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Openness, exchange rate regimes and the Phillips curve

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A B S T R A C T

Recent research suggests that the Phillips curve slope, measured using sacrifice ratios from the period 1961–88, is positively related to trade openness, contradicting the Romer [1993. Openness and inflation: theory and evidence. Quarterly Journal of Economics 108, 869–903.] hypothesis that disinflations are less costly in open economies. In this paper I consider sacrifice ratios and output–inflation trade-offs from 1981–98 and allow their dependence on openness to vary with the exchange rate regime. Sacrifice ratios are weakly negatively related to openness, but the strength of the relationship does not increase with exchange rate flexibility. Output–inflation trade-offs are negatively related to openness, and the strength of the relationship increases with exchange rate flexibility.

1. Introduction

In this paper I provide new evidence on the relationship between openness to trade and the slope of the short-run Phillips curve. Models in which monetary policy expansions depreciate the real exchange rate predict that the increase in output associated with a unit increase in inflation is negatively related to openness, see for example Romer (1993). This implies that the sacrifice ratio and the output–inflation trade-off, which are both proxies for the Phillips curve slope, should be negatively related to openness. However, cross-country studies indicate very little support for this prediction, see Ball et al.

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(1988), Ball (1994) and Temple (2002). In a recent contribution Daniels et al. (2005) show that after controlling for central bank independence (CBI) and its interaction with openness, the effect of openness on the sacrifice ratio is positive, contradicting the predictions in Romer (1993). Daniels et al. argue that their findings are consistent with the models due to Razin and Yuen (2002) and Daniels and VanHoose (2006), which incorporate imperfectly competitive labour and product markets in an open economy framework.

The main purpose of this paper is to consider two extensions of previous research. The first is to examine sacrifice ratios and output–inflation trade-offs calculated using data from the 1980s and 1990s. Most existing research uses the sacrifice ratios calculated by Ball (1994) and the output–inflation trade-offs reported by Ball et al. (1988). The sample periods used to calculate these indices vary slightly across countries, the earliest data being from the 1940s and the latest from the mid-1980s. New versions of these statistics for the period 1981–98 are calculated. During that time monetary policy arguably played a more important role in disinflation episodes than in earlier decades (Nelson, 2005) and, as I argue in Section 3, this is important because the theory proposed by Romer (1993) requires that movements along the Phillips curve result from monetary policy, rather than fiscal policy or some other determinant of aggregate demand.

The second innovation is to allow the relationship between openness and the Phillips curve to depend on the exchange rate regime. The Romer hypothesis requires that unanticipated increases in the money supply lead to depreciation of the nominal and real exchange rates. This pushes up the relative price of imports, raises inflation and restricts the increase in output associated with monetary expansion. These effects will be stronger in more open economies and the responsiveness of output to inflation is therefore expected to decrease with openness. An idea emphasized in the paper is that the correlation between openness and the Phillips curve predicted by Romer (1993) is likely to be stronger under flexible exchange rate regimes.[1] In order to allow for this possibility I estimate models that include an interaction between openness and the exchange rate regime.

The results show that during the post-1980 period the sacrifice ratio is negatively related to openness, supporting the Romer hypothesis. This finding contrasts with the robust positive effect of openness on the sacrifice ratio estimated by Daniels et al. (2005) using data from earlier decades. As such it appears that the mechanisms determining the sacrifice ratio have changed during the post-war period. The relationship between openness and the sacrifice ratio does not vary systematically with the exchange rate regime in either the earlier or later sample periods, casting doubt on the argument that exchange rate adjustment contributes to the relationship between openness and the Phillips curve. However, regressions based on post-1980 estimates of the output–inflation trade-off yield negative coefficients on both openness and its interaction with the exchange rate regime indicator, and as such are consistent with the hypothesis that openness exerts a stronger effect on the Phillips curve under flexible exchange rate regimes.

The rest of the paper expands on these points and is structured as follows. Section 2 summarizes the model due to Romer (1993), highlighting the role played by exchange rate adjustment, and discusses the recent contributions of Razin and Yuen (2002) and Daniels and VanHoose (2006). Section 3 argues for an updating of the sample period used to measure the slope of the Phillips curve and describes the data used in the empirical analysis. Section 4 presents results based on sacrifice ratios and Section 5 presents results based on output–inflation trade-offs. Finally, Section 6 summarizes the paper.

2. Open economy models of the Phillips curve

The link between openness and the slope of the Phillips curve is analyzed in Romer (1993), who builds on an earlier contribution by Rogoff (1985). In order to illustrate the main result, the basic elements of Romer's model are now presented. Let e be the change in the log exchange rate, p^* the change in the log price index for foreign goods in foreign currency units and p the change in the log

[1] A relationship between openness and the Phillips curve slope is still possible when the exchange rate is fixed. The point here is that it is likely to be less strong than if the exchange rate were flexible, other things equal.