Global Output Gaps: Wave of the Future?

CENTRAL to AMERICA'S ECONOMY™

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Any views expressed here are my own and do not necessarily reflect the views of others on the Federal Open Market Committee.

Introduction

This talk

- This is an academic-style talk on an issue of interest for U.S. monetary policy.
- I will review some existing research and comment on possible directions for future research.
- Suggestions for ways to get at the key issues more directly are welcome.

A criticism of FOMC policy

- Critics suggest that the Fed is encouraging inflation globally.
  - This despite the fact that U.S. inflation is relatively low.
- The spirit of the criticism is that the Fed may not be weighing global conditions appropriately.
- The Fed is charged with controlling U.S. inflation …
- … but possibly global inflation will drive U.S. prices higher or cause other problems.

Should the U.S. consider global output gaps?

- Much U.S. monetary policy analysis focuses on the U.S. output gap.
- The U.S. is often analyzed as a closed economy.
  - Example: standard Taylor rules.
- But given the criticism, perhaps the U.S. should focus on a "global output gap"?
- The intuition is that "dollar bloc" countries should appropriately be viewed as closely tied together.

Recent research

- The global perspective on the output gap might give a better indication of global conditions …
- … and possibly a better indication of U.S. inflation prospects.
- Borio and Filardo (2007, *BIS*).
- Martínez-García and Wynne (2010, *FRB-Dallas*).

Gap criticisms

- I have been critical of gap-based analyses of inflation dynamics in the past.

- Those criticisms still apply:
  - Theoretical issues are unresolved.
  - Gap measurement issues are acute.
  - Empirical relationships between gaps and inflation are shaky.

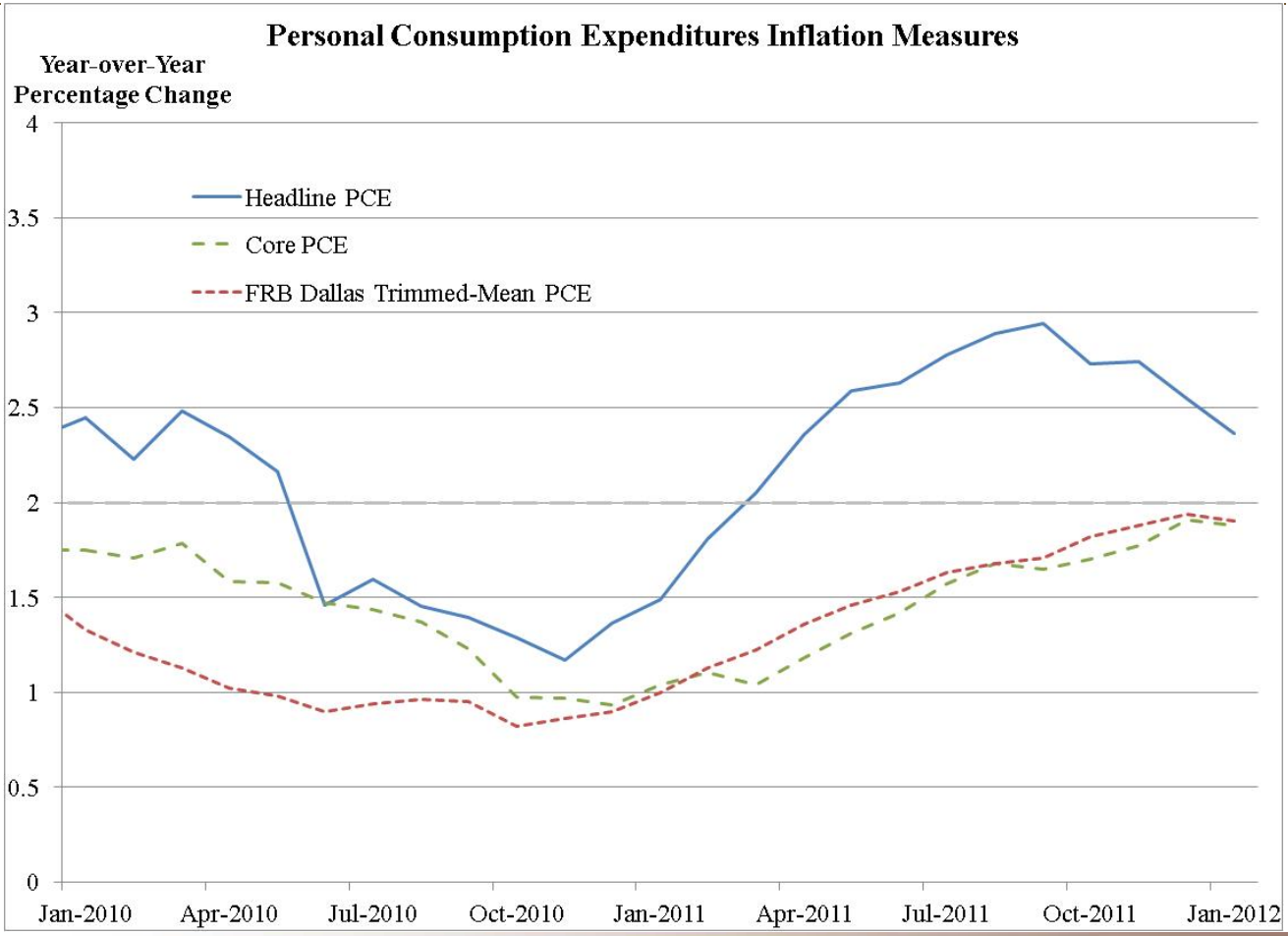
- Still, the idea of "global output gaps" is one way to frame the recent criticism of the Fed and promote fruitful debate.

Global Gaps

An inflation puzzle from the recent U.S. data

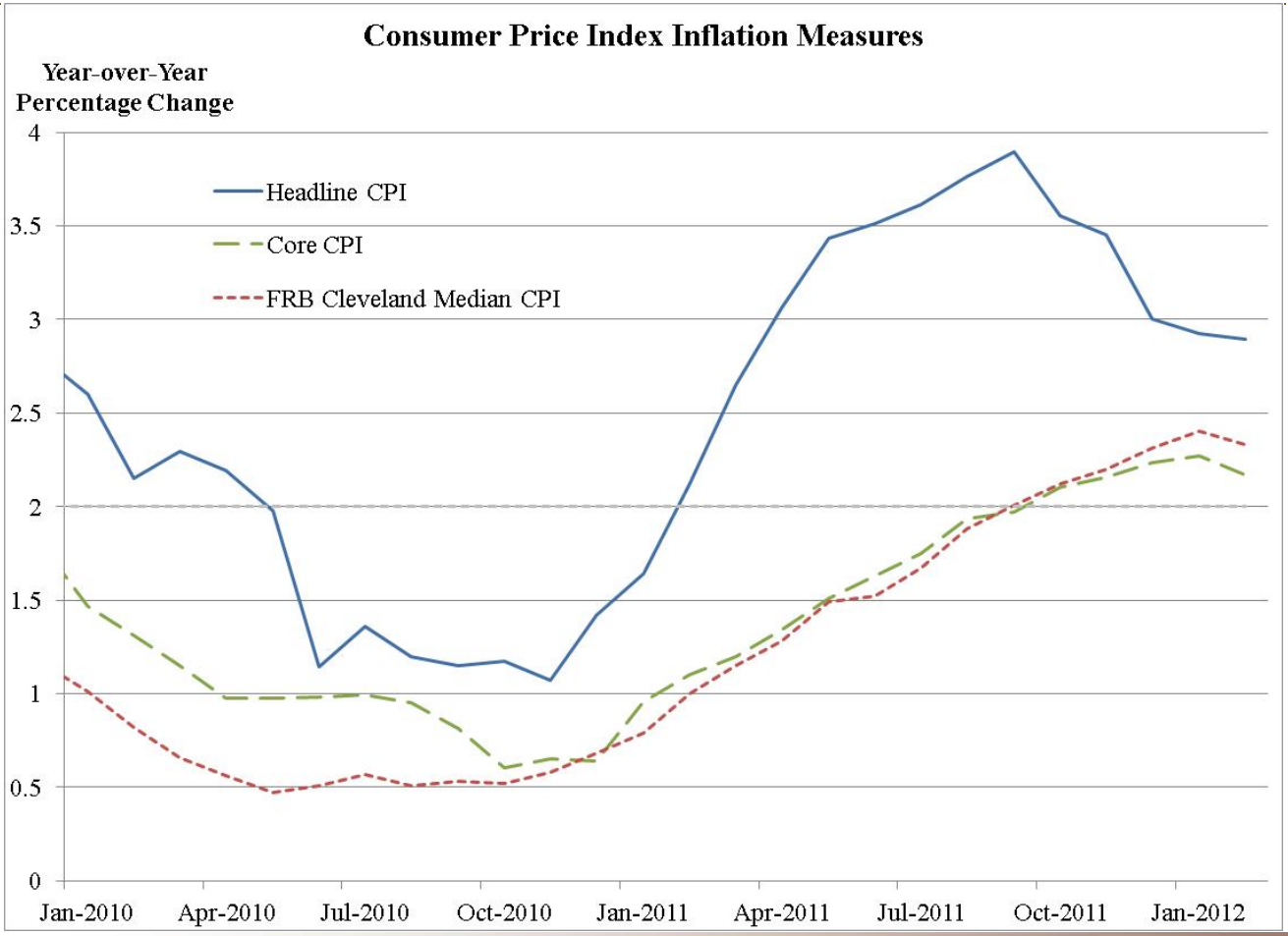
- Inflation in the U.S. has moved up during the past 18 months.
- This has occurred while most measures of the U.S. output gap have remained very wide.
- Typical estimates suggest inflation should have remained low or even moved lower during 2011.
- One explanation could be that the output gap is not nearly as wide as commonly supposed.

Inflation turns around



Source: Bureau of Economic Analysis and FRB Dallas. Last observation: January 2012.

Inflation turns around



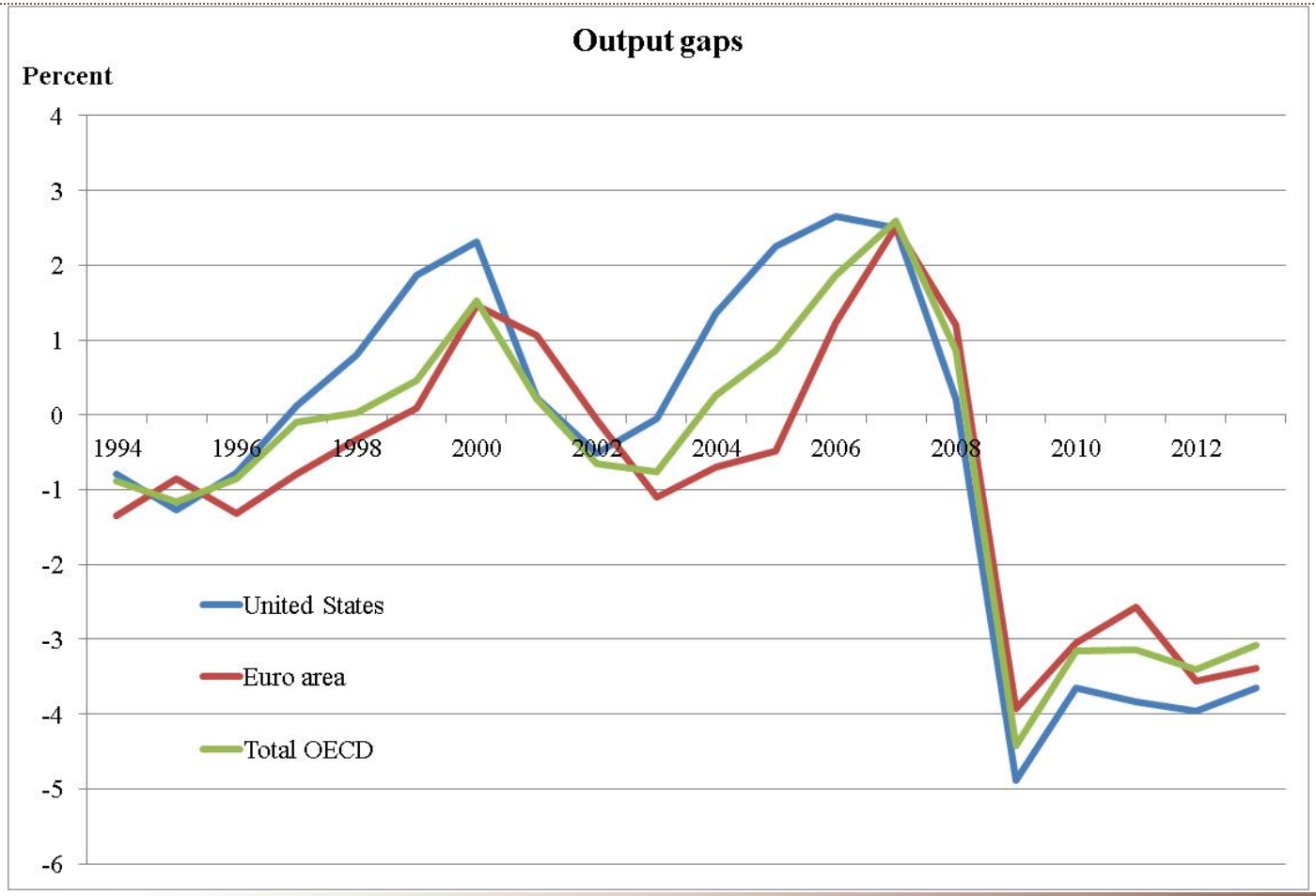
Source: Bureau of Labor Statistics and FRB Cleveland. Last observation: February 2012.

Global inflation

Consumer prices (year-over-year percentage change)				
			Projections Jan-12	
	2010	2011	2012	2013
Advanced Economies	1.6	2.7	1.6	1.3
Emerging and Developing Economies	6.1	7.2	6.2	5.5

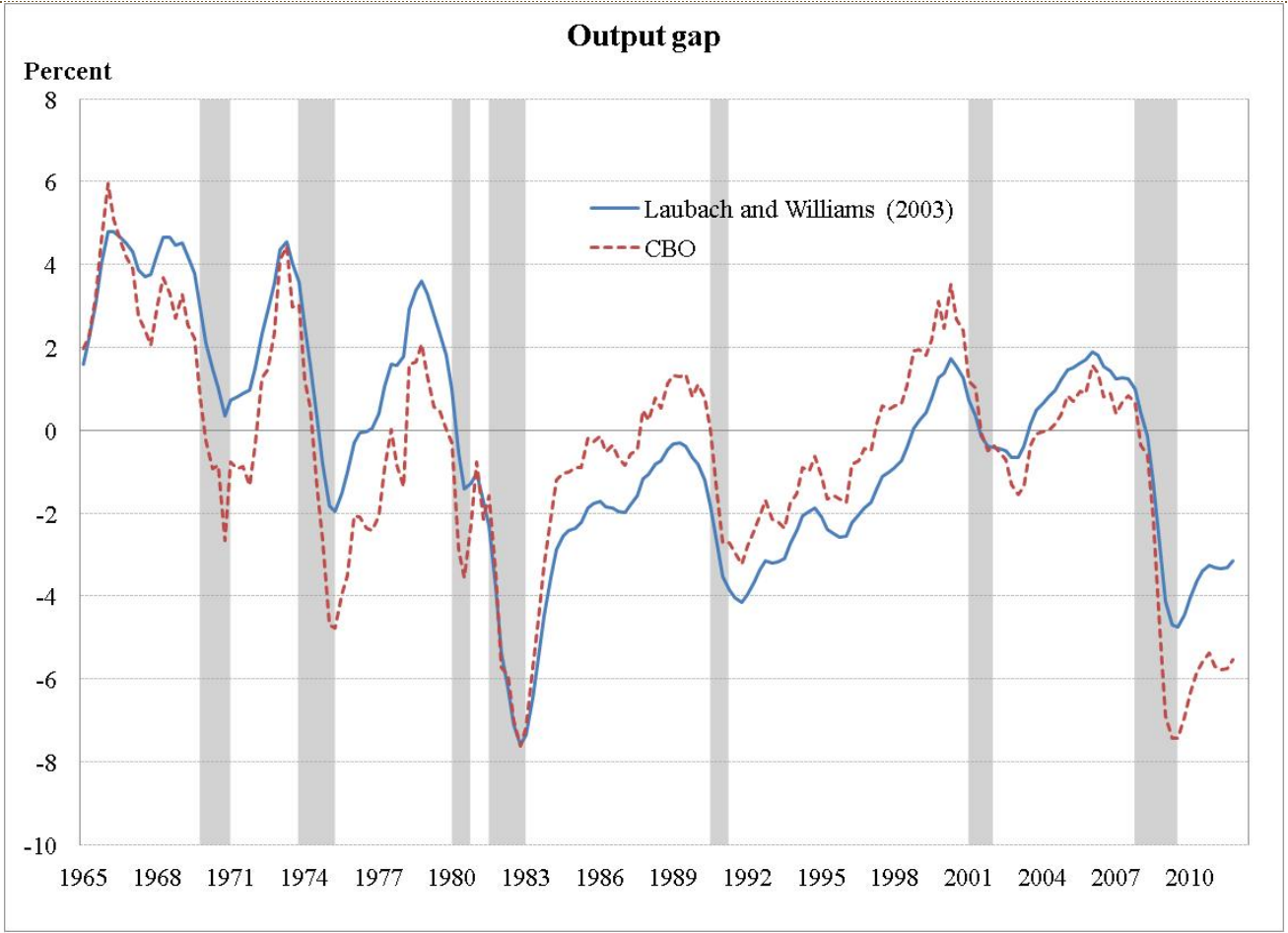
Source: IMF, World Economic Outlook (October 2011) and World Economic Outlook Update (January 2012).

OECD output gaps



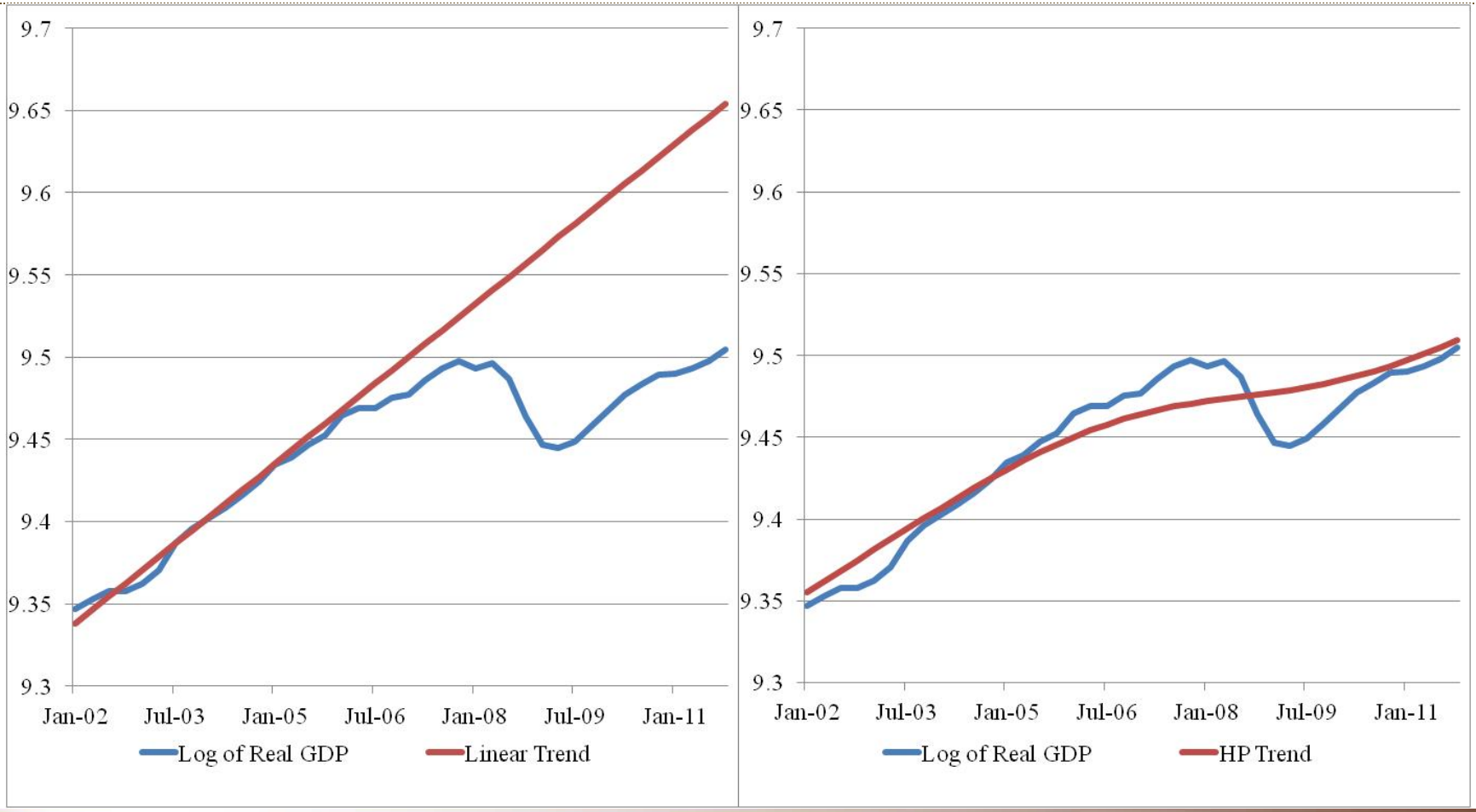
Source: OECD Economic Outlook 90 Database. Last observation: 2010. Forecasts: 2011-2013.

Measuring the output gap



Source: BEA, CBO, and author's calculations. Last observation: Q4-2011.

Decomposing real GDP



Source: Bureau of Economic Analysis and author's calculations. Last observation: Q4-2011.

An alternative explanation

- An alternative explanation is that the U.S. output gap is not the relevant output gap for U.S. inflation.

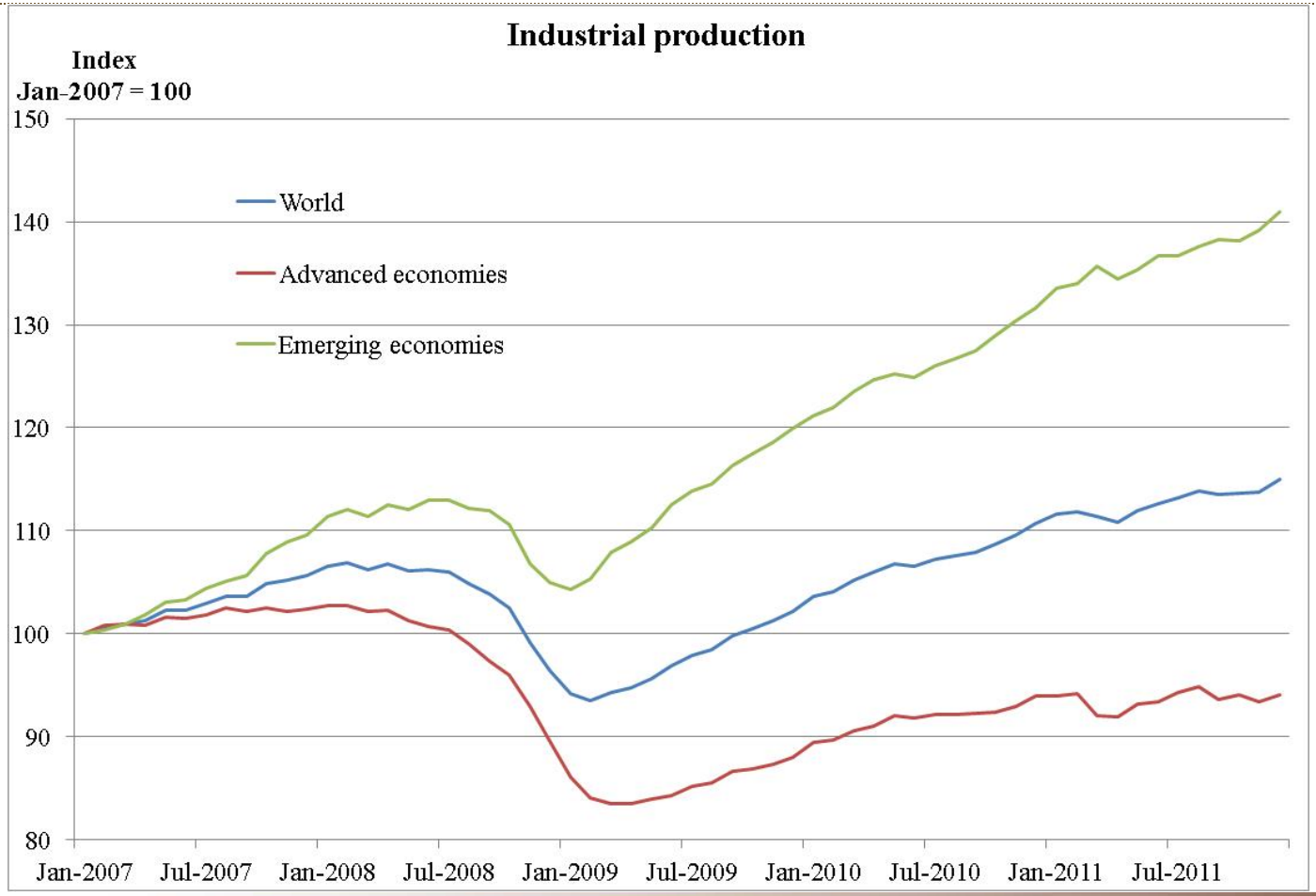
- Inflation has been a threat especially for countries with quasi-fixed exchange rates with the dollar.
  - Many countries prefer to manage their dollar exchange rate.

- Those countries are choosing to import U.S. monetary policy to some extent.

The dollar bloc

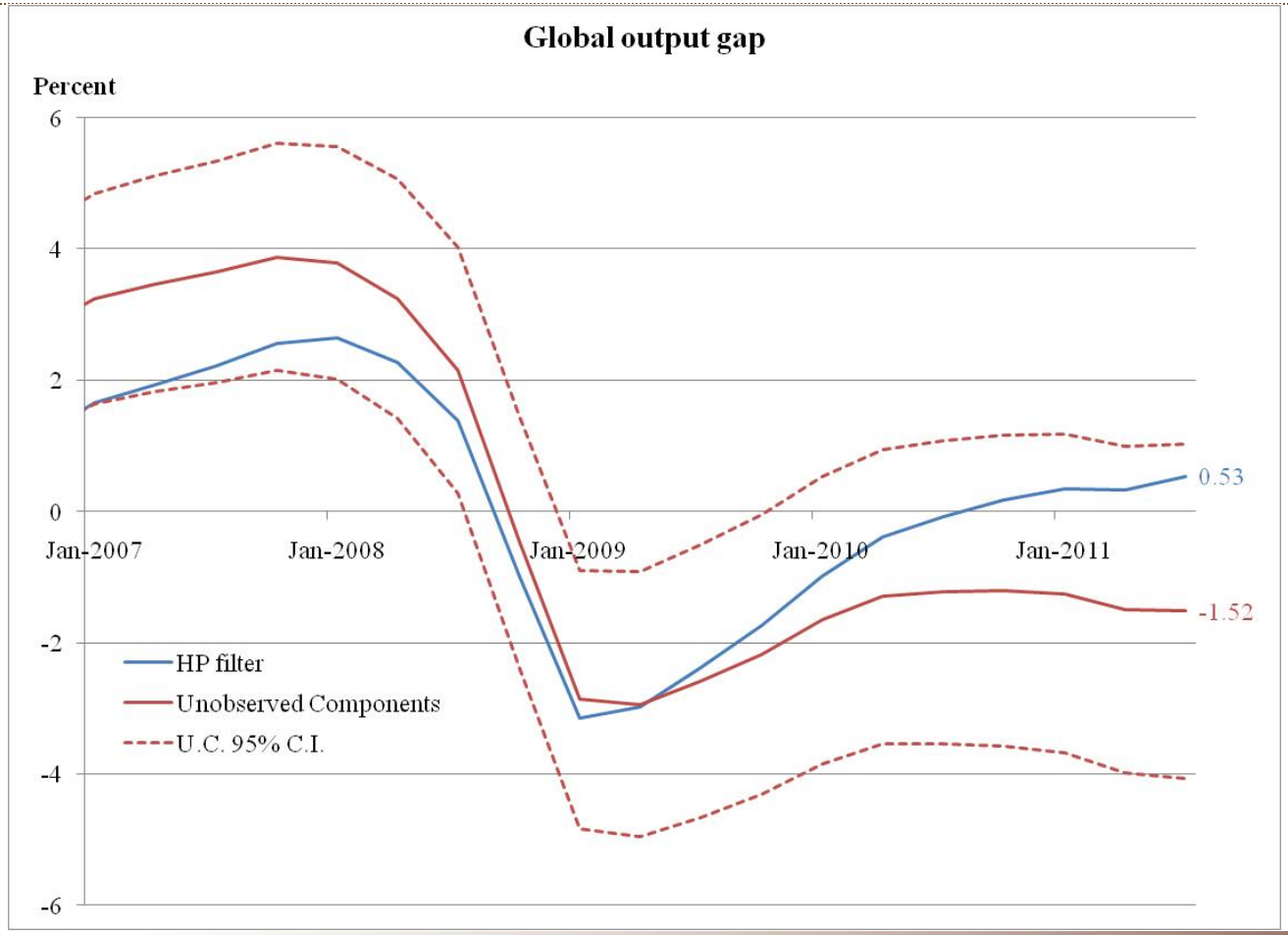
- In a New Keynesian model, the exchange rate regime in conjunction with the definition of inflation would bring global considerations to bear on domestic policy.
- What if it is the global output gap that really matters?
- The global output gap is probably much narrower or even positive.
- This would then be interpreted as putting upward pressure on U.S. inflation.

A global "output gap"



Source: CPB Netherlands Bureau for Economic Policy Analysis, World Trade Monitor. Last observation: December 2011.

Global output gap



Source: P. Gerlach (2011, *BIS Quarterly Review), updated to Q3-2011.*

A tale of two gaps

- These are just some possible measures of a global output gap.

- The idea:
  - The advanced economies gap is negative …
  - … but the emerging markets gap is positive …
  - … and the weighted average of the two is positive.

- This may suggest upward, not downward, pressure on U.S. inflation from this source.

Some Theory

New Keynesian theory

- I will make only broad comments on available models.
- Consider versions of the models in Bullard and Singh (2008, *JME*), Bullard and Schaling (2009, *JMCB*), and Martínez-García and Wynne (2010, *FRB-Dallas*).
- These are, in turn, versions of Clarida, Galí, and Gertler (2002, *JME*).
- The basic idea is to extend the closed economy NK model to an open economy.

Some model features

- These are multi-country models with standard NK features.
  - Calvo sticky prices in an intermediate goods sector, no capital, final good producers are perfectly competitive.
  - Utility is defined over composite final goods consumption from all countries.
  - A single parameter controls both the size of the country and the degree of openness.
  - The composite price index is defined over all goods consumed.
- A key issue is the stabilization of domestic prices versus the stabilization of the composite price index which includes the prices of foreign goods.

Three equations

- The point of CGG (2002) was to retain the "three equation model" in an international context.
- Accordingly, the assumptions yield:
  - An equation describing the evolution of the domestic output gap as a function of the domestic nominal interest rate,
  - An equation describing the evolution of inflation as a function of the output gap,
  - A third, *ad hoc* equation which is a Taylor-type rule for the nominal interest rate.
- The countries are subject to country-specific shocks and have country-specific sticky prices.

A simple observation

- Under what circumstances can the monetary authorities in one country ignore the output gap in other countries?

- Answer:
  - If inflation is defined as "domestic (producer) price inflation" and …
  - … exchange rates are perfectly flexible.

- Bottom line: These conditions are often not met in reality.

Equilibrium

- The equilibrium of the global economy depends on the policy rules adopted in the various countries.
- Determinacy, or uniqueness, of the global equilibrium depends on the joint behavior of the country policymakers.
  - One country cannot "make up" for poor policy choices in the other countries with respect to determinacy.
  - Sunspot shocks will be transmitted across borders.
  - Example: U.S., Germany, Japan in the 1970s.
- Foreign output gaps will matter for domestic inflation dynamics.

Empirical Evidence

Does it work?

- Borio and Filardo (2007) said yes. They included measures of global slack in benchmark inflation rate equations, and found significant increases in explanatory power.
- One study for Europe found that the global output gap did not appreciably impact Euro-area inflation from 1979-2003.
- See Calza (2009, *International Finance*).
  - However, globalization might be more important going forward than it was in the past.
- Thus, the global output gap idea may be the "wave of the future" rather than an explanation for past economic outcomes.

Indeterminacy

TABLE 3. ESTIMATES FOR THE 1990-2004 PERIOD.

Country	φ_π	φ_y	φ_r	Interpretation
U.S.	0.08	0.07	0.94	*Determinacy-consistent*
	(0.10)	(0.03)	(0.03)	
Euro-area	0.21	0.11	0.91	*Determinacy-consistent*
	(0.05)	(0.02)	(0.01)	
Japan	−0.04	0.01	0.90	*Determinacy-inconsistent*
	(0.02)	(0.01)	(0.01)	

Table 3: Baseline estimates of monetary policy rules for the 1990s era suggest a one-dimensional indeterminacy of worldwide equilibrium, even though the U.S. and European policies may be viewed as reasonable. Standard errors are reported in parentheses.

Source: J. Bullard and A. Singh, 2008 *JME*.

Measurement issues

- If domestic output gaps are difficult to measure, then global output gaps are even harder to measure.
- However, the idea of generally robust emerging markets suggests that one might be less worried that the global output gap is very large.
- The gaps suggested by the literature are the distance between the sticky price level of output and the flexible price level of output, and are not the gaps of common parlance.

Conclusions

Conclusion

- I have reviewed some parts of the literature on "global output gaps."
- There are good reasons to think that in NK models, the global output gap is a relevant indicator for domestic inflation.
- This might help explain why current U.S. inflation is higher than would be predicted based on a closed economy analysis.

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