Why Was the Plaza Accord Unique?
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Comment

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Summary

- Authors argue Plaza was a unique confluence where

- (i) agreement that dollar was overvalued

- (ii) direction of sterilized intervention was consistent with monetary policy

Dollar Overvaluation

- Real interest rate parity

$$r = r^* + (q_t - q_{t+1}^e) \qquad q = p/ep^*$$

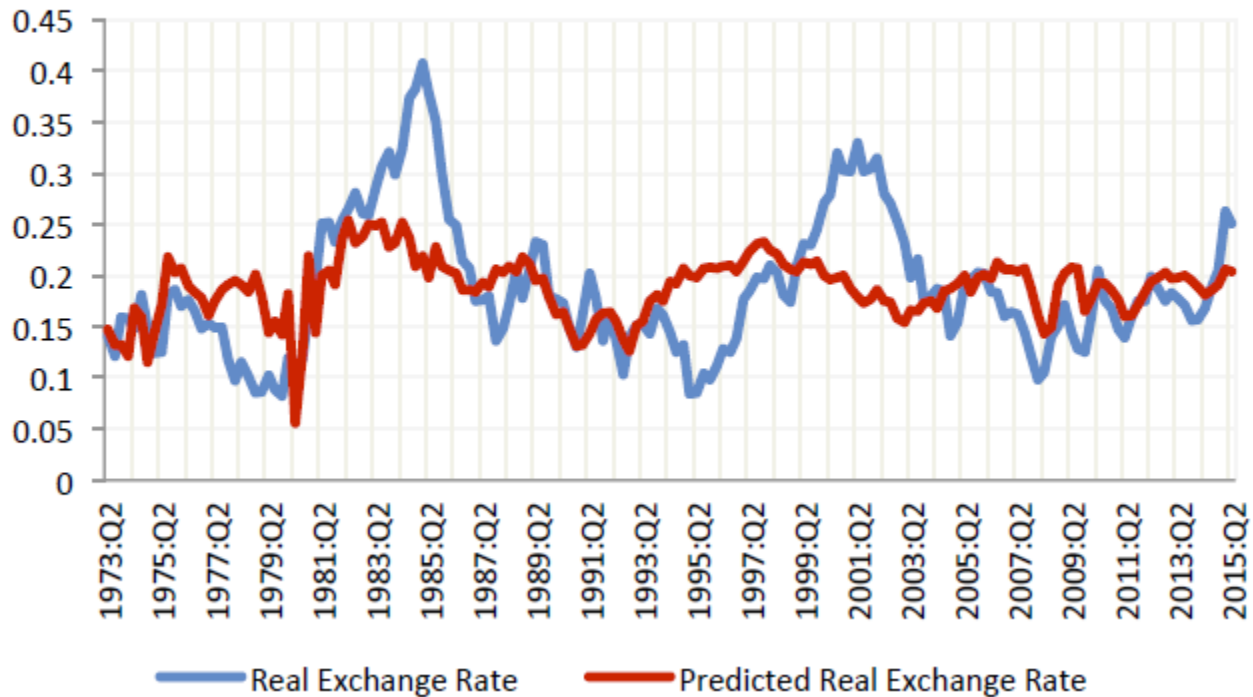- r > r* when expect real depreciation q(t+1)<q(t)

- Or $\qquad q_t = r - r^* + q_{t+1}^e$

$$\hat{q}_t = \alpha + \beta(r - r^*)$$

- "higher real interest rate strengths the real exchange rate"

- "high real interest rate means market expects depreciation"

- (why not use real effective rate?)

Dollar Overvaluation

Panel B. Real Exchange Rate and Predicted Real Exchange Rate

Monetary Stance

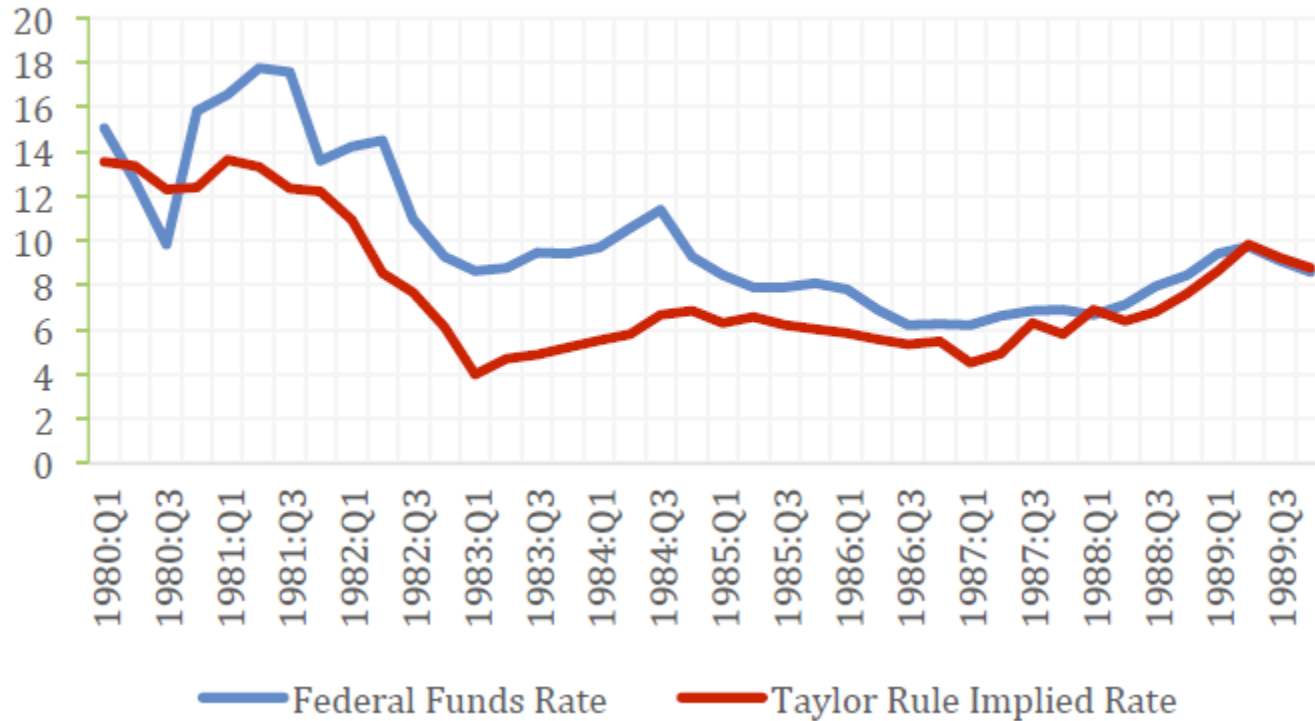- Taylor Rule $\quad i_t^* = \pi_t + \delta(\pi_t - \pi_t^*) + \gamma y_t + r^*$

$$\delta = \gamma = 0.5; \pi^* = r^* = 2$$

$$i_t^* = 1.0 + 1.5\pi_t + 0.5 y_t$$

- If i > i*, scope to lower interest rates

- Hence sterilized intervention for dollar depreciation is "consistent" with monetary policy

Monetary Policy Stance

Panel A. The Federal Funds Rate and Taylor Rule Implied Rate

Was Plaza Policy Coordination?

- Not obvious…
- (coordinated intervention, but not necessarily policy coordination)
- Policy coordination requires countries to have different objectives that are in conflict
- Fewer instruments than targets (so trade-off between targets)—target can include cost of using instrument

Policy Coordination

Motivation

- Unprecedented degree of policy activism during the GFC

  – Such activism helped avert a catastrophic outcome

  – Generated multiple, evolving spillovers

- Period ahead is unlikely to be "quiet"

  – Exit from UMP, fiscal consolidation, financial and other regulatory reforms

  – Will probably generate multiple spillovers

- Prima facie, this calls for a cooperative approach to policy-making

- But coordination seems elusive, except when world on brink of collapse

  – Policy is national rather than multilateral in normal times

- Why is this so? Is this a concern? What is the way forward?

From Spillovers to Coordination

- Foundation for coordination is standard welfare economics: unilateral policy-making does not internalize cross-border transmissions $\Rightarrow$ Pareto-inefficient outcomes
  - Positive transmission-generating policies undersupplied in the Nash equilibrium
  - Negative transmission-generating policies oversupplied in the Nash equilibrium
- Playing Nash is inefficient under some very weak conditions so that:
  - A move by both parties toward the cooperative equilibrium is Pareto improving
  - Coordination is not about being "forced" to accept policies that run counter to the "national interest"
  - Estimated gains are nontrivial (similar to those associated with multilateral trade liberalization)
- So why don't we see cooperation?
  - Failure to recognize policy tradeoffs
  - Uncertainty and disagreements about policy transmission
  - Asymmetries in country size and spillovers

Coordination is Spontaneous in Crises

- Most successful episodes of international cooperation have been in the aftermath of crises

  ☐ 1987 US stock market crash

   ▪ G-7 coordinated interest rate cuts and liquidity provision

  ☐ 2008 global financial crisis

   ▪ G-20 coordinated fiscal & monetary stimulus, financial stabilization

   ▪ IMF followed with package of policy proposals

Selected G7 Short-Term Interest Rates (%), 1987-88

Legend:
- G7 average
- Canada
- Germany
- Japan
- United Kingdom
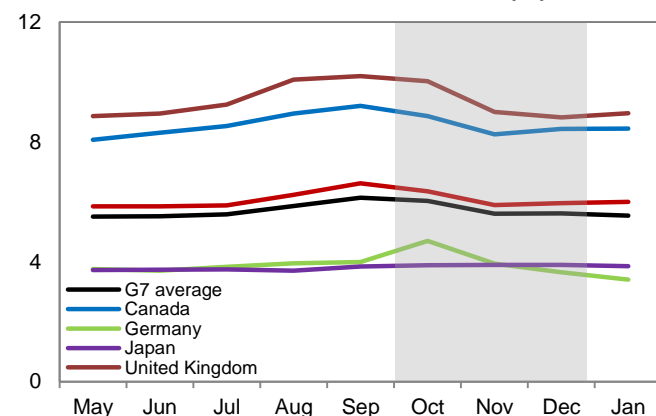
Response time of fiscal stimulus packages after Lehman collapse (in months)
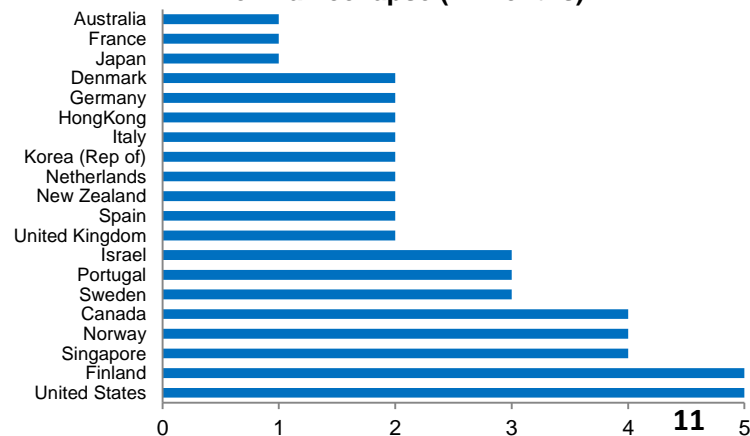
Note: fiscal packages enacted before Lehman collapse are not shown in this chart.

But is Much Rarer in Quiet Times

Bonn Summit, 1978

Plaza Agreement, 1985

- Few examples of international coordination

  – 1978 Bonn Summit (fiscal policy to fight unemployment)

  – 1985 Plaza Agreement (currency intervention to weaken USD)

  – 1987 Louvre Accord (fiscal and monetary policy to halt USD slide)

- Recent attempts have had limited success

  – 2006 Multilateral Consultation on Global Imbalances

  – 2009 (and ongoing) G-20 Mutual Assessment of Policies

- Is coordination of the essence now?

  – Major tail risks off the table, but large potential spillovers from UMP exit, fiscal stimulus/consolidation, financial and structural reforms

  – Gains from coordination may not be as large as at height of crisis, but likely larger than in quiet times

  – Even in quiet times, estimated gains are far from trivial

The Case for Policy Coordination

- Two symmetric countries with welfare $v(y_1, y_2)$ and policies p, p^*:

    $y_1 = \alpha_1 p + \beta_1 p^*, \; y_2 = \alpha_2 p + \beta_2 p^*$

    α = domestic multiplier, β = transmission multiplier

- Nash equilibrium: $\partial v / \partial p = 0$ (taking p^* as given)

    MRS=MRT: $[(\partial v / \partial y_1)/(\partial v / \partial y_2)] = -\alpha_2 / \alpha_1$

- But consider perturbation in p^*

    $\partial v / \partial p^* = (1/\alpha_1)(\partial v / \partial y_2)[\alpha_1 \beta_2 - \beta_1 \alpha_2]$

    Welfare can be improved unless $\partial v / \partial y_2 = 0$ or $(\alpha_1 / \alpha_2) = (\beta_1 / \beta_2)$. By symmetry, perturbation of home instrument can also raise foreign welfare

- Global planner optimum: $[(\partial v / \partial y_1)/(\partial v / \partial y_2)] = -(\alpha_2 + \beta_2)/(\alpha_1 + \beta_1)$

    - (sets MRS=MRT achievable through domestic and transmission effects; analogous to international trade where MRS=world price)

Analytics Identical to Trade

$$y_1 = \alpha_1 p + \beta_1 p^*; \; y_2 = \alpha_2 p + \beta_2 p^*$$

$$\partial v / \partial p \mid p^* = 0 \Rightarrow \alpha_1 (\partial v / \partial y_1) + \alpha_2 (\partial v / \partial y_2) = 0$$

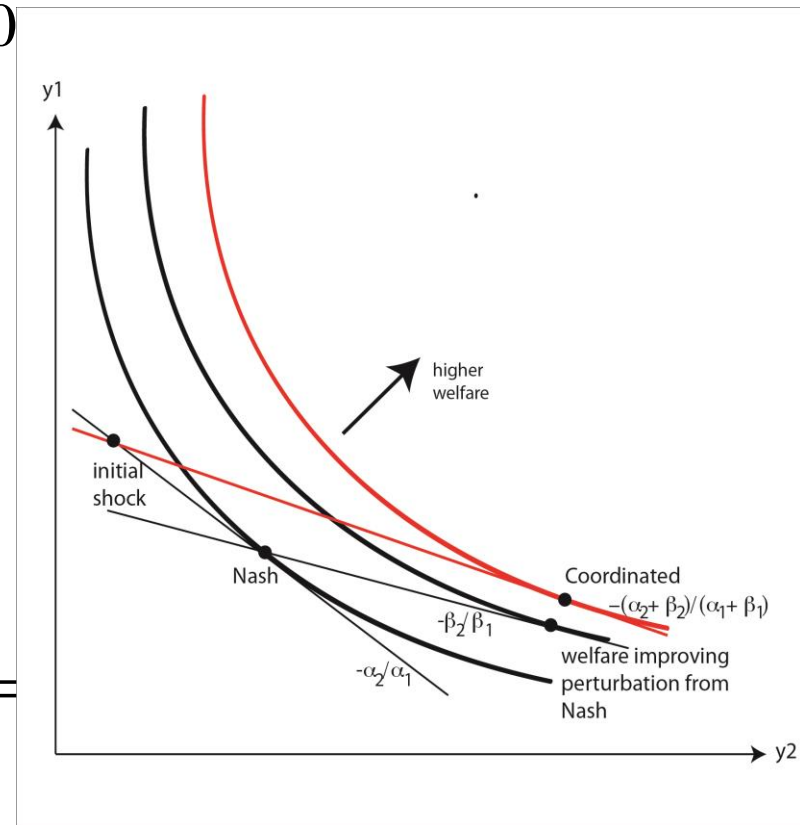$$or \; [(\partial v / \partial y_1) / (\partial v / \partial y_2)] = -(\alpha_2 / \alpha_1)$$

$$\partial v / \partial p^* = \beta_1 (\partial v / \partial y_1) + \beta_2 (\partial v / \partial y_2) =$$

$$(1 / \alpha_1)(\partial v / \partial y_2)[\alpha_1 \beta_2 - \beta_1 \alpha_2]$$

$$\partial v^c / \partial p = 0 \Rightarrow 0.5 \partial v / \partial p + 0.5 \partial v^* / \partial p = 0$$

$$\partial v^c / \partial p = 0 \Rightarrow [(\partial v / \partial y_1) / (\partial v / \partial y_2)] =$$

$$-(\alpha_2 + \beta_2) / (\alpha_1 + \beta_1)$$

Application to Monetary Policy

- Monetary policy stabilizes output and inflation:

  $v=-(1/2)[y^2+\omega\pi^2]$ $\qquad\qquad$ $y= \alpha_1 m+\beta_1 m^*-\varepsilon$ $\qquad$ $\pi=\alpha_2 m$

  $\qquad\qquad\qquad\qquad\qquad$ $\alpha_1,\alpha_2>0,\ \beta_1>0$ or <0

- Nash: $m^N=m^{*N}= \alpha_1\varepsilon/[\alpha_1(\alpha_1+\beta_1)+\omega\alpha_2^2]$

- Cooperative: $m^C=m^{*C}= (\alpha_1+\beta_1)\varepsilon/[(\alpha_1+\beta_1)^2+\omega\alpha_2^2]$

- $\beta_1<0$ (negative transmission):

  - Nash policies too expansionary

  - Cooperative equilibrium has lower output, but this is offset by gains from lower inflation

- $\beta_1>0$ (positive transmission):

  - Nash policies too contractionary

  - Cooperative equilibrium has higher inflation, but this is offset by gains from higher output

Discussion of Monetary Policy Example

- Monetary stimulus has two effects

  - Spillovers through trade and financial/exchange rate channels

- Suppose exchange rate channel dominates. Then there is excessive stimulus in the Nash equilibrium

- In the cooperative equilibrium, stimulus is lower, output gaps are larger, but welfare is nonetheless higher

- Need a lot of information to implement cooperative solution

- What about welfare of third parties? Can go either way (role of rules)

- Other examples/complications: Asymmetries; Fiscal policy; Capital controls

- Cooperative equilibrium is fragile

  - Clear benefit to reneging—very difficult to sustain

Possible Obstacles to Coordination

- Debates about coordination often revolve around:

  - The size of spillovers

  - The implications of uncertainty and disagreement

  - Importance of the different policy targets and availability of instruments

  - Inherent asymmetries in the system

- Plan for the discussion:

  - A few words about the evidence on spillovers

  - The role of uncertainty and disagreement

Evidence on Spillovers

- Multi-country models of 1970s and 1980s: Transmission multipliers for fiscal and monetary policy are 1/3 to 1/2 as large as domestic multipliers, in absolute value (much larger than thought from *averaging* across models)

- More recent literature suggests that trade and financial linkages play a major role in transmission of shocks:

  - US fiscal policy transmission multipliers = 60 percent of domestic multipliers

  - Monetary policy transmission multipliers = 40 percent of domestic multipliers

- Variation in size of transmission multipliers depends on strength of financial and trade linkages

  - Financial linkages account for 1/3 of cross-country variation in multipliers

  - Trade linkages account for 10 percent of cross-country variation

- Transmission effects larger from large countries, during periods of downturns/crises, and for closely interconnected country clusters

Spillovers Appear to be Largest in Crises

- Average correlations between quarterly GDP growth rates of country pairs:
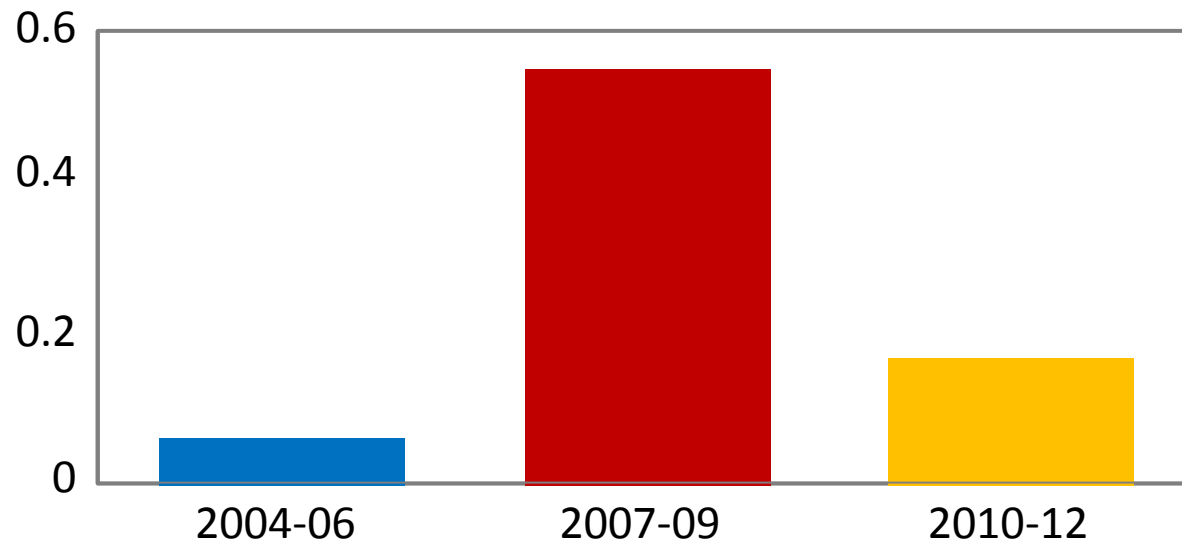
Sources: IMF, *World Economic Outlook*; and IMF staff calculations.

But Also Substantial in Normal Times

- Regression of growth on lagged growth in a country's main AE and EM trading partners, 1980-2011 (excl. outliers):

	Full sample		Advanced		EMEs	
	(1)	(2)	(3)	(4)	(5)	(6)
Advanced growth (lagged)	0.360**	0.264**	0.138	0.062	0.521**	0.174
	(0.162)	(0.124)	(0.172)	(0.121)	(0.199)	(0.238)
EME growth (lagged)	0.791***	0.343***	0.241*	0.267***	0.890***	0.821*
	(0.189)	(0.096)	(0.131)	(0.089)	(0.188)	(0.454)
Real GDP growth (lagged)		0.442***		0.499***		0.396***
		(0.047)		(0.050)		(0.057)
Country-fixed effects	Yes	No	Yes	No	Yes	No
Year effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2,191	2,182	828	826	1,363	1,356
R-squared	0.184	0.343	0.404	0.528	0.183	0.308
Number of countries	82	82	29	29	53	53

- Evidence suggests appreciable cross-border correlations

Does Uncertainty Undercut Coordination?

- Uncertainty is considered a major obstacle to cooperation

  - "Economists... can, under certain circumstances, identify coordinated policies that... are better than uncoordinated country choices. But in practice, the overwhelming uncertainty about the quantitative behavior of individual economies and their interaction... all make such international fine tuning unworkable." - Feldstein, 1983

- In fact, uncertainty has multiple effects

  - "Model uncertainty" can raise the gains from coordination

  - Disagreement between countries can leads to collapse of bargaining process

  - Even if a cooperative agreement is reached, uncertainty makes it more difficult to sustain

- Uncertainty increases the gains from coordination but makes coordination harder to implement!

"Model Uncertainty" and Coordination

- Two countries with one target and one instrument each. Policy multipliers are uncertain:

  $v(y_1)=-(1/2)E(y_1)^2$

  $y_1= \alpha m + \beta m^* - \varepsilon$

  $\varepsilon \sim (\mu_\varepsilon, \sigma_\varepsilon^2), \alpha \sim (\mu_\alpha, \sigma_\alpha^2), \beta \sim (\mu_\beta, \sigma_\beta^2)$

- Nash: $m^N=m^{*N}= \mu_\alpha \mu_\varepsilon /[\mu_\alpha(\mu_\alpha+ \mu_\beta)+ \sigma_\alpha^2]$
- Cooperative: $m^C=m^{*C}= (\mu_\alpha+ \mu_\beta)\mu_\varepsilon /[(\mu_\alpha+ \mu_\beta)^2+ \sigma_\alpha^2+ \sigma_\beta^2]$

- No multiplier uncertainty ($\sigma_\alpha^2= \sigma_\beta^2=0$): No coordination gains
- With either $\sigma_\alpha^2>0$ or $\sigma_\beta^2>0$: Gains from coordination

- Intuition: Volatility associated with uncertainty about effects of policy is itself a (negative) spillover. Uncertainty increases spillovers, raising the gains from coordination.

Discussion of Model Uncertainty

- Two targets: <u>level</u> of output gap and <u>volatility</u>

- Suppose *average* transmission multipliers are small, but there is substantial uncertainty about the cross-border effects of policies

  - Ignoring uncertainty, coordination may not be deemed worthwhile

  - But with uncertainty (e.g., because effects of unconventional instruments are unknown), instrument usage creates *negative* spillovers by increasing volatility abroad

  - Even though *average* transmission is expected to be small, coordination would involve more conservative use of instruments

  - Small average transmission effects need *not* imply small gains from coordination
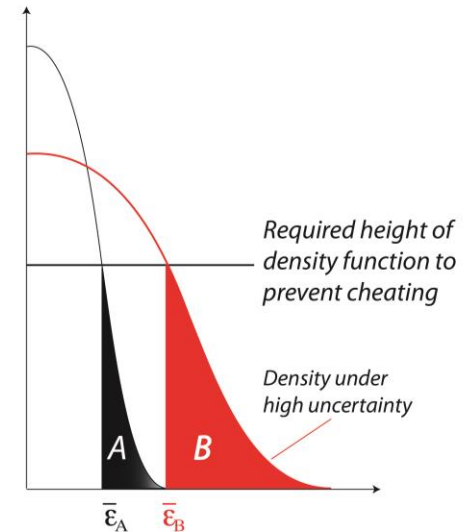
Negotiating/Sustaining Coordination

- Negotiating under uncertainty is hard
  - Clear incentive to misrepresent nature and size of transmission effects
  - There may be positive gains from coordination under each country's model, but negotiating a coordination agreement may prove impossible
- Even if parties reach a cooperative agreement, uncertainty makes sustaining it more difficult
  - Both parties benefit from agreement, but each is better off reneging, provided that the other party adheres
  - With these incentives, cooperation would break down in the absence of penalties
  - The obvious penalty is refusal to coordinate in the future
    - ⇒This works provided that policy-makers have sufficiently long horizons, do not discount the future too heavily, and the static gains from coordination are sufficiently large

Model Uncertainty can Explain the Episodic Nature of Coordination

- The issue: Policies are observable, but the beliefs on which they are based are not

  - Incentive to mischaracterize the state of economy to appropriate more of the gains from coordination

  - Coordinated packages will seek to balance expected cost of cheating (lower welfare during punishment period multiplied by probability of triggering punishment) and benefits (national gains from deviating from the policy warranted by the unbiased forecast)

- In equilibrium, neither party cheats, but random shocks will trigger the punishment period

  - More uncertainty makes it more difficult to link observed outcomes to unobserved biases in country forecasts

  - More uncertainty thus implies that for the same trigger, there are more frequent coordination breakdowns

Reversion to Noncooperation More Probable when Uncertainty is Greater

- Although cooperative agreements are inherently fragile, folk theorem of repeated games
  suggests they can be sustained by the threat of reverting to non-coordination

- Uncertainty makes it harder to tell whether someone cheated
  - Reversion to non-coordination occurs when observed outcomes are *sufficiently different* from no-cheating case: forecast error ε > ε̄
  - In equilibrium, no one cheats, but non-coordination will be triggered endogenously by shocks
  - Greater uncertainty means that with the same trigger level, endogenous breakdown of coordination is more likely

Required height of density function to prevent cheating

Density under high uncertainty

A   B

ε̄$_A$ ε̄$_B$

Area under curve is probability of triggering non-cooperation. Greater probability under high uncertainty (B) than under low uncertainty (A).

- Uncertainty helps explain the episodic character of coordination
  - Oil price shock 1979 effectively derailed coordination attempts of London and Bonn summits
  - Not until the Plaza Accord of 1985 did even the closely-linked G7 attempt coordination again