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Inflation dynamics and the cost channel of monetary transmission

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Abstract

Evidence from vector autoregressions indicates that the impact of interest rate shocks on macroeconomic aggregates can substantially be affected by the so-called cost channel of monetary transmission. In this paper, we apply a structural approach to examine the relevance of the cost channel for inflation dynamics in G7 countries. Since firms' costs of working capital increase with interest rates, we augment a (hybrid) New Keynesian Phillips curve by including the short-run nominal interest rate. We find significant and varying direct interest rate effects for the majority of countries, including member countries of the EMU. Simulations further demonstrate that the estimated interest rate coefficients can substantially affect inflation responses to monetary policy shocks, and can even lead to inverse inflation responses, when the cost channel is – relative to the demand channel – sufficiently strong.

JEL classification: E31; E32; E52

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1. Introduction

This paper aims at showing that changes in short-run nominal interest rates, which alter the cost of working capital, affect pricing decisions of firms and thus matter for inflation dynamics in industrialized countries. Supply side effects of nominal interest rates have already been considered in various studies focussing on the transmission of monetary policy shocks, i.e., in the literature on the so-called 'credit channel' (see Bernanke and Gertler, 1995). Their impact, however, on inflation dynamics within the New Keynesian framework, which by now serves as the predominant framework for monetary policy analysis, has rarely been taken into account. Recent empirical contributions to the literature on the New Keynesian Phillips curve presume that price rigidities are the main source for monetary non-neutrality (see e.g., Galí and Gertler, 1999; Galí et al., 2001; Sbordone, 2002; Benigno and López-Salido, 2002). According to this view, monetary policy actions affect inflation dynamics via changes in firms' real marginal costs, solely brought about by shifts in aggregate demand.

Though this approach leads to predictions about price responses to interest rate shocks, which accord to common priors about monetary policy effects, they are not fully consistent with vector autoregression (VAR) based evidence (see Christiano et al., 1999). As shown by Barth and Ramey (2001) for the US, interest rate shocks affect prices and real activity through changes in the cost of working capital.[1] Higher nominal interest rates directly raise the cost of working capital, and this counteracts the cost alleviating effect of a decline in aggregate demand. As a consequence, the inflation response to an interest rate shock is mitigated and the output response is amplified. Christiano et al.'s (2005) empirical analysis of a large scale dynamic general equilibrium model indicates that this "cost channel of monetary policy transmission" matters significantly for the transmission of monetary policy shocks in the US.

In this paper, we provide further (structural) evidence on the cost channel by estimating marginal cost based Phillips curves that account for direct interest rate effects, and show that changes in short-run nominal interest rates exert a substantial direct effect on inflation dynamics in the majority of G7 countries. We build on the evidence by Galí and Gertler (1999) and Galí et al. (2001) and allow for backward-looking elements in the price setting behavior of firms, and estimate a hybrid version of a marginal cost based Phillips curve for the time period 1980–1997. We find that changes in short-run nominal interest rates significantly affect the short-run movements of inflation rates in Canada, France, Italy, the UK and the US,[2] while we cannot establish a significant cost channel in Germany and Japan. The existence and strength of an effective cost channel seems to vary in accordance with differences in financial systems, as summarized in Allen and Gale (2000, 2004). In particular, our

[1]Further empirical evidence on the relevance of working capital for the transmission of interest rate shocks in France, Germany, Italy and in the UK is provided by Dedola and Lippi (2005).

[2]Ravenna and Walsh (2003) provide similar results for a marginal cost based Phillips curve, which is restricted to be entirely forward looking, indicating a significant cost channel in the US.