

# Comments on *What drives inflation in the world?*

Calderón and Schmidt-Hebbel

Simon Price

Bank of England and City University (London)

2009 RBA/Münster Workshop on  
*Inflation in an era of relative price shocks*



# World views

- We can be too myopic.
- Inflation is endogenous ...
  - but institutions and environment help determine it.
  - However – institutions are endogenous too.



# World views

- We can be too myopic.
- Inflation is endogenous ...
- but institutions and environment help determine it.
- However – institutions are endogenous too.



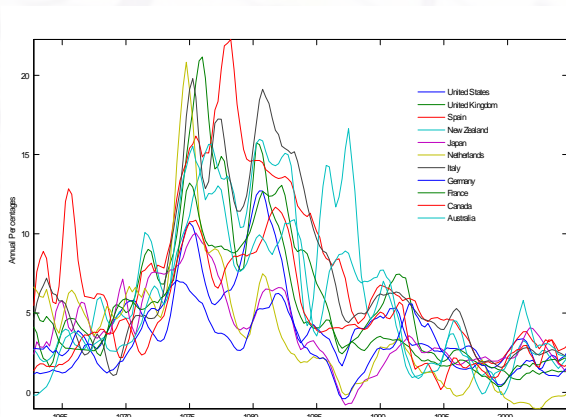
# World views

- We can be too myopic.
- Inflation is endogenous ...
- but institutions and environment help determine it.
- However – institutions are endogenous too.



# Inflation in 11 developed economies

From Mumtaz and Surico (2008)



## Another literature

- **Ciccarelli and Mojon (2008):** inflation in (22) industrialized countries is largely global phenomenon.
- **Mumtaz and Surico (2008):** in 11 industrialised countries find declines in the level, persistence and volatility of inflation. And level and persistence of national inflation rates moving more closely together since the mid-1980s.
- But this all mainly describes.



# Analysis?

- **Borio and Filardo (2007):** 'global slack' matters. Controversial: Irhig et al (2007). But we might think of some global output gap as being a world factor.
- **Karagedikli, Mumtaz and Tanaka (2009):** increasing co-movement in inflation rates across 14 industrialised countries attributable to greater global integration of product markets? Some.
- **Neely and Rapach (2008):** 65 countries; world, idiosyncratic and regional factors. Sensitivity to international factors rises over time. Openness, institutional quality, financial development, government share of output, average inflation and volatility, central bank independence explain variation in global influences.



# What about THIS paper?

- Long and wide sample.
- Rich set of explanatory variables.
- Variety of methods - robust.



## In case Klaus hasn't already explained ...

- **Inflation**  
High/hyperinflation episodes and inflationary inertia.
- **Monetary regimes**  
IT and exchange rate regimes.
- **Structural/institutional variables**  
Democratic accountability and per capita income;  
government surplus; financial development (credit ratio).  
(Pity no proxies for independent central banks.)
- **Cyclical variables**  
Output gap and oil price.
- **Openness**  
Trade; financial; world inflation and output gap.



## What they find

- Discipline and credibility reduce inflation.
- Inflation targeting and fixed exchange rates lower inflation. Financial openness and surplus also help in the short run.
- Higher income countries have lower inflation. (Is this a tax-base proxy?)
- Slope of the Phillips curve steeper in richer countries.
- 'Globalisation' (the foreign output gap) has no impact on domestic inflation.



# Causality?

- But there are always issues of causality.
- Do countries with credible regimes have low inflation because they like low inflation? Or if there's low inflation independence comes at low cost?
- Does it matter if deficit lovers also have higher inflation?
- Endogeneity: IV not really the answer.
- (What are the instruments? Tests for validity?)
- Real problem **identification**, not efficient estimation of structural parameters.
- Cointegration can help with identification if the series are  $I(1)$  - but problem still lack of an identifying theory.
- Clemens and Bazzi (2009) discuss problems associated with identification, weak instruments and causality in the context of the growth literature.



# Causality?

- But there are always issues of causality.
- Do countries with credible regimes have low inflation because they like low inflation? Or if there's low inflation independence comes at low cost?
- Does it matter if deficit lovers also have higher inflation?
- Endogeneity: IV not really the answer.
- (What are the instruments? Tests for validity?)
- Real problem **identification**, not efficient estimation of structural parameters.
- Cointegration can help with identification if the series are  $I(1)$  - but problem still lack of an identifying theory.
- Clemens and Bazzi (2009) discuss problems associated with identification, weak instruments and causality in the context of the growth literature.



# Causality?

- But there are always issues of causality.
- Do countries with credible regimes have low inflation because they like low inflation? Or if there's low inflation independence comes at low cost?
- Does it matter if deficit lovers also have higher inflation?
- Endogeneity: IV not really the answer.
- (What are the instruments? Tests for validity?)
- Real problem **identification**, not efficient estimation of structural parameters.
- Cointegration can help with identification if the series are  $I(1)$  - but problem still lack of an identifying theory.
- Clemens and Bazzi (2009) discuss problems associated with identification, weak instruments and causality in the context of the growth literature.



# Methods

- Initial condition problem in dynamic models to which there are IV or GMM solutions (Arellano and Bond, Blundell and Bond).
- Although initial conditions problem washes out in long panels.
- But also in long panels there's a heterogeneity bias.
- Hence three cheers for the PSS method.
- Bundled with a neat test for homogeneity.



# Methods

- Initial condition problem in dynamic models to which there are IV or GMM solutions (Arellano and Bond, Blundell and Bond).
- Although initial conditions problem washes out in long panels.
- But also in long panels there's a heterogeneity bias.
- Hence three cheers for the PSS method.
- Bundled with a neat test for homogeneity.



## That Hausman test

- Presented as a test for homogeneity. But better seen as a misspecification test - not a test of parameter restrictions: Holly (1982).
- Null not that parameters are equal, but mean (ie, MG) estimate of the parameters not significantly different from the PMG estimate.
- So what we're really doing is efficiently estimating the average value.
- Which is an interesting object.



## That Hausman test

- Presented as a test for homogeneity. But better seen as a misspecification test - not a test of parameter restrictions: Holly (1982).
- Null not that parameters are equal, but mean (ie, MG) estimate of the parameters not significantly different from the PMG estimate.
- So what we're really doing is efficiently estimating the average value.
- Which is an interesting object.



# Embrace diversity!

- One advantage of panels to estimate parameters efficiently.
- But remains an interesting question whether the long-run coefficients are homogenous: so use a Wald test.
- Another advantage of panels is precisely to explore heterogeneity in the data.
- So for which groups of countries are the coefficients the same?
- This is done in the five-year averaging exercise - cut by country group (rich/ poor) and time (pre/post 1995).
- Could try a (large) system restricting sets of long-run parameters to be equal? SUR infeasible; OLS often works



## Embrace diversity!

- One advantage of panels to estimate parameters efficiently.
- But remains an interesting question whether the long-run coefficients are homogenous: so use a Wald test.
- Another advantage of panels is precisely to explore heterogeneity in the data.
- So for which groups of countries are the coefficients the same?
- This is done in the five-year averaging exercise - cut by country group (rich/ poor) and time (pre/post 1995).
- Could try a (large) system restricting sets of long-run parameters to be equal? SUR infeasible; OLS often works.



## Other suggestions

- The other literature shows (growing) international linkages.
- How could we model in this institutional/structural approach?
- Might be scope for spatial econometrics methods - cut data not just geographically but also by other taxonomies?
- Another aspect of inflation performance: volatility. Pétursson (2008).



## References

- **Borio, Claudio E V and Andrew J Filardo (2007)** 'Globalisation and Inflation: New Cross-Country Evidence on the Global Determinants of Domestic Inflation' *BIS Working Paper* No. 227.
- **Ciccarelli, Matteo and Benoit Mojon (2008)** 'Global Inflation' *ECB Working Paper* No. 537.
- **Clemens, M and S Bazzi (2009)** 'Blunt Instruments: On Establishing the Causes of Economic Growth', *Center for Global Development Working Paper* No. 171.
- **Holly, A (1982)** 'A remark on Hausman's specification test', *Econometrica* Vol 50, pp 749-60.
- **Ihrig, Jane, Steven B Kamin, Deborah Lindner and Jaime Marquez (2007)** 'Some Simple Tests of the Globalization and Inflation Hypothesis' *FRB WP* 2007-891.



## References (contd)

- **Karagedikli, Özer, Haroon Mumtaz and Misa Tanaka (2009)** 'All together now: do international factors explain relative price co-movements?' *Bank of England/RBNZ*.
- **Mumtaz, Haroon and Paolo Surico (2008)** 'Evolving international inflation dynamics: evidence from a time-varying dynamic factor model' *Bank of England Working Paper No 341*.
- **Neely, C J and David Rapach (2008: revised 2009)** 'Is Inflation an International Phenomenon?' *Federal Reserve Bank of St. Louis Working Paper No. 2008-025B*.
- **Pétursson, Thórarinn G (2009)** 'Inflation control around the world: Why are some countries more successful than others?' *Bank of Iceland*.

