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Output gaps and inflation in Mainland China

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Abstract

We estimate output gaps using three methods for Mainland China on annual data spanning 1982–2003. The estimates are similar and appear to co-move with inflation. Standard Phillips curves, however, do not fit the data well. This may reflect the omission of some important variable(s) such as the effect of price deregulation, trade liberalisation and/or changes in the exchange rate regime. We re-estimate the Phillips curves assuming that there is an unobserved variable that follows an AR(2) process. The modified model fits the data much better and accounts for some of the surprising features of the simple Phillips curve estimates.

JEL classification: C22; E30; E40; E53
Keywords: Output gap; Phillips curve; China; Omitted variables

1. Introduction

Since the economic reform programme started in the late 1970s, the economy of Mainland China (the “Mainland” hereafter) has experienced a number of episodes of pronounced economic growth, interrupted by generally sharp but short-lived periods of slowdown. These macroeconomic cycles have been associated with large movements in inflation. Most recently,

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the deceleration of economic growth in the period 1995–2002 led to a decline of inflation and, indeed, to the development of deflationary pressures. Specifically, the retail price index declined at an average rate of 1.4% per annum in 1997–2002, compared with an average rise of 8.7% in 1982–1996, while annual real GDP growth slowed to 7.7% from 9.4% during the same periods.[2] Growth subsequently rebounded, exceeding 9% on a year-on-year rate basis in 2003 and 2004. Inflation also rose to almost 4% year-on-year in 2004.

These developments have led analysts to wonder whether the Mainland economy has entered an overheating phase, and whether and to what extent macroeconomic policies should be tightened to stabilise the economy. The increase in inflation also raises the issues of the nature of the inflation process in the Mainland and, in particular, whether traditional Phillips-curve models, in which inflation is determined by past inflation and the output gap, are useful for analysing inflation in the Mainland. This is the central question we focus on in this paper.

The paper is structured as follows. In Section 2 we briefly review the limited literature on the role of the output gap in the determination of inflation in the Mainland and in Section 3 we turn to the behaviour of inflation, using four different price indices. While the various measures of inflation differ at times sharply, they are dominated by a few cyclical peaks. In Section 4 we construct measures of the output gap using three different statistical approaches. We show that the resulting estimates are similar, which casts some doubt on the proposition that it is difficult to estimate the output gap in the Mainland because of large structural changes in the economy. In Section 5 we discuss a number of Phillips-curve models and provide econometric estimates, using data for the period 1982–2003. We first show that traditional Phillips curves do not fit the data well and that a generalised Phillips curve, which imposes less structure on the dynamic relationship between the output gap and inflation, fits the data better but leads to parameter estimates that are difficult to interpret. To explore whether these results can be explained by omitted variables, we develop a modified Phillips-curve model which includes an unobserved variable that obeys a second-order autoregressive process. We estimate the model using two methods and find that it can explain the parameter estimates of the generalised Phillips curve. Section 6 concludes.

2. Output gaps and inflation in the Mainland

There are a number of studies on the estimation of potential output in the Mainland, including Chow (1993), Borensztein and Ostry (1996), Hu and Khan (1996), Woo (1998), Chow and Li (2002), Heytens and Zebregs (2003), and Scheibe (2003). However, the link between inflation and the output gap remains under-studied.[3] Oppers (1997) employs a Phillips-curve model and finds that inflationary episodes have generally been associated with increases in aggregate demand. He argues that the factors behind the upswings in activity, and the relative importance of the components of aggregate demand, differed across cycles. In particular, the expansion in the first part of the 1990s was supported mainly by a surge in investment spending which raised production capacity and helped achieve a marked disinflation

[2] The consumer price index, which is available only from 1985 onwards, shows a slight rise of 0.2% per year in 1997–2002 with falls in 1998–1999 and 2002, compared with much higher rates of inflation in the earlier years.

[3] Another strand of research focuses on the role of monetary factors in inflation in China. In particular, Chen (1997) estimates a long-run demand function for money and examines its implications for controlling inflation. Hasan (1999) finds a feedback relationship between inflation and money growth.