

Discussion

1. John McDermott

It is a pleasure to comment on the paper by César Calderón and Klaus Schmidt-Hebbel. Typically, when economists ask the question ‘what drives inflation?’, explanations turn to monetary factors. The problem of inflation control is naturally encapsulated in the new Keynesian models such as that described in Woodford (2003) and Galí (2008). An important contribution of César and Klaus’s paper is that it highlights that just focusing on monetary factors to understand inflation is insufficient.

The objective of César and Klaus’s paper is to evaluate the importance of non-monetary factors for inflation. They classify their candidate factors into five groups – high inflation and persistence, monetary and exchange rate regimes, openness, structural variables and institutions, and business-cycle-related variables.

In their study, César and Klaus use an impressive large panel dataset that consists of 97 countries over thirty years and a range of econometric approaches. They find that a disciplined monetary regime, sensible fiscal policy, and financial openness are crucial to low-inflation outcomes. They also show that globalisation – as proxied by a foreign output gap – has no significant effect on domestic inflation.

My discussion will use the empirical findings of César and Klaus as a springboard to address three topics of importance when thinking about monetary policy and the control of inflation: the role of nominal anchors, fiscal policy and commodity prices.

The first issue to address is the role of nominal anchors. There has been growing agreement among economists that credibly adhering to a nominal anchor is essential to controlling expected and actual inflation. César and Klaus evaluate two main nominal anchors: inflation targeting and an exchange rate peg. The findings are consistent with a large body of literature demonstrating that inflation targeting generally improves economic performance. For example, Mishkin and Schmidt-Hebbel (2007) provide extensive empirical evidence that inflation targeting improves monetary performance.¹ In addition, the results in César and Klaus’s paper are also consistent with the findings of Ghosh *et al* (1997) who find evidence that fixed exchange rate regimes reduce inflation.²

The second issue to address is fiscal policy. There has long been a view among economists that fiscal policy can significantly influence inflation outcomes.

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1. The conclusion that inflation targeting is beneficial is not universally held. Ball and Sheridan (2004) find that inflation targeting does not make a difference to economic performance in advanced countries. That said, Ball and Sheridan use control countries such as Germany and the United States, which, it has been argued, have strong implicit nominal anchors (Mishkin 2007).
 2. There are limits to this empirical finding. Mishkin (1999) notes that there are substantial risks with using fixed exchange rate regimes as a nominal anchor if the regimes are not supported by appropriate policies.

Mishkin (2007) argues that sensible fiscal policy is a prerequisite for an inflation-targeting regime. Recent global developments have only re-ignited such views. For an example of these current concerns see Sims (2009). There are two ideas on how fiscal policy can influence inflation worth exploring: aggregate demand pressure and the fiscal theory of the price level.

Fiscal deficits can create excessive aggregate demand pressure. An often-used strategy of governments unable to address fiscal imbalances is to turn to the central bank to print money in order to finance these deficits (see Sargent 1982 for a discussion of some particular case studies). Nevertheless, formal econometric evidence of the relationship between fiscal deficits and inflation tends to be elusive.

The advantage of César and Klaus's panel econometric approach is that they examine evidence across a variety of countries, including many countries that have suffered persistent fiscal imbalances. Consequentially these results can be considered more robust than individual case studies and thus provide an important contribution to the literature in this area.

The notion that poor fiscal policy can undermine monetary policy also appears in the literature on the theory of the price level. Many models used to analyse monetary policy often ignore the government budget constraint. However, even if the government budget constraint is not explicitly stated in our models, it is always present. The standard government budget constraint can be solved for the price level to highlight the fact that, at least in the long run, the price level is determined by fiscal policy. That is, we have

$$P_t = \frac{B_t}{\frac{y_t}{1+R} \sum_{s=0}^{\infty} \left(\frac{1+\pi+\gamma}{1+R} \right)^s \left(\frac{-d_{t+s}}{y_{t+s}} \right)}$$

where: B is the stock of bonds; R is the nominal interest rate; π is the inflation rate; γ is the rate of GDP growth; y is the level of GDP; P is the price level; and d is the primary deficit. While the fiscal theory of the price level is often difficult to verify empirically, it serves as a useful reminder that central banks should pay close attention to fiscal developments.

The third issue to address is commodity prices. The huge run-up in oil prices from around US\$55 per barrel at the start of 2007 to more than US\$140 in July 2008 highlights the significance of commodity prices on the inflation process. In fact there is a relatively old literature that argues that the fall in inflation in OECD countries in the early 1980s was mostly due to the fall in commodity prices, as opposed to the more traditional view of excessive slack in the economy, particularly in the labour market (Beckerman and Jenkinson 1986).³ While it is clear that commodity prices have a strong association with headline inflation, it is less clear that they have a strong influence on the persistence element of inflation, or core inflation.

3. While Gilbert (1990) argues that Beckerman and Jenkinson attributed too much importance to commodity prices in the determination of inflation, he does find it to be a significant driver.

Since large jumps in commodity prices are generally temporary, commodity price movements tend not to feed into inflationary expectations and, therefore, tend not to feed into inflationary pressure over the medium term. Moreover, increases in the price of commodities that are typically imported reduce consumers' real incomes in a way that tends to offset the direct price effects on headline inflation. Conversely, increases in the price of commodities that are typically exported tend to be matched by an appreciating exchange rate (Chen and Rogoff 2003). The direct effect on prices from an appreciating currency tends to offset the indirect effect of higher incomes. The implication is that large but temporary shifts in commodity prices need not have a long-run impact on inflation if there is a credible nominal anchor.

The paper by César and Klaus provides a valuable contribution to the empirical literature of inflation determination. Three key lessons from the paper are: (i) that nominal anchors, such as inflation targeting and fixed exchange rates, are essential for inflation control; (ii) good fiscal policy is a prerequisite for inflation control; and (iii) relative price changes can, and do, change the cyclical nature of inflation, but they are unlikely to affect inflation over the medium term.

Finally, I have some questions on the results with regard to the effects of globalisation on inflation. The proxy for globalisation used in the paper is the foreign output gap, which is found to have no significant effect on domestic inflation. This result is contrary to some other recent findings where important 'international/global' dimensions to the country-level inflation have been found (Monacelli and Sala 2009).

Moreover, I believe that using the foreign output gap is too narrow a concept for globalisation. First, globalisation in trade reduces barriers to market access by foreign producers, thereby increasing price competition in domestic markets, especially with the integration of rapidly industrialising economies into the global trading system. I believe this has had significant effects on the prices of both manufactures and commodities. This competition in turn forces a reallocation of productive resources to more cost-efficient firms, thus keeping a lid on inflation. Karagedikli, Mumtaz and Tanaka (2010) find evidence in support of this idea. In particular, they find that the relative price movements across developed economies are, to a significant extent, driven by global factors affecting different products, which is probably due to trade and product market integration. Second, globalisation in financial markets can increase the fear of a reduction in foreign investment flows, which in turn provides the discipline for the central bank to conduct monetary policy in a manner that keeps inflation under control.

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2. General Discussion

The discussion opened with a participant noting that there were two main changes in inflation over the period from 1975 to 2005 covered by the paper by César Calderón and Klaus Schmidt-Hebbel; the great moderation of inflation, and a change in the cyclical behaviour of inflation. This led them to question whether the results of the paper explained more the disinflationary story or the cyclical story. Similarly, others asked how well the regression models dealt with common, global inflationary shocks; were the time-fixed effects sufficient to soak this up and what did they look like? Klaus Schmidt-Hebbel's response was that the paper explained the observed disinflation, and that while there was less observed inflation persistence after 1996, the cyclical-related variables showed little deviation across the sample period.

Much of the debate related to the model specification. The discussion was varied and covered issues surrounding variable selection and the way in which they were included in the models. There was some concern expressed about possible collinearity amongst the explanatory variables. For instance, measures of both capital account and trade openness were included in the paper. Another participant wondered about the potential for a non-linear relationship between the output gap and inflation. There was also some discussion of the specification of the monetary policy regimes of the countries in the sample, with one participant noting that the paper did not include a variable to capture countries that had formed a currency union in order to lower inflation, instead of explicitly targeting inflation or fixing exchange rates outside of a currency union. Further suggestions touched on the inclusion of interaction terms in the paper's regressions, such as having a variable for the volatility of the terms of trade interacting with an indicator of inflation targeting and/or flexible exchange rate regimes. A participant thought that it would be worth looking at the effect of the duration of an inflation-targeting regime, while another suggested there should be interactions between fixed exchange rates and measures of openness. Klaus Schmidt-Hebbel welcomed these suggestions and said that the inclusion of interaction terms was something he would consider in future versions of the work.

The conversation turned to issues of fiscal policy, with extensive discussion on the appropriate measures to assess the effect of fiscal positions on inflation. The paper used a fiscal surplus-to-GDP variable to model the fiscal theory of inflation, which proposes that the smaller a country's tax base or the greater the pressure on government spending, the greater incentive a country has to resort to an inflation tax. One participant suggested that it might be more appropriate to use a measure that would gauge fiscal sustainability instead of the fiscal surplus – the debt-to-GDP ratio, for example. A subsequent comment focused on the political economy implications of high stocks of government debt. It was suggested that if an economy has a high level of debt, there are potential implications for the independence of monetary authorities, which do not manifest themselves in a linear fashion as implied by the inclusion of a fiscal surplus variable in a regression. One participant noted that the fiscal experience of Latin American countries is quite distinct from that of countries in the rest of the world and suggested the paper investigate whether the overall

results on the fiscal theory of inflation are driven by the Latin American observations. Later in the discussion, a comment was made on the implications of high inflation for the fiscal surplus variable. It was suggested that, if a country uses an inflation tax to finance its expenditures, the fiscal surplus variable would be less effective at capturing spending pressures leading to inflation. Klaus Schmidt-Hebbel noted that to better capture fiscal conditions required more data, which were not readily available for all the countries in the sample.