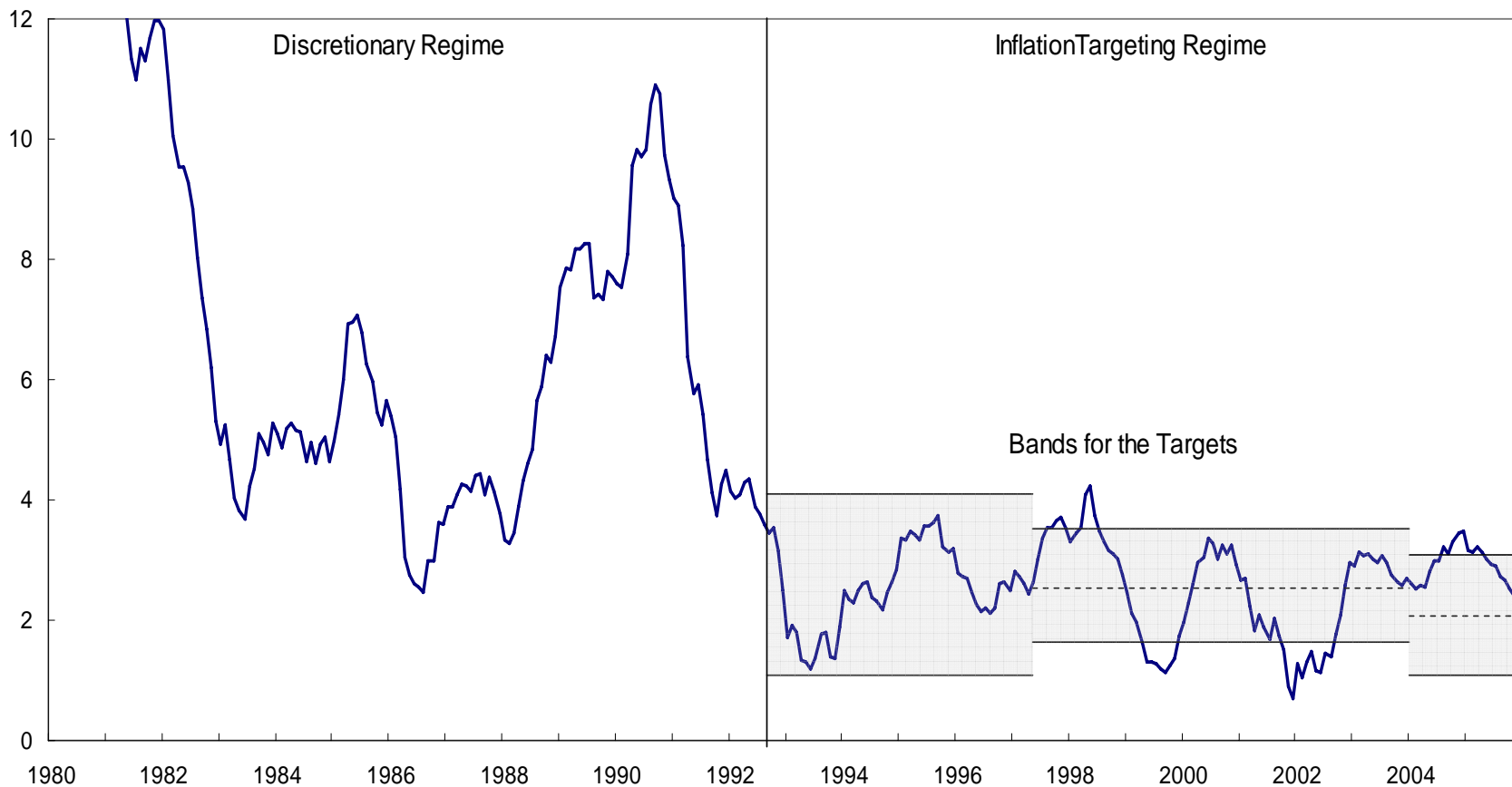
**More Evidence on
Modest Real Effects of Monetary Policy:
The Case of Inflation Targeting**

Inflation in Discretionary and Targeting Regimes - NZ



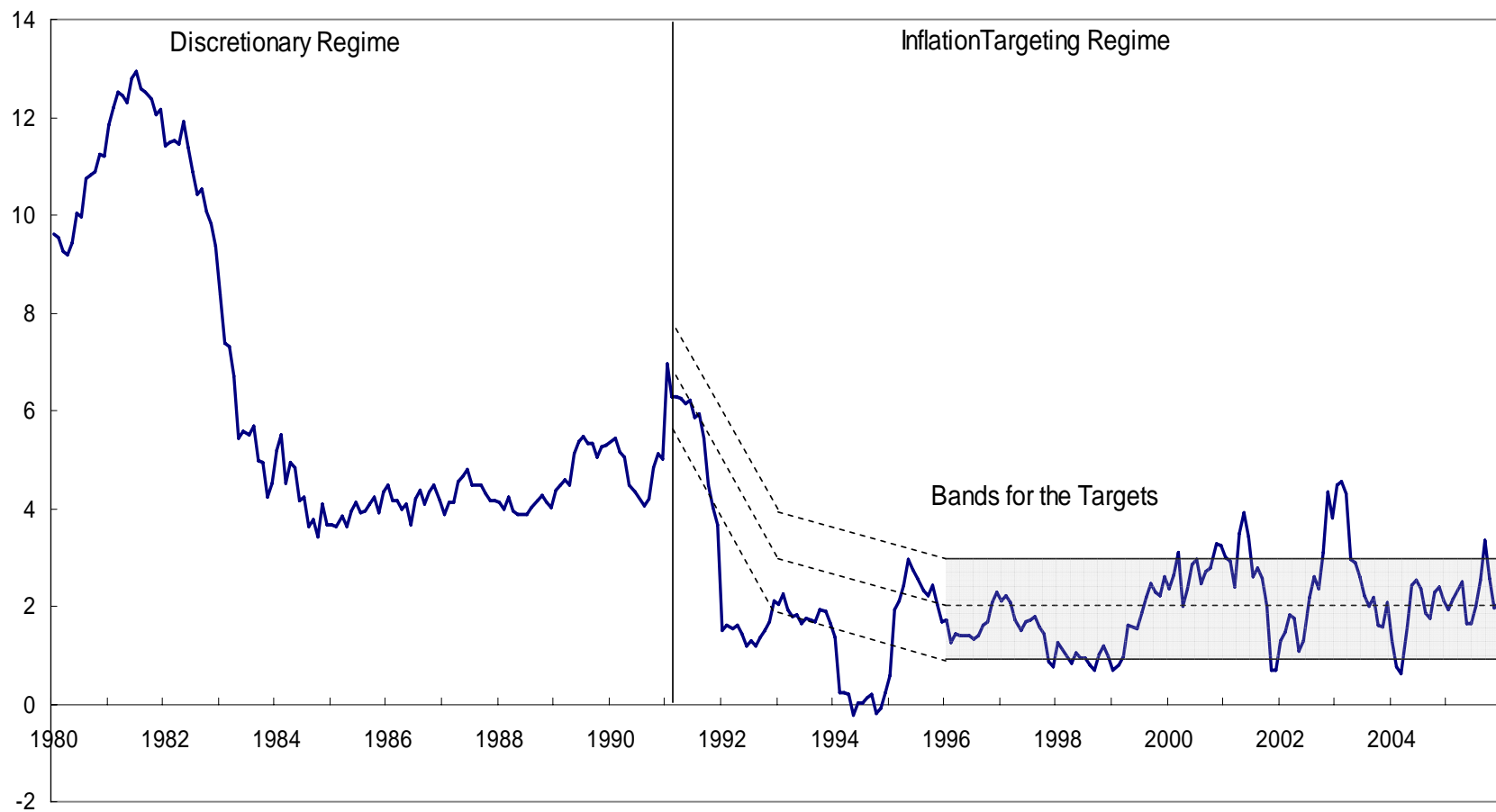
Source: The Reserve Bank of New Zealand

Inflation in Discretionary and Targeting Regimes - UK



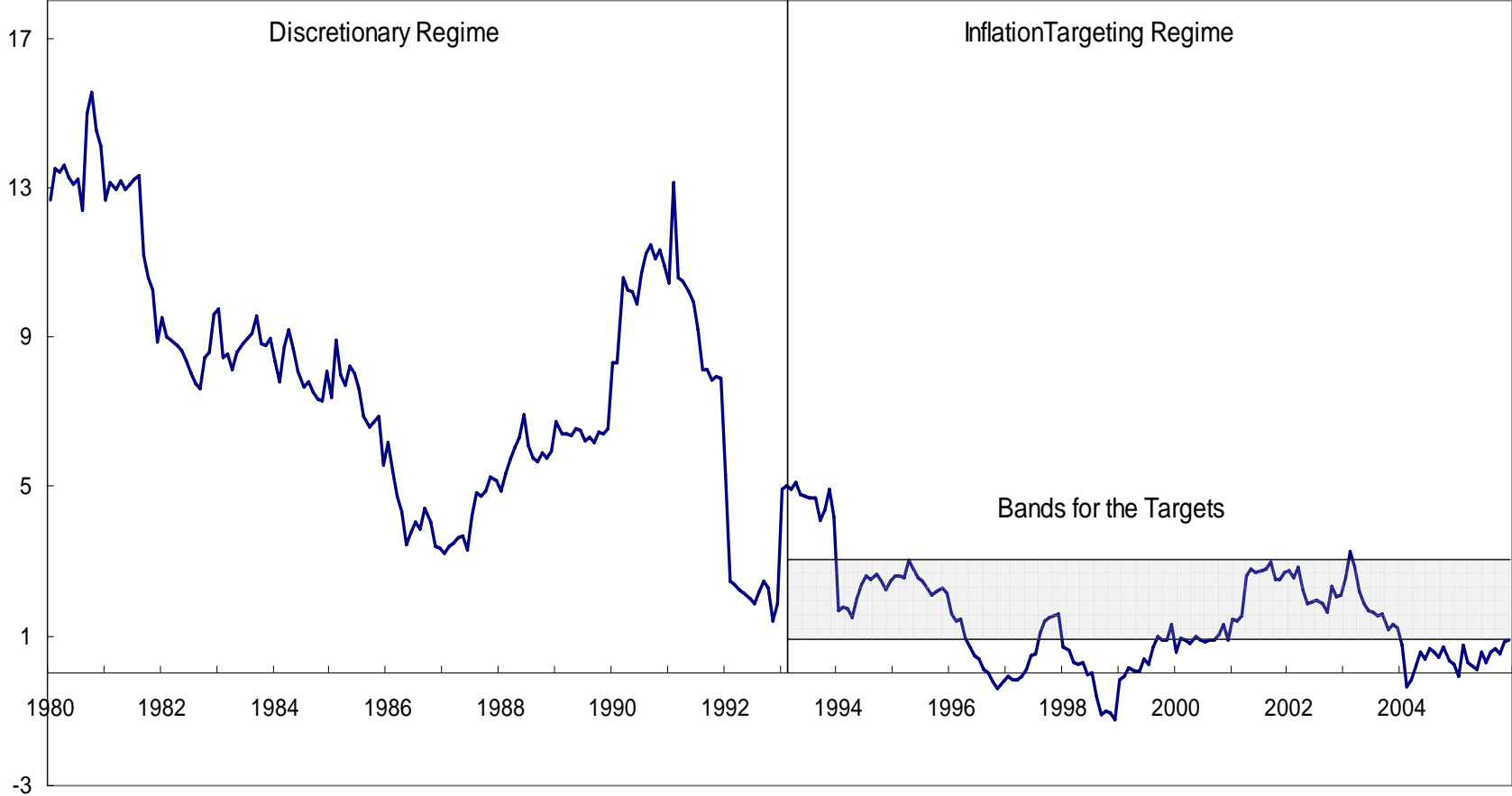
Source: IMF-IFS, Bank of England

Inflation in Discretionary and Targeting Regimes - Canada



Source: OECD, Bank of Canada

Inflation in Discretionary and Targeting Regimes - Sweden



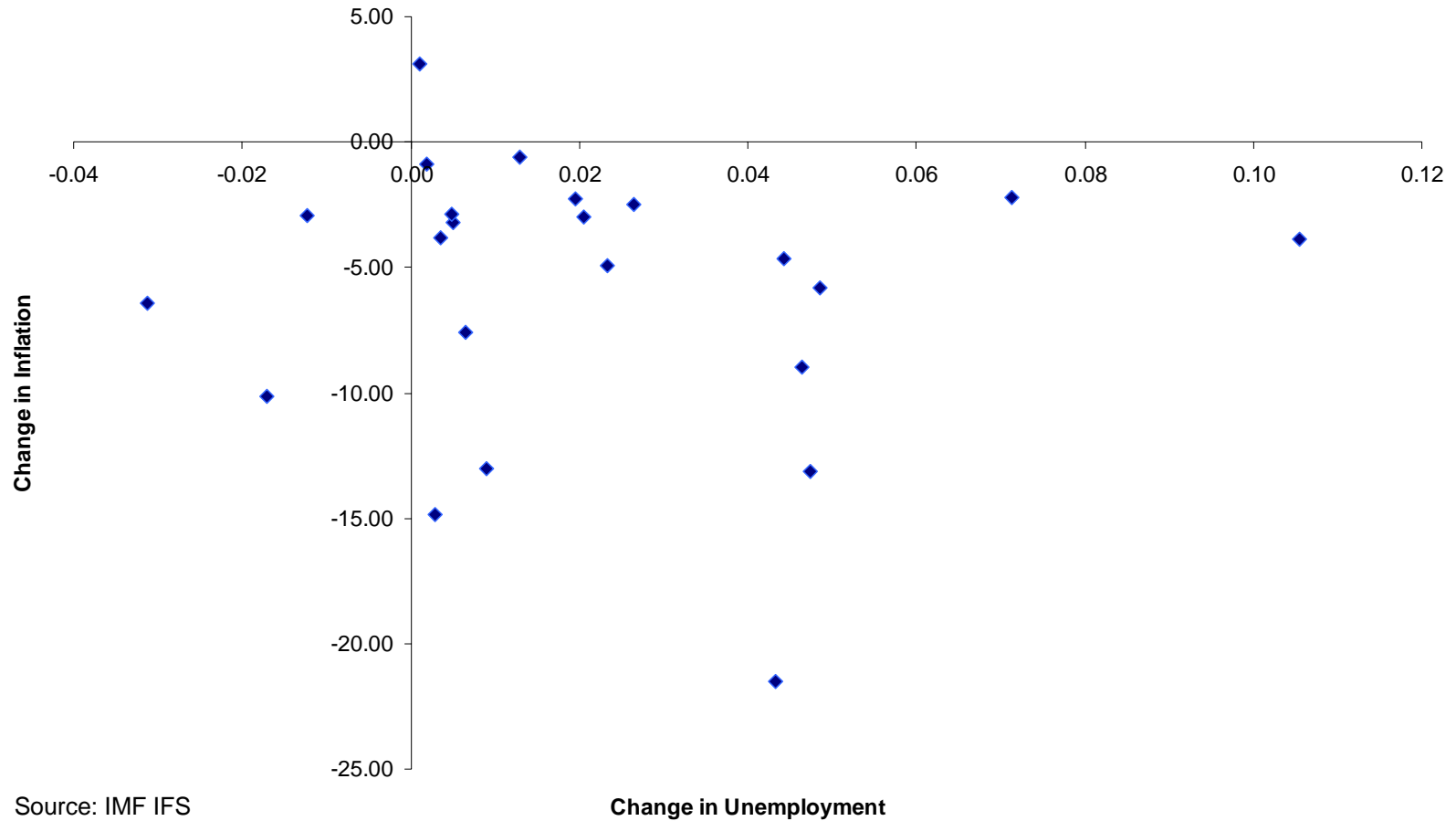
Source: OECD, Bank of Sweden

Inflation Targeting in 22 Countries: 1989-2002

	5 Years Before Targeting Date	5 Years After Targeting Date
Mean Inflation	27.34	4.92
Median Inflation	7.34	3.55
Mean GDP growth	3.85	3.84
Median GDP growth	3.61	3.76

Source: IMF IFS

Change in Inflation versus Change in Unemployment Before versus After Adoption



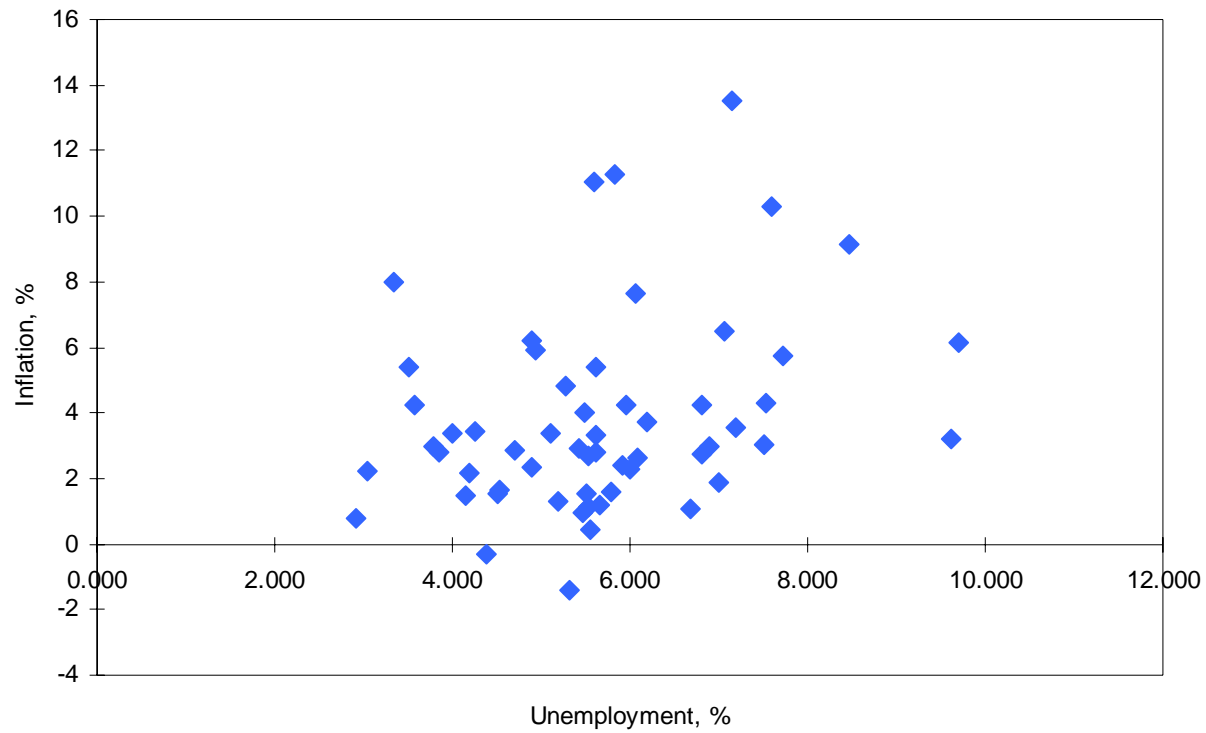
$$y = -14.6x - 5.6, \quad R^2 = 0.0065, \quad t - Stat = -0.37$$

No Stable Short Run Phillips Curve

**Evidence for
First Generation Phillips Curve**

Inflation versus Unemployment

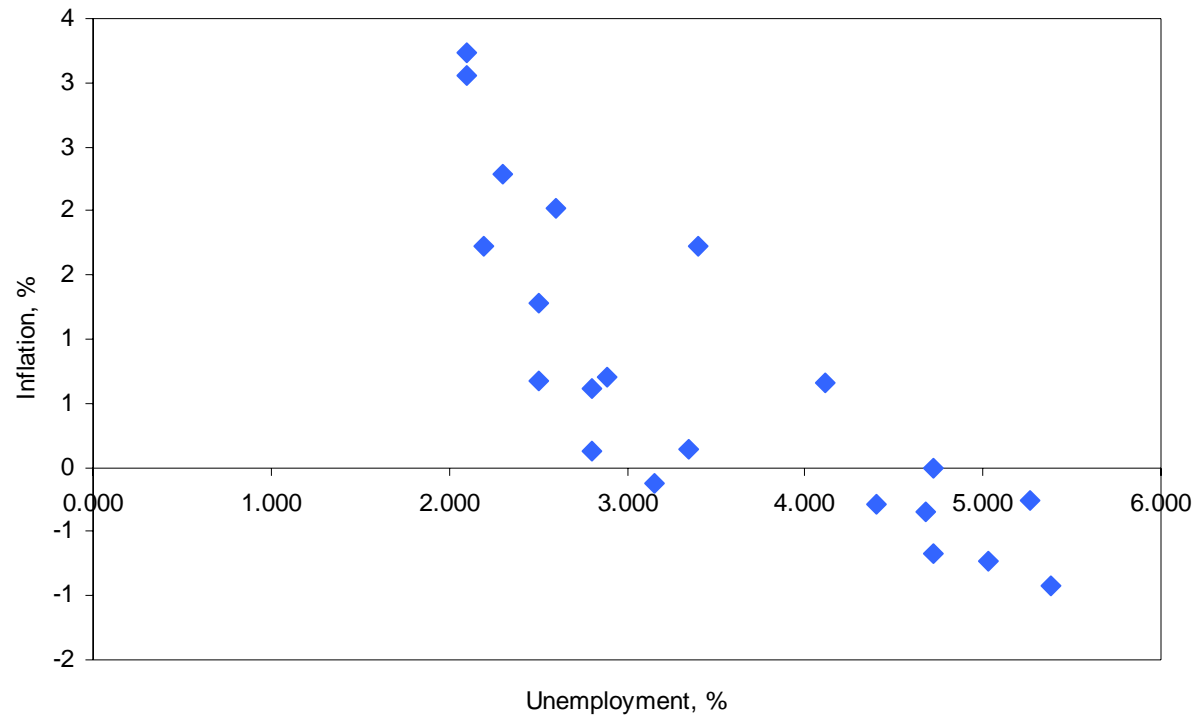
United States



Source: IMF IFS

Inflation versus Unemployment

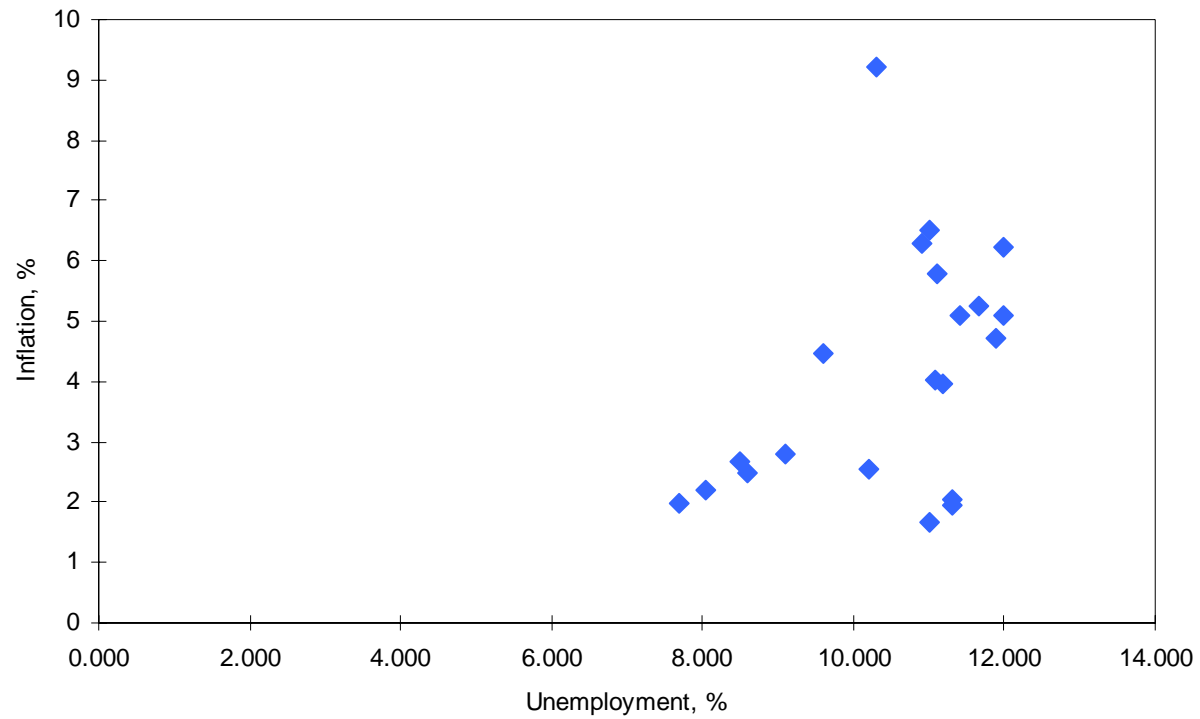
Japan



Source: IMF IFS

Inflation versus Unemployment

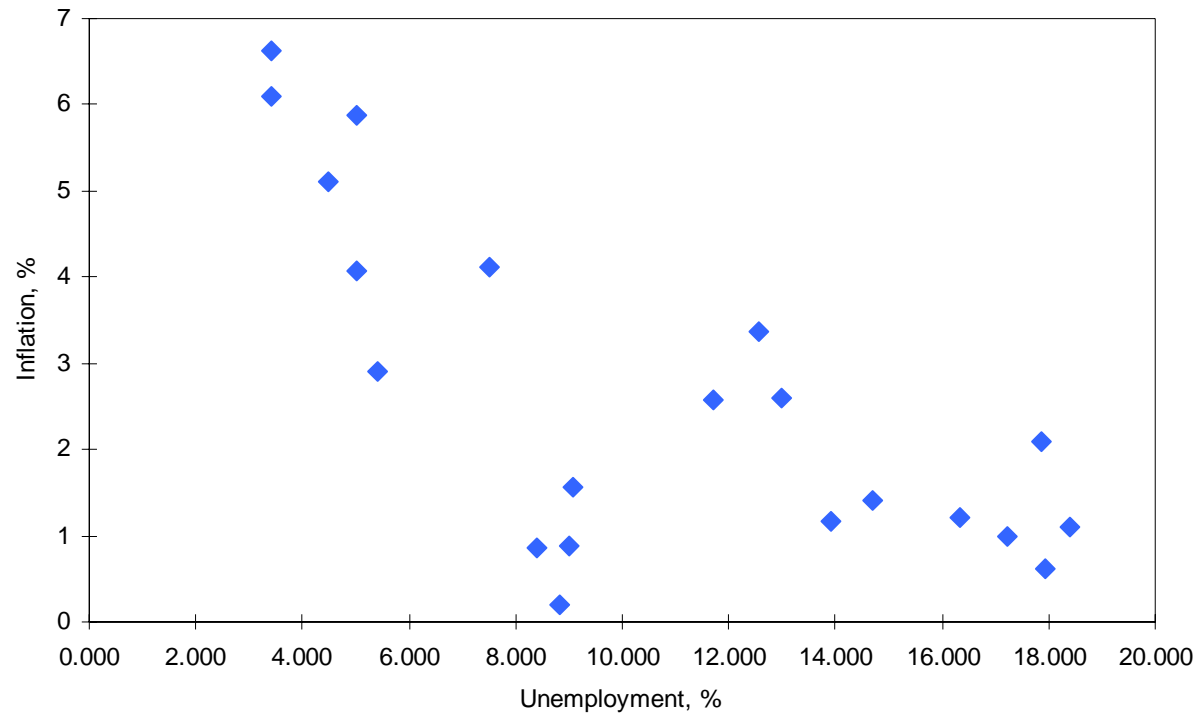
Italy



Source: IMF IFS

Inflation versus Unemployment

Finland

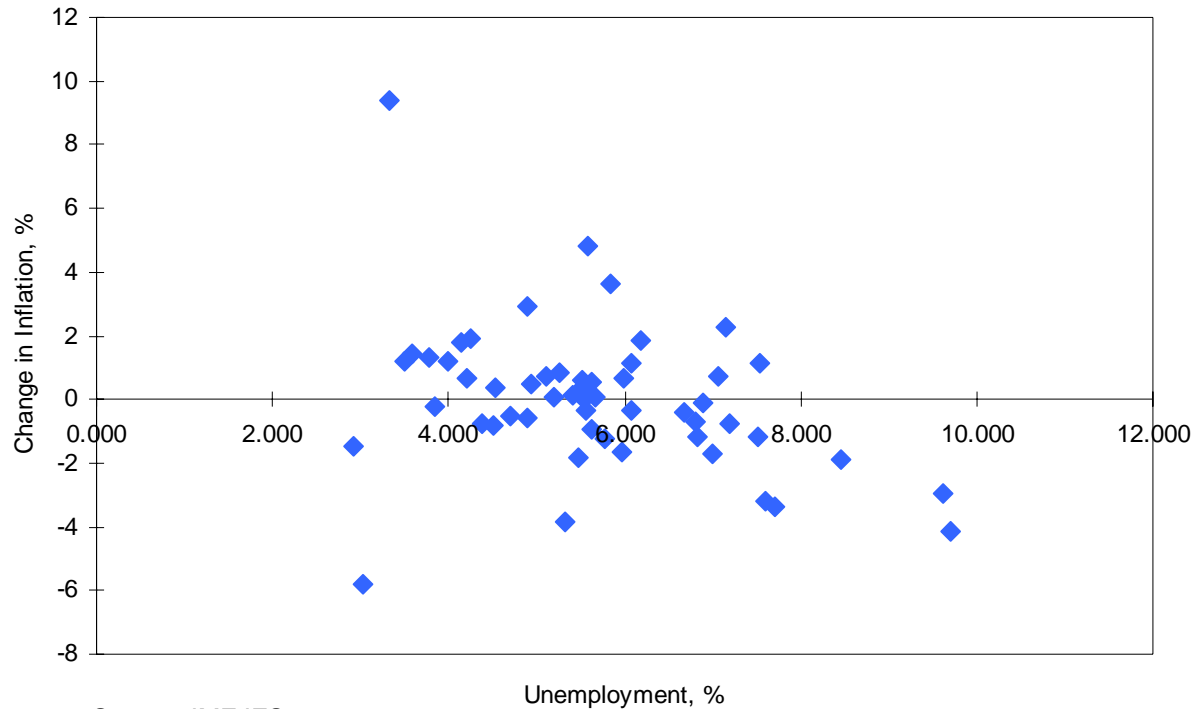


Source: IMF IFS

**Evidence for
Second Generation Phillips Curve**

Change in Inflation versus Unemployment

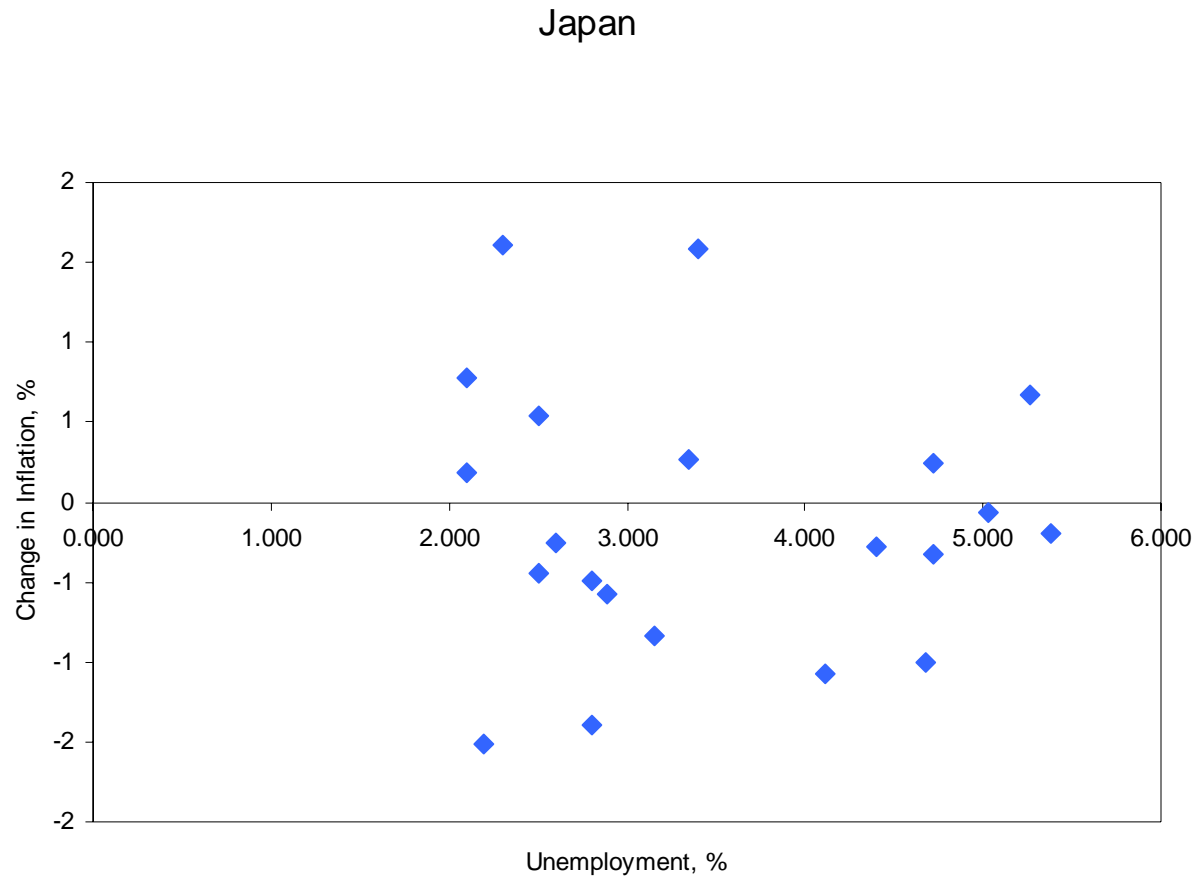
United States



Source: IMF IFS

$$y = -0.54x + 3.07, \quad R^2 = 0.12, \quad t\text{-Stat} = -2.81$$

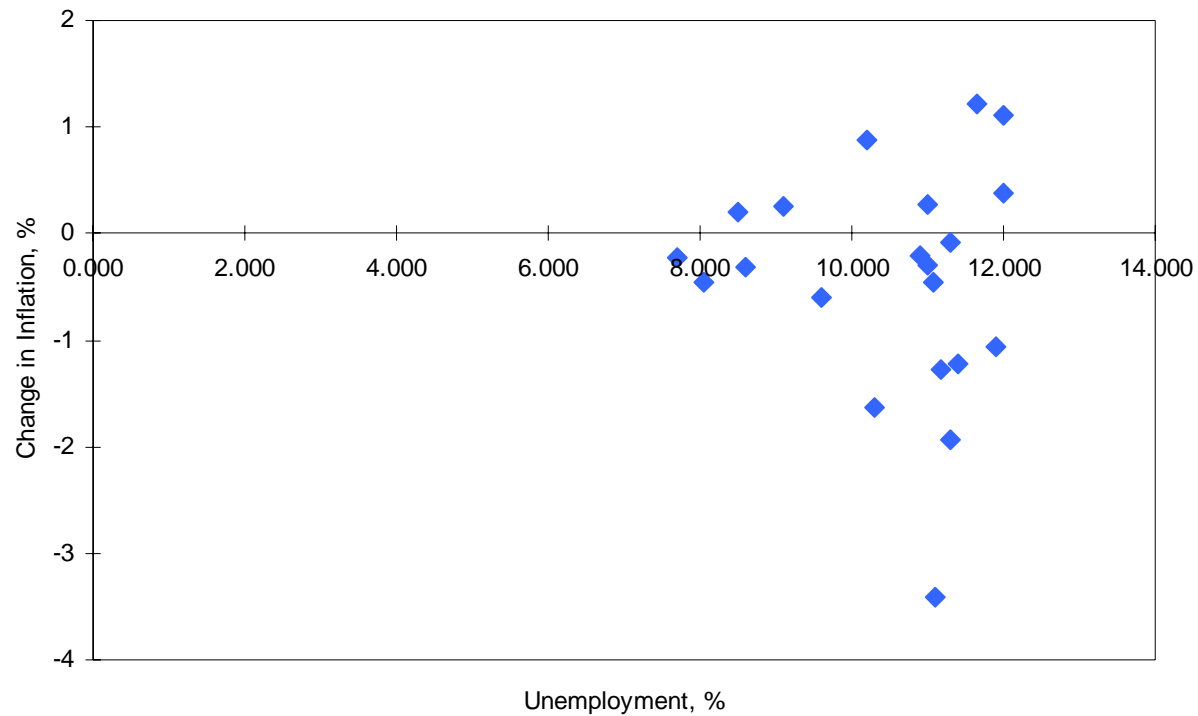
Change in Inflation versus Unemployment



Source: IMF IFS

Change in Inflation versus Unemployment

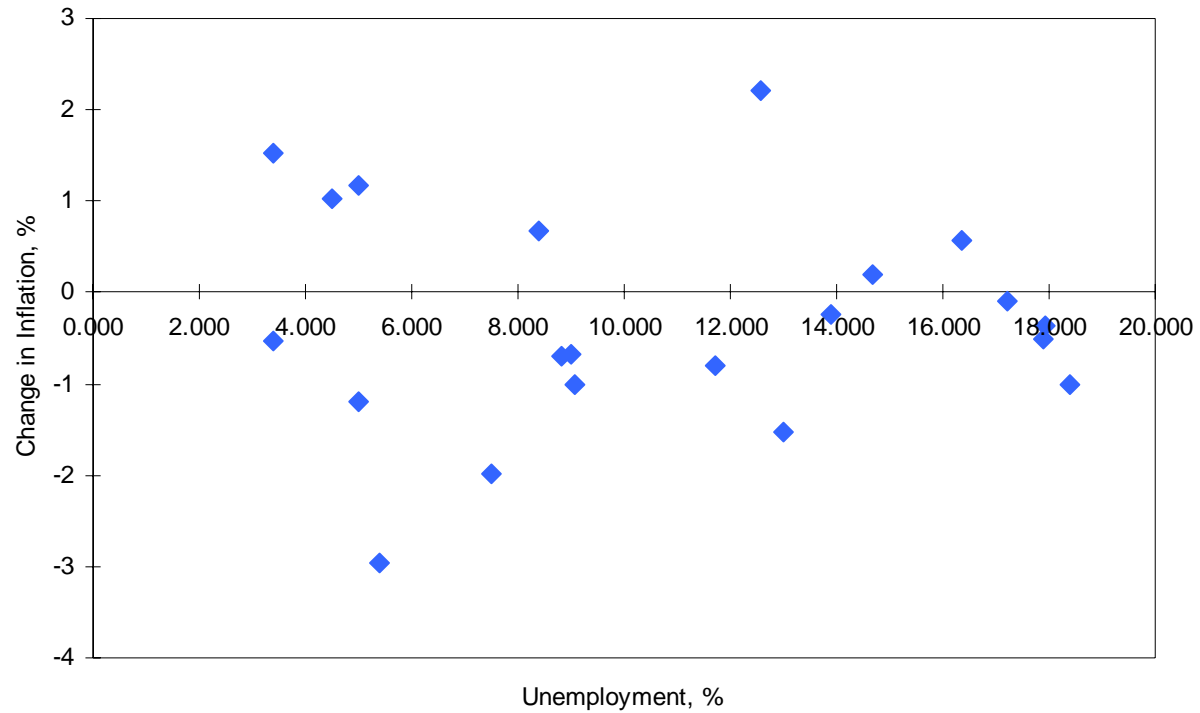
Italy



Source: IMF IFS

Change in Inflation versus Unemployment

Finland



Source: IMF IFS

**Does Policy-Invariant
Phillips Curve Pass Smell Test?**

Policy-Invariant Phillips Curve?

- If Phillips curve policy-invariant
 - Zimbabwe should have low unemployment rates
 - Brazil, Argentina should have done well in hyperinflations
- Policy-invariant Phillips curve fails smell test

Punchline

- Why do we like standard models?

Punchline

- Why do we like standard models?
- Not because we are blind to obvious fact

Punchline

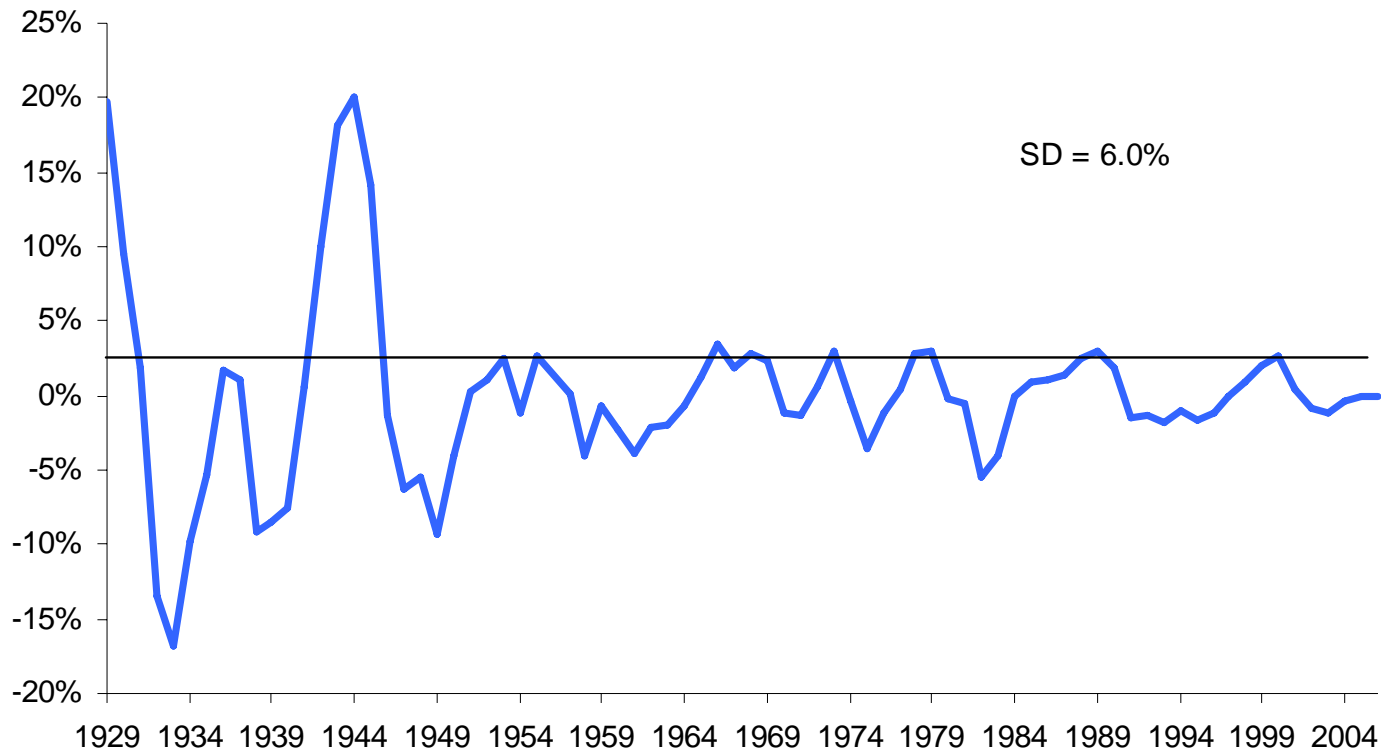
- Why do we like standard models?
- Not because we are blind to obvious fact
- Not because we are stubborn ideologues

Punchline

- Why do we like standard models?
- Not because we are blind to obvious fact
- Not because we are stubborn ideologues
- But because we are humble applied theorists

Business Cycles...Possibly a Big Deal

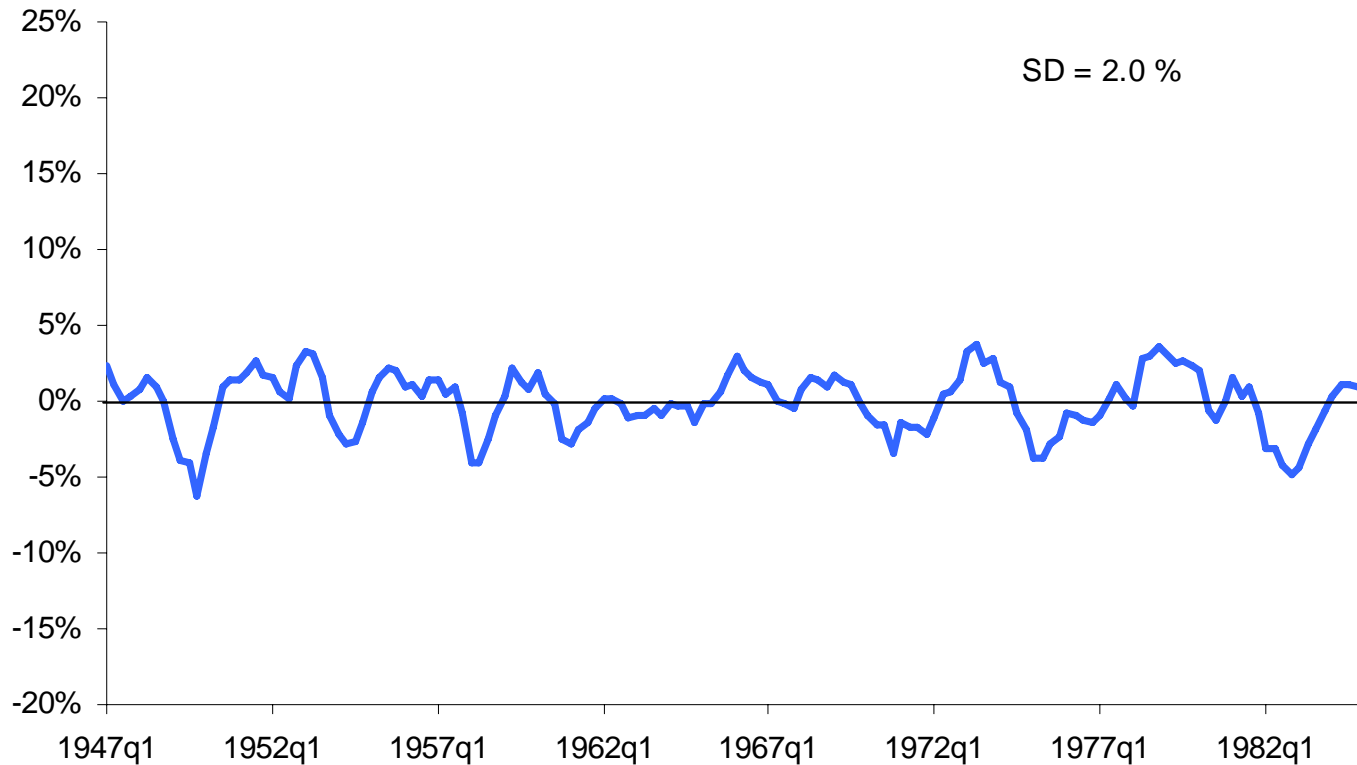
Real GDP: Deviations From Trend
1929-2006 (annual data)



Source: BEA

Business Cycles...Less of a Big Deal

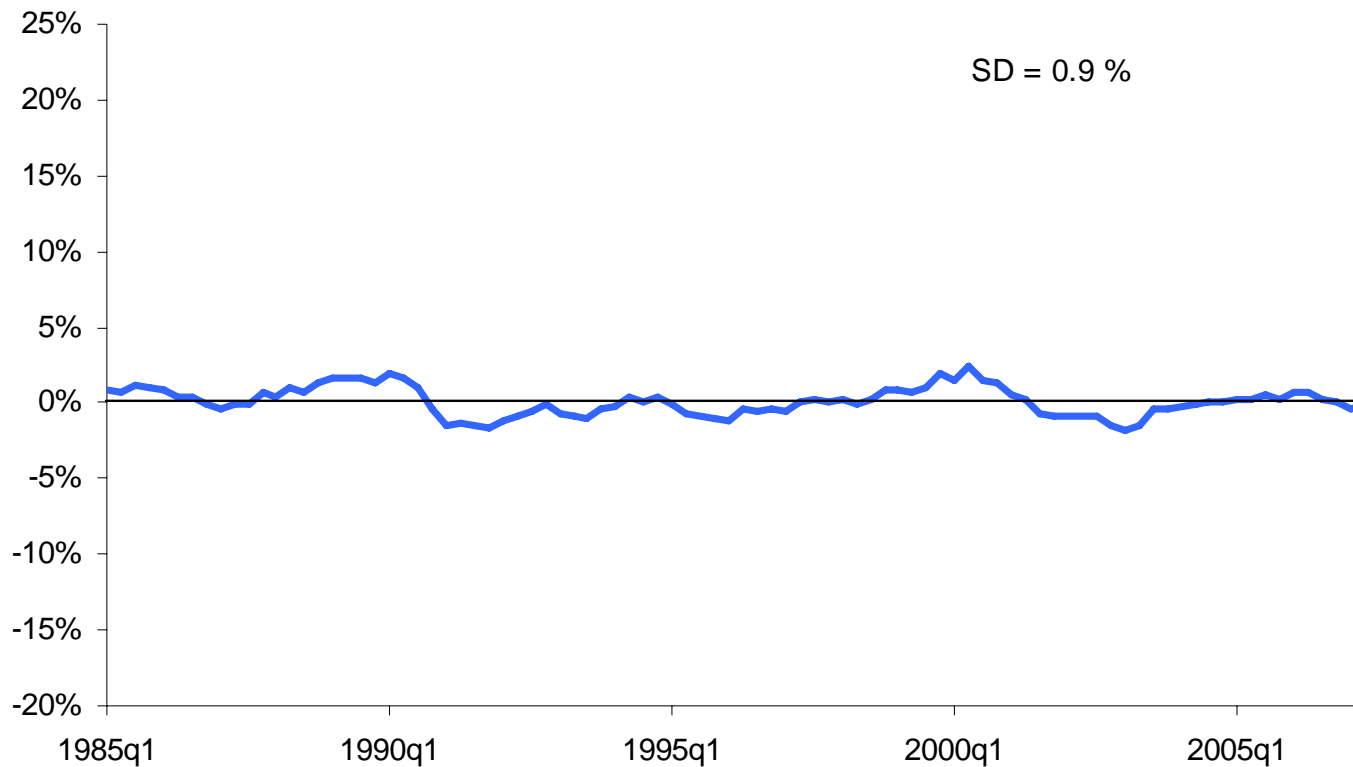
Real GDP: Deviations From Trend
1947-1985 (quarterly data)



Source: BEA

Business Cycles...Even Less of a Big Deal

Real GDP: Deviations From Trend
1985-2007Q2 (quarterly data)



Source: BEA