

# **How Academic Macroeconomic Theory Affects Policy**

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## **Academe and Policy: Engineering versus Architecture**

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- Day to Day Policy Advice: Engineering
  - Essential in getting things done
  - Relatively unimportant in long-run
- Designing Institutions: Architecture
  - Useless in short-run
  - Remote, abstract, model-based
  - Essential in long-run

## Main Arguments Today

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- Much progress in architecture
- Not a great deal in engineering
- Other countries have reformed institutions
- U.S. institutions somewhat better but not much better
- Need to improve U.S. institutions

## **Developments in Macroeconomic Theory**

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- Lucas Critique
- Kydland-Prescott Critique
- Quantitative Business Cycle Modeling

## **Lucas Critique**

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- Private behavior depends on beliefs about how future policies will be set as the state of the economy changes
- Must think about policy as a rule describing how policy will be set as state of the economy changes
- Must think about policy as comparison between alternative rules
- Must get away from “What do we do right now”

## Kydland-Prescott Critique

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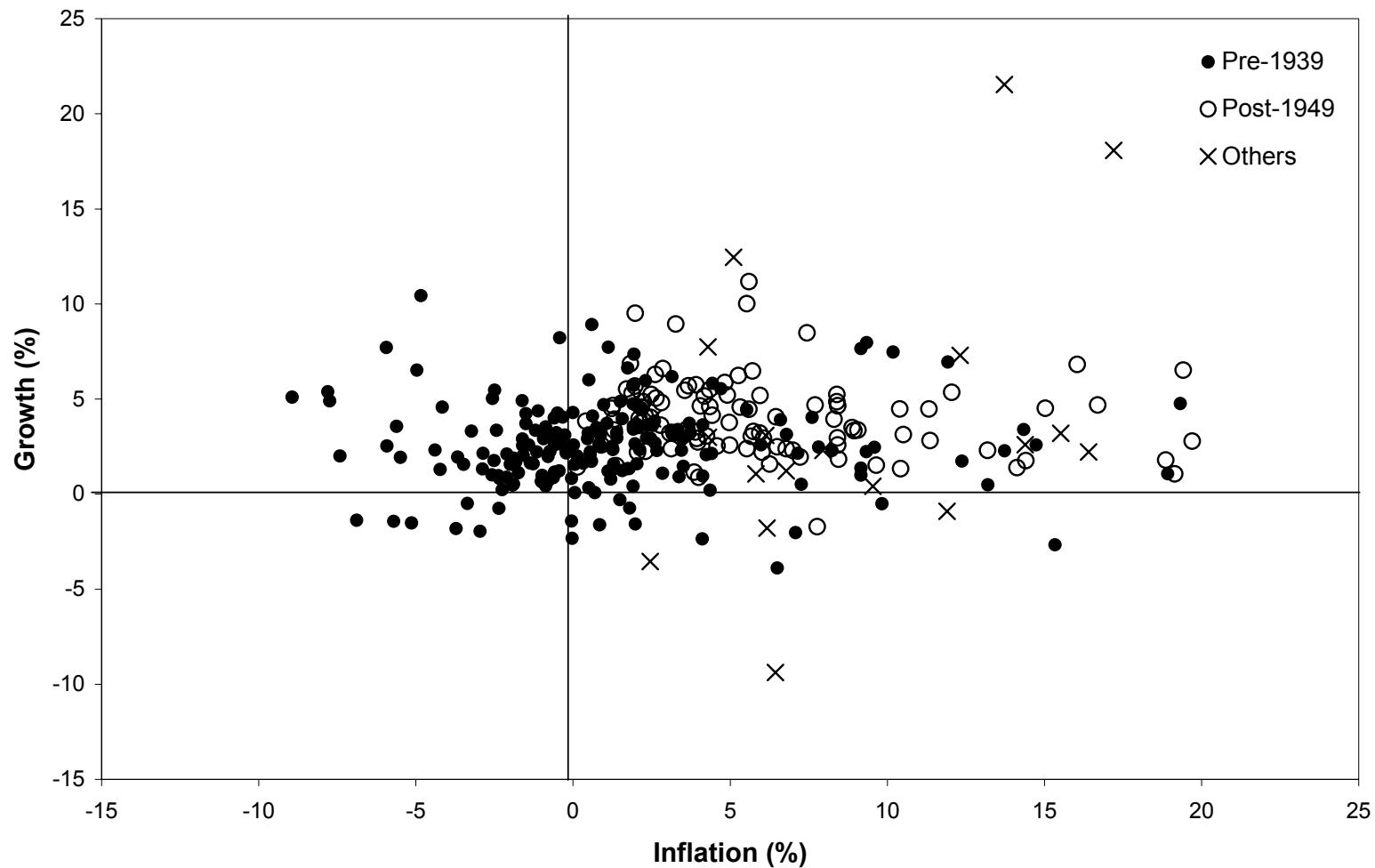
- Policy rules set under commitment better than choosing policies in a discretionary manner
- Must design institutions which make rules difficult to change
- “What should we do now” terrible way to make policy

## **Implications for Monetary Policy**

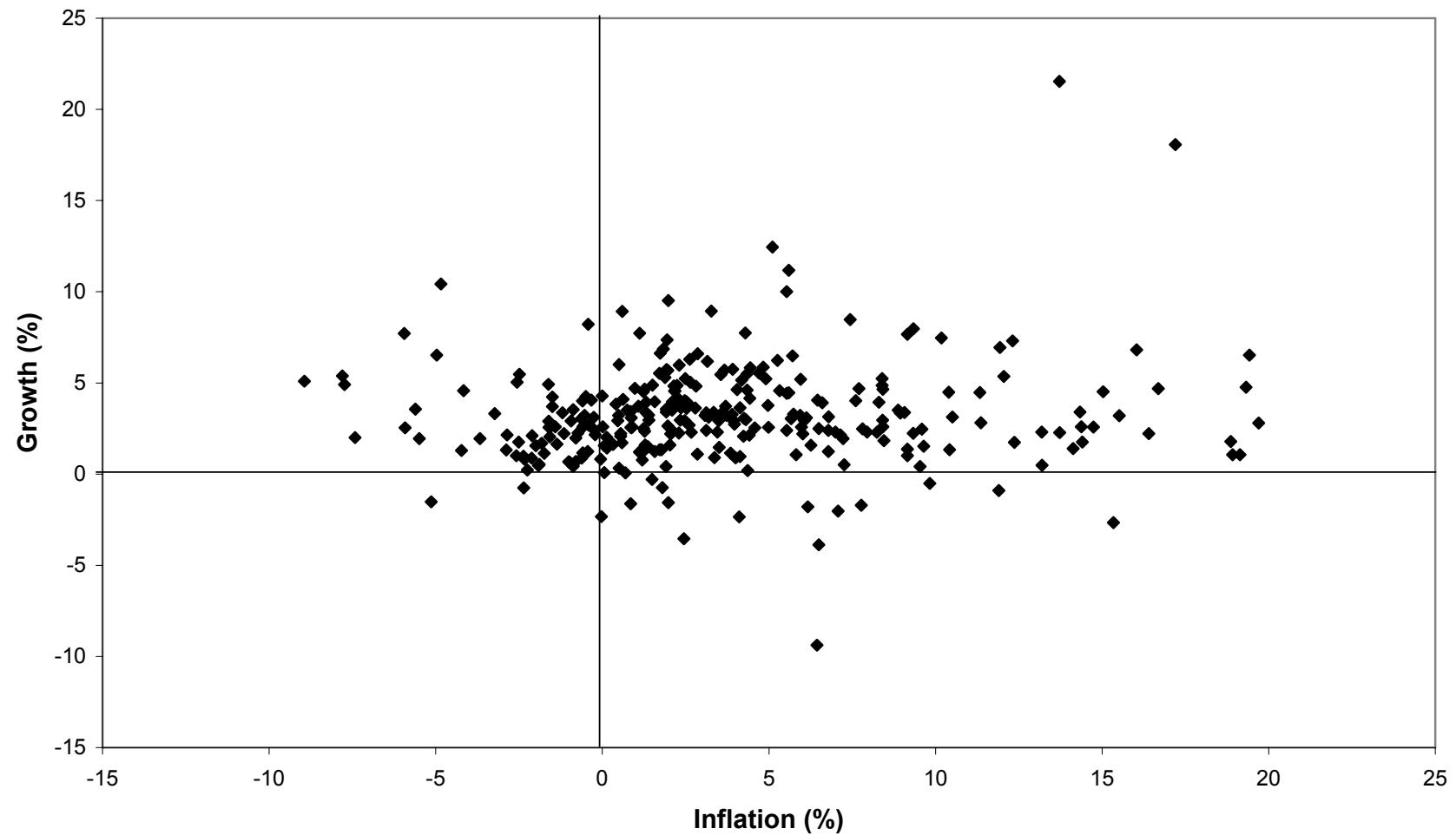
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- Optimal Monetary Policy keeps interest rates and average inflation rates low
- Under discretion, policymakers have incentives to choose policies with short-run gains and long-run costs
- Design institutions to minimize such discretionary policymaking

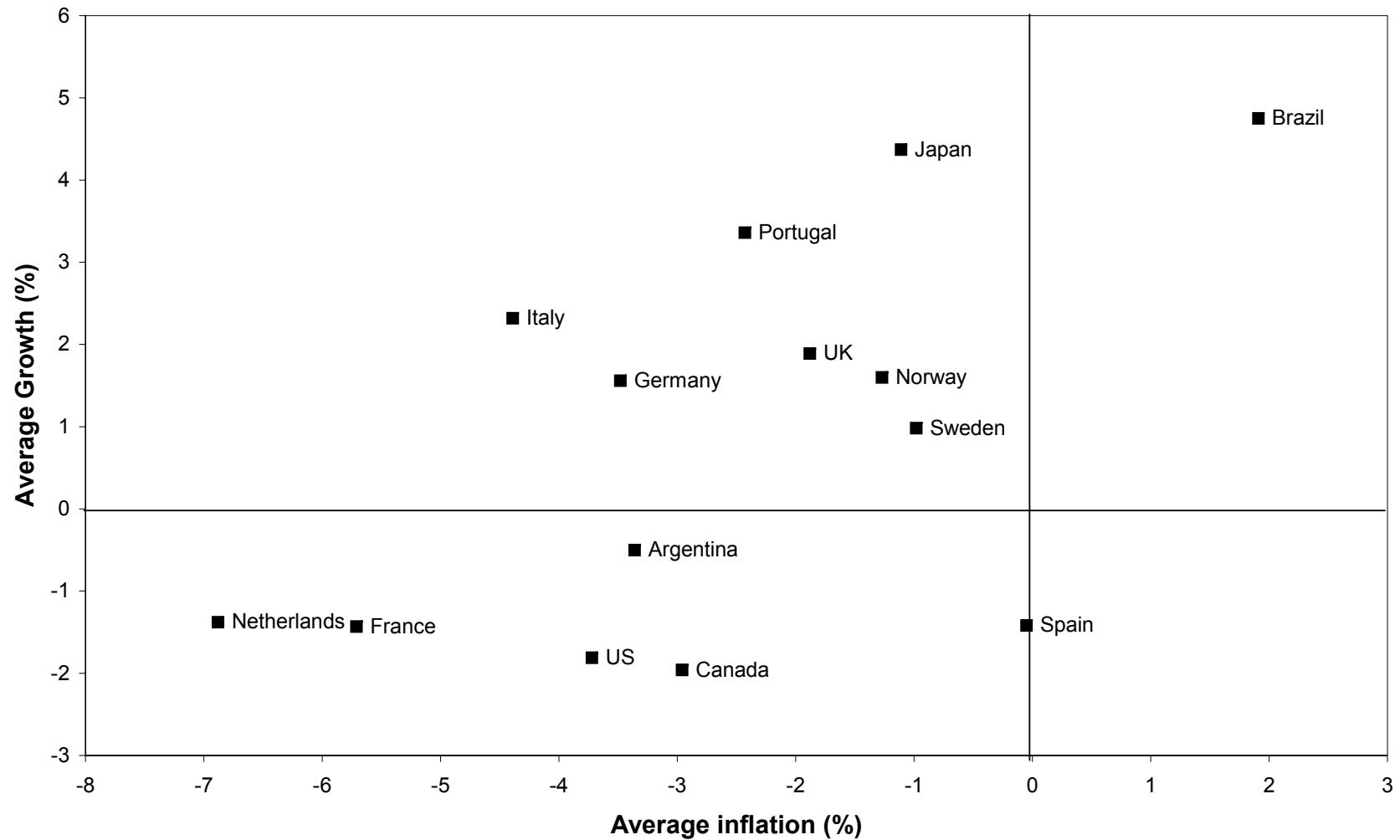
**Average Inflation and Real Output Growth in 15 countries in All 5-year Periods,  
1820-2000**



**Avg. Inflation and Real Output Growth in 15 Countries in All 5-year Periods  
Except 1929-34**



### Average Inflation and Real Output Growth in 14 Countries in 1929-34

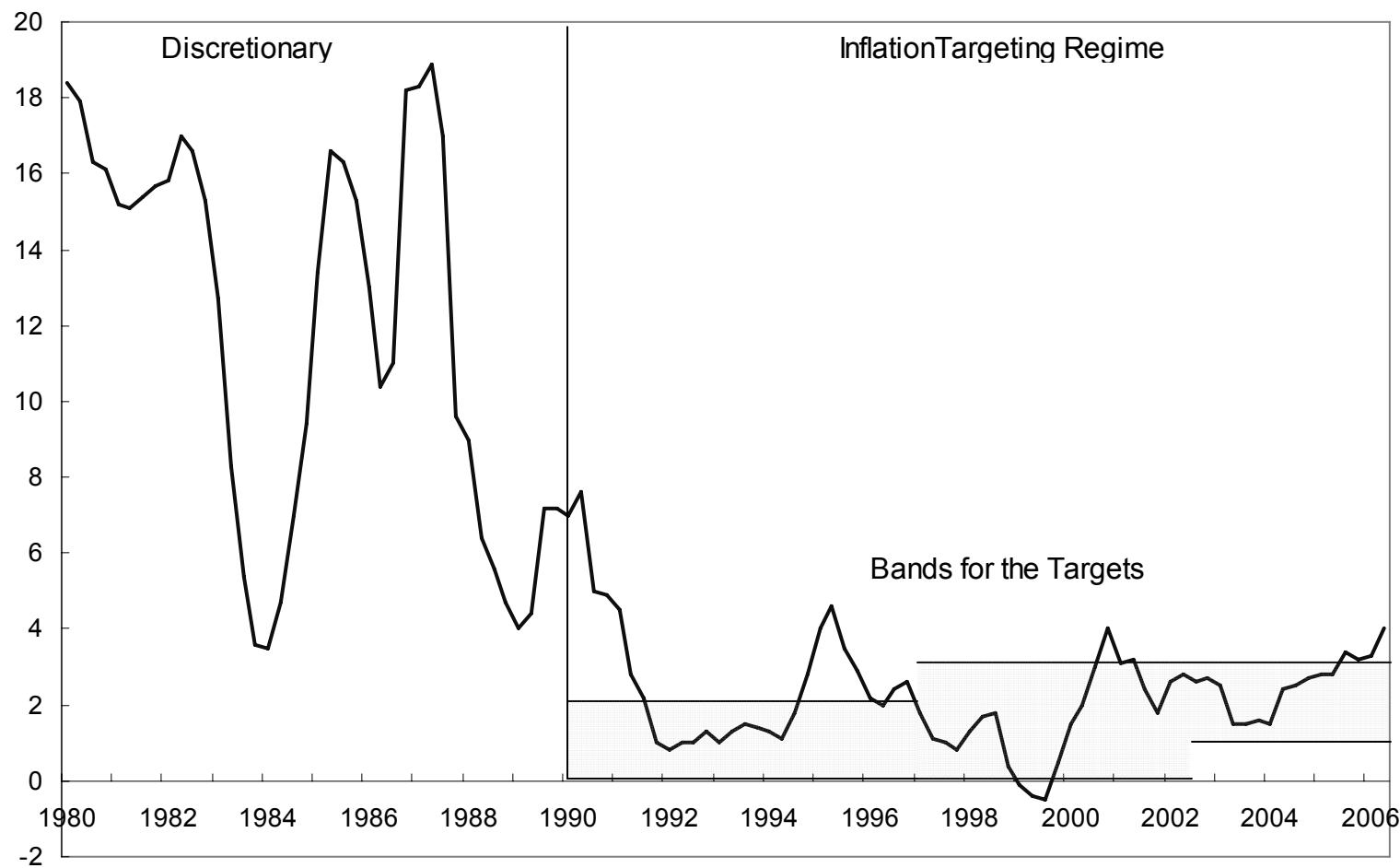


## The Evolution of Monetary Policy

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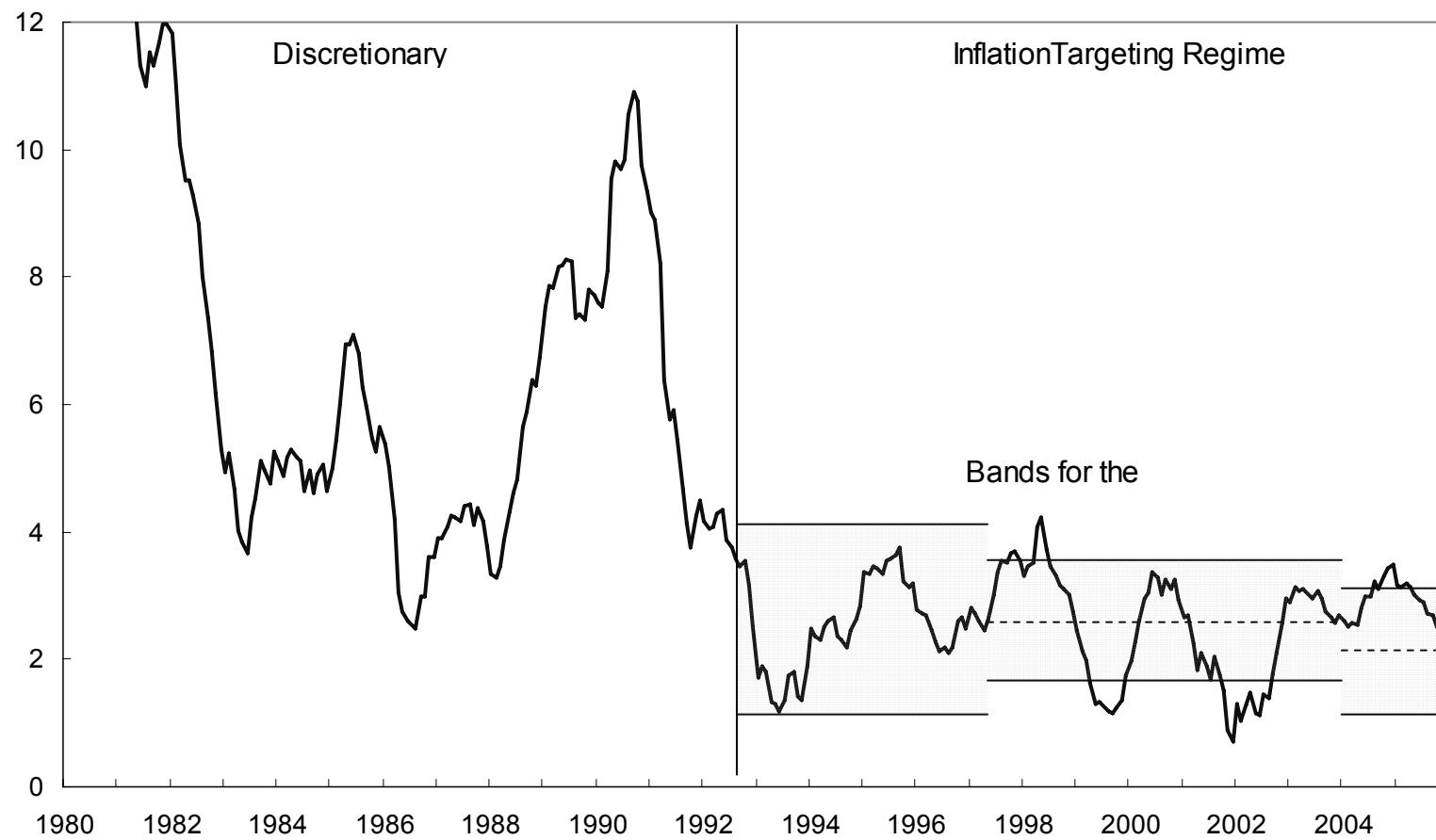
- European Central Bank
  - Commitment to price-stability
  - Restriction on fiscal policies of member countries
  - Independence of central bank core value
- Inflation targeting: 22 countries have adopted inflation targeting since 1989
  - All developed countries except U.S., Japan, Switzerland
  - Some developing countries

### Inflation in Discretionary and Targeting Regimes – NZ



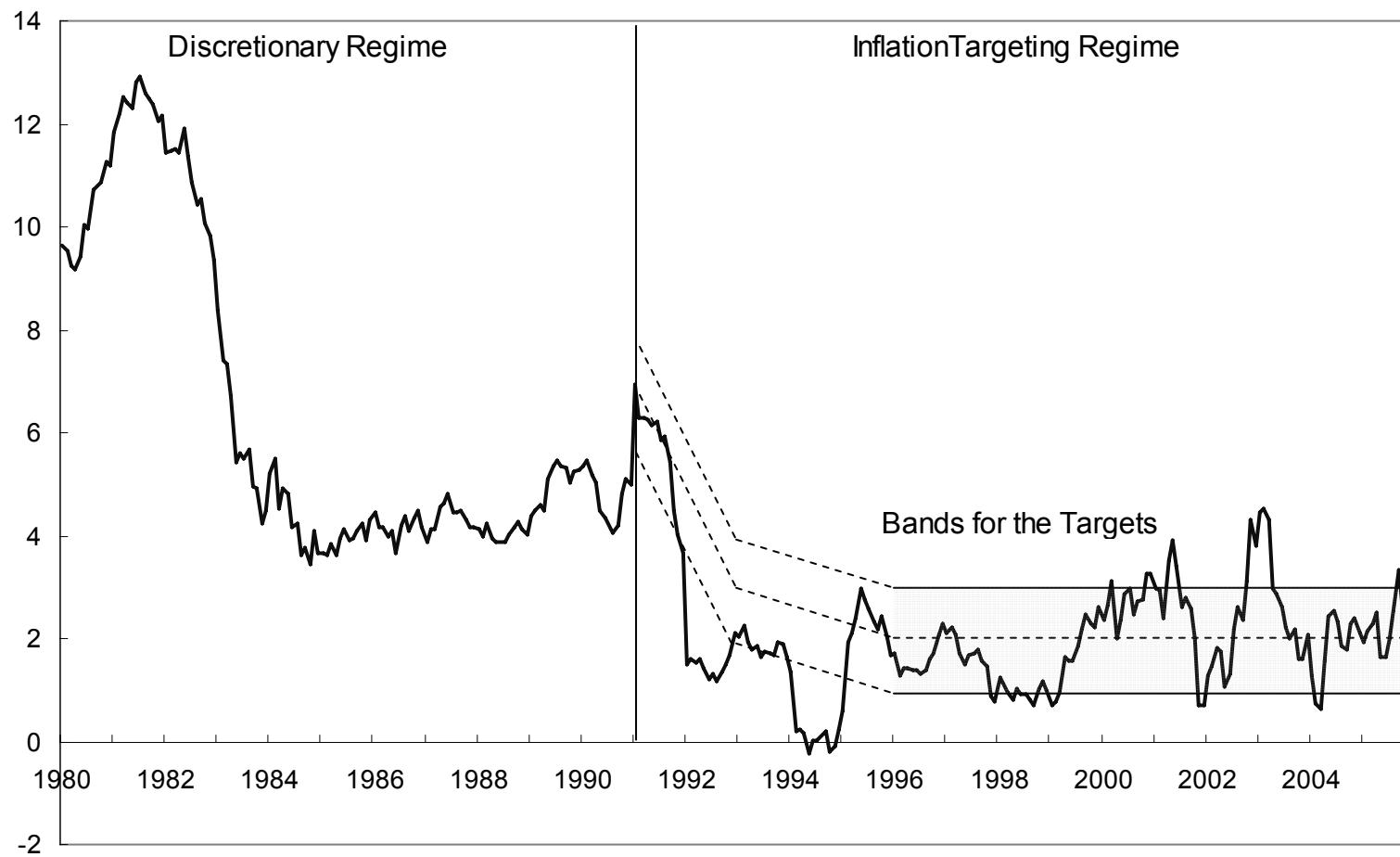
Source: The Reserve Bank of New Zealand

### Inflation in Discretionary and Targeting Regimes – UK



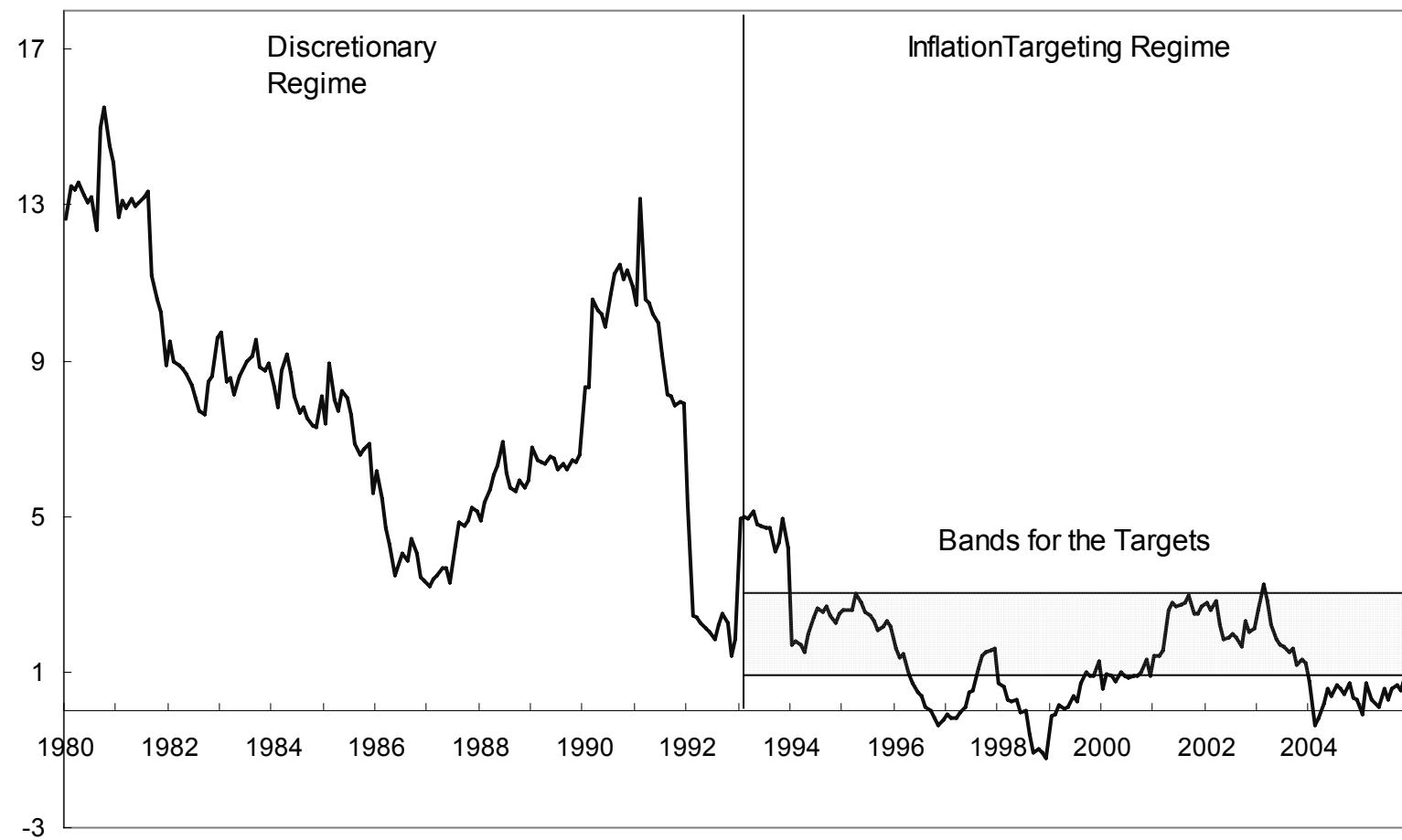
Source: IMF-IFS, Bank of England

### 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

Country	Date of adoption	Average inflation 5 years before	Inflation in the year of adoption	Average inflation 5 years after
Australia	June-93	5.25	1.81	2.05
Brazil	June-99	433.81	4.86	8.73
Canada	February-91	4.46	5.61	1.46
Chile	September-90	20.33	26.04	13.92
	September-99	7.66	3.34	2.75
Colombia	October-99	20.44	10.87	7.31
Czech Republic	December-97	9.31	8.54	4.63
Finland	February-93	4.91	2.10	1.06
Hungary	June-01	15.18	9.22	5.06
Iceland	March-01	2.83	6.39	3.55
Israel	December-91	24.31	19.02	11.31
	June-97	11.31	9.00	3.70
Korea	April-98	4.97	7.51	2.68
Mexico	January-95	16.30	35.01	19.40
	January-01	19.40	6.36	4.57
New Zealand	December-89	11.38	7.50	2.41
Norway	March-01	2.30	3.02	1.44
Peru	January-02	5.00	0.19	2.51
Philippines	January-02	6.31	3.00	5.69
Poland	September-98	26.62	11.73	5.10
South Africa	February-00	7.34	5.34	5.10
Spain	January-95	5.57	4.68	2.62
Sweden	January-93	6.89	4.73	1.10
Thailand	May-00	5.12	1.56	2.27
United Kingdom	October-92	6.44	3.74	2.61

## 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

# Inflation Targeting in 22 Countries

Country	Date of adoption	Average inflation 5 years before	Average inflation 5 years after	Median of never-targeting countries		Difference	
				Average inflation 5 years before	Average inflation 5 years after	Before	After
Australia	June-93	5.25	2.05	10.14	5.57	-4.88	-3.52
Brazil	June-99	433.81	8.73	5.57	3.66	428.24	5.07
Canada	February-91	4.46	1.46	8.51	7.88	-4.05	-6.43
Chile	September-90	20.33	13.92	6.86	9.70	13.47	4.22
	September-99	7.66	2.75	5.57	3.66	2.09	-0.91
Colombia	October-99	20.44	7.31	5.57	3.66	14.87	3.65
Czech Republic	December-97	9.31	4.63	7.88	3.67	1.43	0.96
Finland	February-93	4.91	1.06	10.14	5.57	-5.23	-4.51
Hungary	June-01	15.18	5.06	3.75	3.46	11.43	1.60
Iceland	March-01	2.83	3.55	3.75	3.46	-0.92	0.09
Israel	December-91	24.31	11.31	8.51	7.88	15.80	3.42
	June-97	11.31	3.70	7.88	3.67	3.42	0.03
Korea	April-98	4.97	2.68	5.78	3.66	-0.81	-0.98
Mexico	January-95	16.30	19.40	9.62	3.75	6.69	15.65
	January-01	19.40	4.57	3.75	3.46	15.65	1.11
New Zealand	December-89	11.38	2.41	7.67	9.62	3.72	-7.21
Norway	March-01	2.30	1.44	3.75	3.46	-1.44	-2.02
Peru	January-02	5.00	2.51	3.54	3.61	1.46	-1.09
Philippines	January-02	6.31	5.69	3.54	3.61	2.77	2.08
Poland	September-98	26.62	5.10	5.78	3.66	20.83	1.44
South Africa	February-00	7.34	5.10	4.50	3.33	2.84	1.77
Spain	January-95	5.57	2.62	9.62	3.75	-4.04	-1.13
Sweden	January-93	6.89	1.10	10.14	5.57	-3.24	-4.47
Thailand	May-00	5.12	2.27	4.50	3.33	0.63	-1.05
United Kingdom	October-92	6.44	2.61	9.54	5.78	-3.10	-3.18

# Inflation and GDP Growth Relative to Nontargeting Countries

Inflation

All Countries		Before	After
Median inflation	Targeting	7.34	3.55
	Never-targeting	5.78	3.66
Median of differences		2.09	0.03

GDP Growth

All Countries		Before	After
Median	Targeting	3.61	3.76
	Never-targeting	3.24	2.47
Median of differences		0.37	0.85

# Inflation Targeting in OECD Countries

Country	Date of adoption	Average inflation 5 years before	Average inflation 5 years after	Median of never-targeting OECD countries		Difference	
		Average inflation 5 years before	Average inflation 5 years after	Before	After	Before	After
Australia	June-93	5.25	2.05	3.23	2.07	2.02	-0.02
Canada	February-91	4.46	1.46	3.19	2.56	1.27	-1.10
Czech Republic	December-97	9.31	4.63	2.56	2.30	6.75	2.34
Finland	February-93	4.91	1.06	3.23	2.07	1.68	-1.02
Hungary	June-01	15.18	5.06	2.30	2.14	12.89	2.92
Iceland	March-01	2.83	3.55	2.30	2.14	0.53	1.41
Korea	April-98	4.97	2.68	2.37	2.44	2.60	0.24
Mexico	January-95	16.30	19.40	3.51	2.30	12.79	17.10
	January-01	19.40	4.57	2.30	2.14	17.10	2.43
New Zealand	December-89	11.38	2.41	3.95	3.51	7.43	-1.11
Norway	March-01	2.30	1.44	2.30	2.14	0.01	-0.70
Poland	September-98	26.62	5.10	2.37	2.44	24.25	2.66
Spain	January-95	5.57	2.62	3.51	2.30	2.06	0.32
Sweden	January-93	6.89	1.10	3.23	2.07	3.66	-0.97
United Kingdom	October-92	6.44	2.61	3.38	2.37	3.05	0.24

# Inflation and GDP Growth Relative to Nontargeting Countries

Inflation

OECD Countries	Before	After
Median inflation	Targeting	6.44
	Never-targeting	3.19
Median of differences	3.05	0.24

GDP Growth

OECD Countries	Before	After
Median	Targeting	3.72
	Never-targeting	3.01
Median of differences	1.00	0.95

# Inflation Targeting in Latin American Countries

Country	Date of adoption	Average inflation 5 years before	Average inflation 5 years after	Median of never-targeting Latin-American countries		Difference	
		Average inflation 5 years before	Average inflation 5 years after	Before	After	Before	After
Brazil	June-99	433.81	8.73	11.38	8.95	422.43	-0.22
Chile	September-90	20.33	13.92	31.60	31.01	-11.28	-17.09
	September-99	7.66	2.75	11.38	8.95	-3.73	-6.20
Colombia	October-99	20.44	7.31	11.38	8.95	9.05	-1.64
Mexico	January-95	16.30	19.40	32.07	10.07	-15.76	9.33
	January-01	19.40	4.57	10.07	10.27	9.33	-5.71
Peru	January-02	5.00	2.51	8.09	8.81	-3.09	-6.29

# Inflation and GDP Growth Relative to Nontargeting Countries

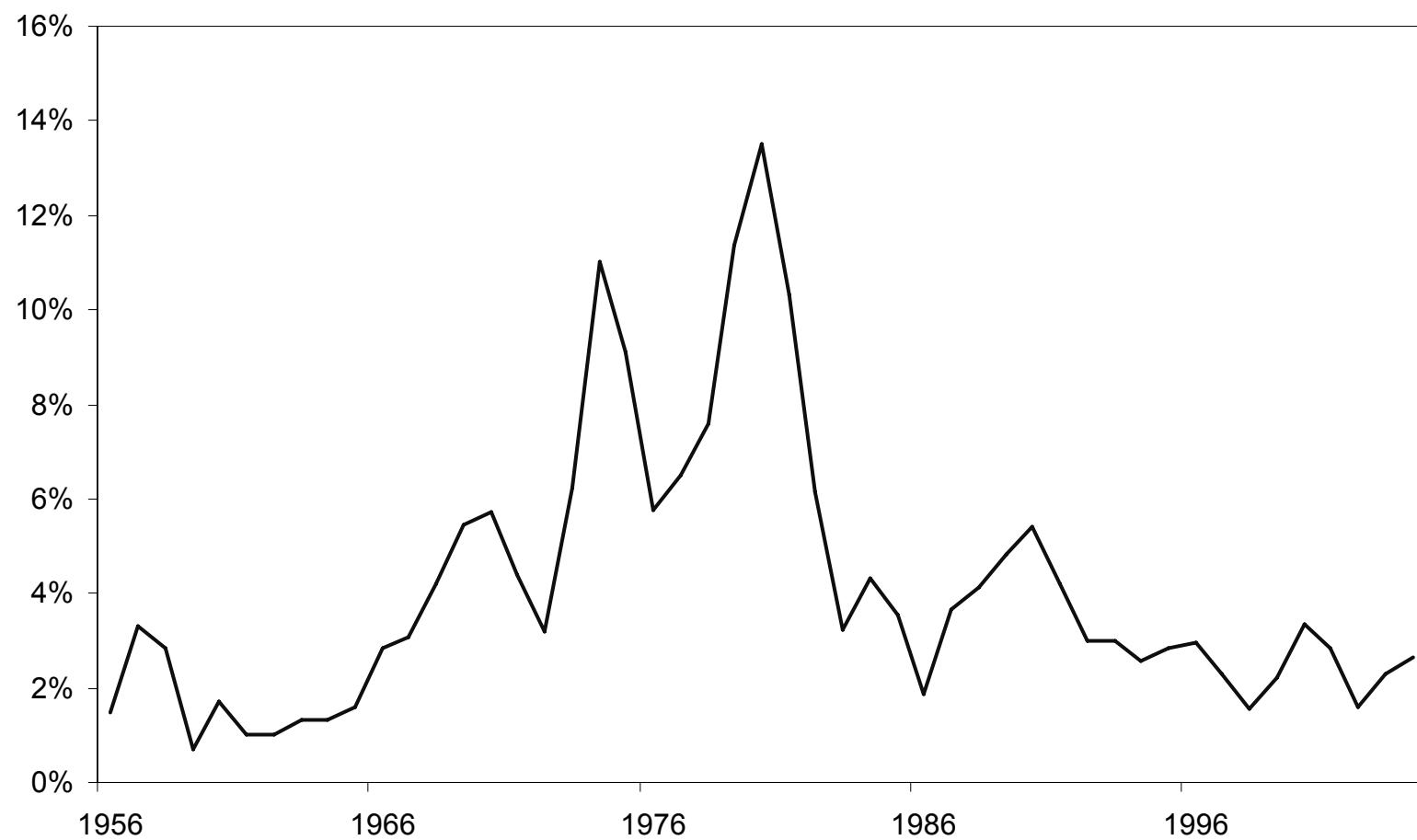
Inflation

Latin-American Countries	Before	After
Median inflation	Targeting	19.40
	Never-targeting	11.38
Median of differences	-3.09	-5.71

GDP Growth

Latin-American Countries	Before	After
Median	Targeting	3.86
	Never-targeting	3.61
Median of differences	0.35	0.94

### US Inflation (1950-2004)



Source: Bureau of Labor Statistics

## Hypotheses About Great Inflation in U.S. ---

- Poor institutions
- Bad luck
- Stupid policymakers

## My View

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- Poor institutions
- Discretionary policymaking
- No commitment to rules
- Inflation targeting will help but does not fundamentally change institutions

## A Proposal

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- Every 3 years, FOMC sets policy rule for next 3 years
- Deviations from rule requires supermajority

## **Advantages**

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- Overcomes discretion problems
- Provides some room for “unexpected” events
- Shifts focus from “What should we do now” to thinking strategically about contingent plans

# **Supermajority Rules and the Time Inconsistency Problem**

V.V. Chari, Lukasz Drozd and Jaromir Nosal

# **Overcoming Time Inconsistency Problem**

- Time inconsistency important
- Need escape clauses from rules
- More general problem: how to get commitment
- In simplest models: unanimous desire to deviate

## Model Economy

- Kydland-Prescott / Barro-Gordon with heterogeneity in preferences
- $-\frac{1}{2}(y - \bar{y})^2 - \frac{\theta}{2}\pi^2$
- $y = b(\pi - \pi^e)$
- 3 policymakers, each of type  $\theta \in \{\theta_1, \theta_2, \theta_3\}$
- Type profile always  $\theta_1, \theta_2, \theta_3$
- Each policymaker of type  $\theta_i, i = 1, 2, 3$  with probability  $\frac{1}{3}$

## Timing of the Game

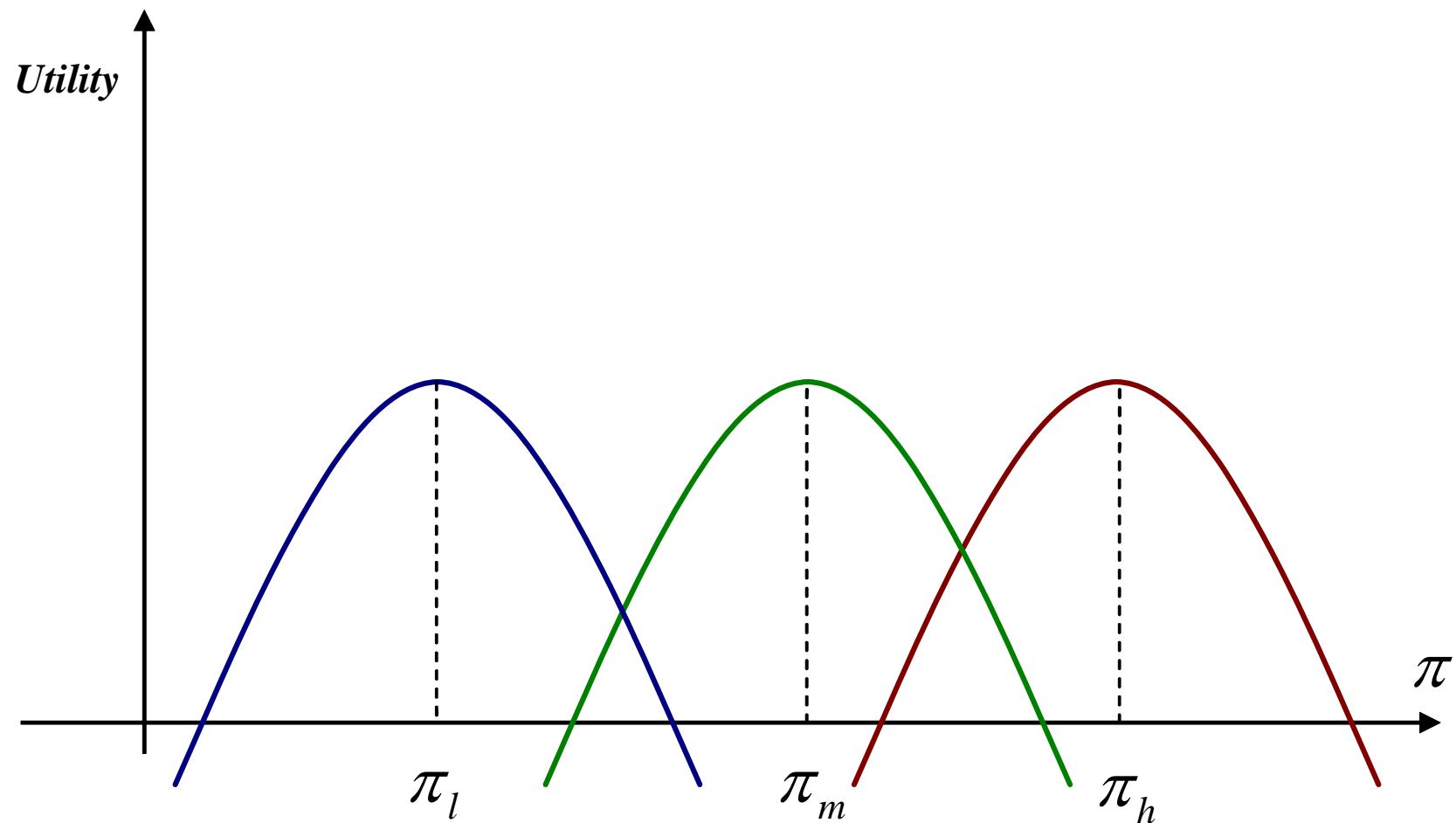
- Policy ‘Rule’  $\pi^*$  is chosen
- Private agents choose  $\pi^e$
- Type profile revealed
- Policymakers choose  $\pi$

## With Commitment

- Equilibrium has  $\pi^* = 0$  independent of  $\theta$  is chosen
- Reason: Policymaker understands  $\pi^e = \pi^*$
- Therefore cannot affect output
- Best  $\pi$  is then zero

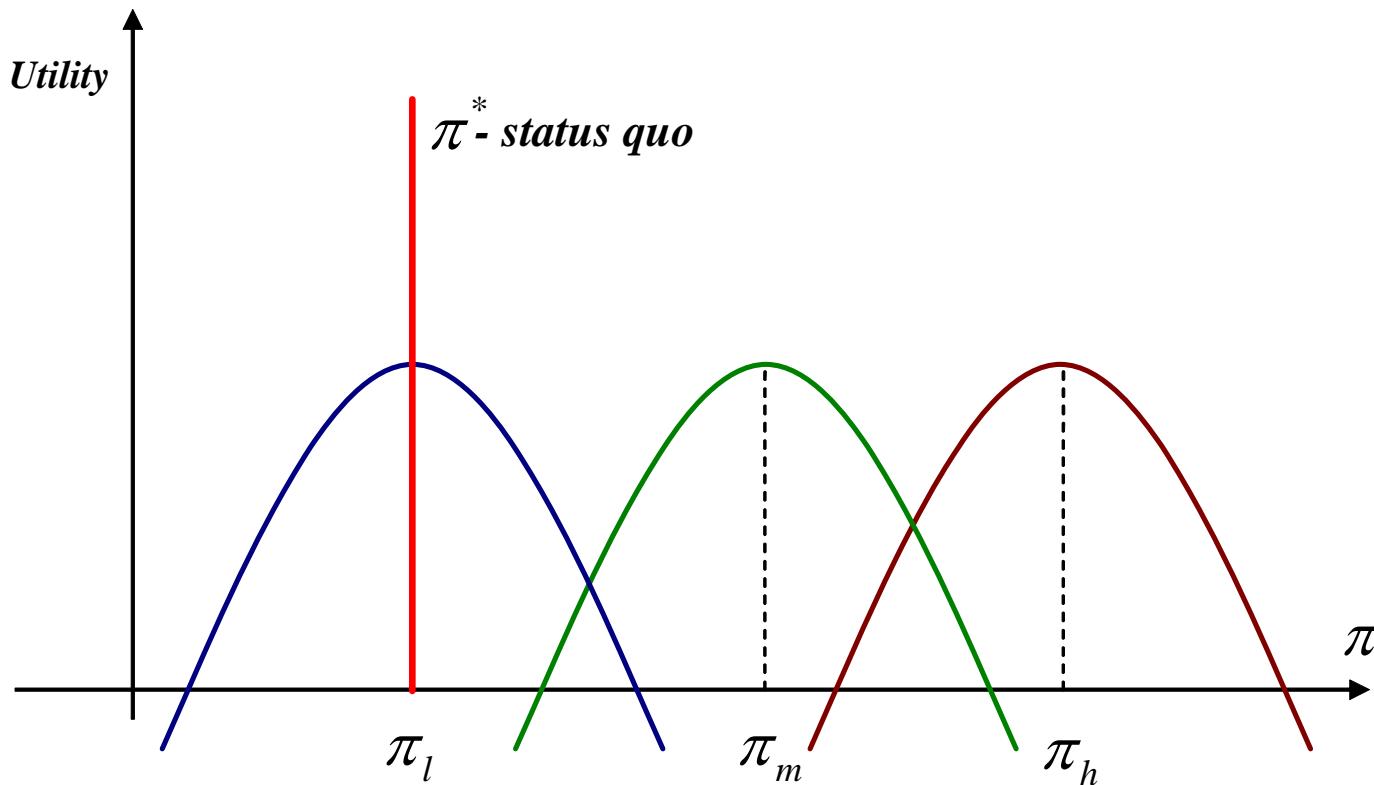
- **Majority Vote Game**

- Let  $\pi_l, \pi_m, \pi_h$  denote inflation rate preferred by low type, median type and high type, respectively
- Proposition: Unique equilibrium outcome,  $\pi = \pi_m, y = 0$
- Reason: Median voter theorem
- Moral: ‘Rule’ or status-quo irrelevant with majority rule



# Unanimity Vote Game

- Proposition: Unique equilibrium outcome,  $\pi = \pi_l, y = 0$
- Why? Suppose ‘Rule’ chosen at the beginning of period is  $\pi^* = \pi_l$



## Unanimity Vote Game

- Proposition: Unique equilibrium outcome,  $\pi = \pi_l, y = 0$
- Why? Suppose ‘Rule’ chosen at the beginning of period is  $\pi^* = \pi_l$
- Then, low type vetos anything more than status-quo
- Is  $\pi^* < \pi_l$  in equilibrium
- No. In subgame all prefer a slightly higher value of  $\pi$

## **Unanimity Vote with Independent Types**

- Multiplicity of equilibria now
- Equilibria typically same or better than majority vote equilibrium outcome

## **Moral of the Story**

- Majority vote system means no point in setting rules to govern policy
- With supermajority requirement, setting rules in advance makes sense