

Does the credit channel of the monetary transmission mechanisms predict recessions

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Abstract

In this paper we investigate the relevance of credit channels of the monetary transmission mechanisms in indicating real economic activity. Our evidence is consistent with a heterogeneous credit channel of monetary policy transmission in the European Union. We employed Error Correction Models and cointegration techniques and we have found that the external finance premium is one important leading indicator of real economic activity in Germany and Italy. No evidence is found for France and the UK. Our evidence is consistent with earlier finding by S. Fountasa and, A. Papagapitos (2001). Therefore, a common monetary policy implemented by the European Central Bank might be transmitted in different ways across the member countries of the monetary union, thus exacerbating existing regional disparities among the member countries.

Introduction

Extensive economic research has shown that monetary policy is neutral in the long run but it does affect real economic activity in the short run (Eichenbaum, 1997). Recent evidence has as well shown that these output effects can last for up to two years or more in some cases (Bernanke and Blinder, 1992). There is, however, considerable disagreement on how monetary policy is transmitted to the real economy. A significant volume of primarily empirical research on the monetary transmission mechanism has already been produced for the US economy and surveyed in Bernanke (1993), Bernanke and Gertler (1995), Cecchetti (1995), Hubbard (1995) and Kashyap and Stein (1994). These studies were motivated by the US credit crunch of 1990–1991, as well as theoretical developments which combine informational imperfections with standard macroeconomic models. Overall, the evidence points to the importance of the banking sector in the transmission of monetary policy, a result consistent with the credit view, although it appears that this channel has lost some of its significance over time.

Until recently, the focus of European economists and policy makers had been the appropriate monetary policy strategy (monetary targeting, inflation targeting, etc.) that the European Central Bank (ECB) should pursue following the launch of the single European currency. European monetary integration has prompted significant interest in the study of structural and institutional differences in European national financial systems and, consequently, the transmission mechanism of monetary policy in individual European countries. Recent studies have attempted to test for the importance of the credit channel of the monetary transmission mechanism in individual European countries. Such studies include, Dale and Haldane (1995) for the UK; Buttiglione and Ferri (1994) for Italy; Escriva and Haldane (1994) for Spain; Garretsen and Swank (1998) for The Netherlands. In addition, some descriptive evidence for the EU countries is provided by Kashyap and Stein (1997) and Cecchetti (1999). It is anticipated that a credit channel would be more relevant in some European countries than in the US financial system due to the greater share of bank-intermediated credit in total

indebtedness of non-financial firms in Europe and, hence, the prevalence of bank-dependent firms. Furthermore, it is anticipated that due to the heterogeneity of financial structure among European countries, the importance of the credit channel would differ among countries. For example, in countries with arm-length banking systems (such as the UK), bank-intermediated credit is small relative to countries with relationship banking (e.g., Germany). At the same time, however, information asymmetries are less significant in Germany due to a relationship-type banking system. Indeed, support for this asymmetric credit channel is found in the above studies as the evidence shows that a credit channel exists in the UK, Italy and Spain but not in Germany.

This paper, is interested in both the existence of a credit channel and the cross-country differences in the importance of this channel. We are following in line S. Fountasa and, A. Papagapitos (2001), as we are as well using aggregate annual and quarterly data. Here we are not able to present direct evidence on the credit channel, but instead we attempted to provide indirect evidence for the existence of the credit channels in different European countries with different banking systems (bank based systems like in Italy and Germany and market based systems such as in the UK) by examining the predictive ability of the interest rate spread between private and government securities for fluctuations in real output.

Early US evidence has shown that this quality spread has performed very satisfactorily as a leading indicator of future real economic activity (Bernanke and Blinder, 1992; Friedman and Kuttner, 1992, 1998; Estrella and Mishkin, 1998). In fact, Kashyap et al. (1993) and Bernanke and Gertler (1995) argue in favour of using this spread as an indicator of a credit channel. Using the techniques of cointegration and error-correction models, we find that the spread predicts short-run output fluctuations for Germany and Italy but not France and the UK. These findings indicate that there exists some heterogeneity of the credit channel across European countries. They imply that common European monetary policy applied by the European Central Bank might have asymmetric effects across the member States, thus possibly exacerbating existing regional disparities.

Theory and methodology

2.1. Theoretical background

The traditional Keynesian transmission mechanism, i.e., the money view, has recently come under attack by the proponents of the credit channel of monetary policy transmission that complements the conventional money channel and, hence, tends to amplify and propagate the standard interest rate effects of monetary policy on real activity. Based on credit market imperfections, owing to information asymmetries between borrowers and lenders, there exists an external finance premium, i.e., a wedge between the cost of funds raised externally and the opportunity cost of internal funds.

The supporters of the credit channel claim that monetary policy affects both the general level of interest rates and the magnitude of the external finance premium. The credit channel of monetary policy transmission includes two mechanisms that analyse the relationship between changes in monetary policy stance and the size of the external finance premium: the balance sheet channel and the bank lending channel. The balance sheet channel of monetary policy predicts that changes in monetary policy stance affect the real economy through their impact on borrowers' financial positions. The second mechanism associated with the credit channel is the bank lending channel that predicts that changes in monetary policy affect bank loan supply and, therefore, bank-dependent borrowers and private investment.

Methodology

Our objective is to provide indirect evidence for the importance of the credit channel in the transmission of monetary policy to the real economy. As, according to the credit view, the external finance premium has forecasting ability with respect to the level of real economic activity, we first employ a bi-variate model of output and our proxy for the external finance premium, i.e., the interest-rate spread between private and government debt. We then expand the model by considering a multivariate system of four variables: output, the price level, the overnight money market rate and the interest rate spread. The identification of monetary policy represents a contentious issue in the literature on the effects of monetary policy. There is, however, considerable evidence that monetary policy can be measured by changes in the overnight interbank rate (Federal Funds rate in the US, Bernanke and Blinder, 1992). At the same time, according to the money view, as monetary policy is transmitted through interest rate changes, the

interest rate variable captures monetary policy effects consistent with the money channel. Furthermore, the interest rate spread that measures the external finance premium, captures monetary policy effects consistent with the credit channel. By considering both interest rate effects, as well as external finance premium effects, we are able to separate the monetary policy effects that work through the different channels (Kashyap et al., 1993). We use the bivariate and multivariate systems to examine the long- and short-run relationship between the variables using cointegration techniques and error-correction models (ECM), respectively. An important advantage of this approach is that it allows us to account for a long-run relation among the variables in shaping the short-run dynamics. In particular, by treating credit market conditions, proxied by the external finance premium, as endogenous in a cointegrating framework, we avoid the criticism applied on forecasting exercises that treat a credit aggregate as an independent causal factor affecting the real economy (Bernanke and Gertler, 1995). In the multivariate model, the error-correction regression for real output is as follows:

Our model is represented as

$$\Delta \ln Y_t = \alpha_0 + \alpha_1 \text{ECT}_{t-1} + \sum_{i=1}^n \beta_i \Delta \ln Y_{t-i} + \sum_{i=1}^n \gamma_i \Delta \ln R_{t-i} + \sum_{i=1}^n \delta_i \Delta \ln P_{t-i} + \sum_{i=1}^n \varepsilon_i \Delta S_{t-i} + e_t$$

where Y , R , P and S stand for output, the short-term interest rate, the price level and the quality spread, respectively. If our variables are co-integrated, then the equation for output in the ECM will be of the above form, where ECT is the error-correction term (i.e., the lagged residual from the $t-1$ co-integration regression).

3. Data and results

3.1. Data

We use both annual and quarterly data for the period 1981–2007. Our sample includes the four largest European Union countries, France, Germany, Italy, and UK. The short-term interest rate is proxied by the overnight money market rate (call money rate). The private and government long-term debt rates are proxied by the corporate and government bond rates, respectively. The price level is measured by the consumer price index (CPI). Finally, output is proxied by real GDP measure. IPI and CPI data are taken

from the IFS (International Financial Statistics) published by the International Monetary Fund; interest rate data come from two sources: IMF statistics and national Central Banks.

3.2. Results

We first perform unit root tests on the following variables: the log of real GDP, the log of the CPI, the log of the overnight rate and the interest rate spread, defined as the difference between the log of the private sector interest rate and the log of the government interest rate. Using the ADF statistic, we establish that most series are stationary in first differences, i.e., $I(1)$, with the exception of CPI which is $I(2)$, a result consistent with earlier findings earlier studies S. Fountasa and, A. Papagapitos (2001) among others. We start with the bilateral model and test for cointegration between output and the spread using Johansen's maximum eigenvalue and trace tests. We do not find any evidence in favour of cointegration. We then run OLS regressions in first differences and perform F -tests on the predictive ability of the spread in the output equation. The results show that the spread does not predict output in any of the countries at the 5% level or better. We, therefore, proceed to the multivariate case to test for cointegration between output, the first difference in the CPI, the overnight rate and the interest rate spread. Evidence for cointegration is found in France, Italy and the UK but not in Germany. For cases where cointegration applies, we estimate an ECM where the differenced VAR includes an error-correction term that captures the short-run adjustment to the long-run equilibrium. In the rest of the cases, we estimate a differenced VAR.

The choice of the lag length, n , is based on the likelihood ratio test. Marginal significance levels are shown in parentheses next to the statistics. 2 difference in the CPI, the overnight rate and the interest rate spread. Evidence for cointegration is found in France, Italy and the UK but not in Germany. For cases where cointegration applies, we estimate an ECM where the differenced VAR includes an error-correction term that captures the short-run adjustment to the long-run equilibrium. In the rest of the cases, we estimate a differenced VAR.

Our results report as well the estimated error-correction regressions for output. The maximum number of lags is identical with that used in the cointegration tests.

Insignificant lags have been deleted to derive a more parsimonious model unless this introduced autocorrelation in the error term. We report three 2 diagnostics: adjusted R^2 , and the F statistic versions of the Breusch-Godfrey test for autocorrelation and the ARCH test. Based on these results, Germany and Italy demonstrate evidence consistent with the credit channel. In both countries the lagged spread predicts output at the 5% significance level or 3 better. In France and the UK, the spread has no predictive power. As mentioned earlier, our use of aggregate, as opposed to firm- and bank-level data, does not allow us to test directly for the existence of a credit channel. However, as, according to the credit channel, the spread should contribute towards the prediction of output fluctuations, our evidence for Germany and Italy is consistent with an operative credit channel in these countries. Moreover, for these two countries, the spread represents an important leading indicator of output fluctuations. Many of our results are consistent with the descriptive analysis of the importance of the credit channel summarised in Kashyap and Stein (1997, Table 6). By focusing on factors like the health of the banking system, the share of small firms and small banks, and the availability of alternatives to bank credit, the authors predict that the credit channel would be very strong in Italy. They also conclude that the UK would be on the other side of the spectrum, a result broadly consistent with ours. The descriptive analysis of Kashyap and Stein (1997) finds Germany to be an intermediate case for the existence of a credit channel. Relationship banking is very strong in Germany, thus weakening 4 asymmetric information frictions in the credit markets. On the other hand, Germany has a large number of small banks, thus suggesting the possibility of a credit channel. Our analysis does find some evidence consistent with a credit channel.

4. Concluding remarks

This paper has provided evidence consistent with an operative credit channel of monetary policy transmission in some European Union countries. We have shown that the external finance premium is one important leading indicator of real economic activity in Germany and Italy. No evidence is found 5 for France and the UK. This evidence in favour of a potentially heterogeneous credit channel implies that a common monetary policy implemented by the ECB might be transmitted in different ways across the member countries of the monetary union, thus exacerbating existing regional disparities among the member countries. Our results are important for three reasons:

first, accounting for the credit channel would provide a better understanding of the varying influence of changing institutional factors on the effectiveness of policy. Secondly, the results point to the importance of integrating banking and securities markets in the common currency area along with the move to a single currency, in order to minimize the likelihood of asymmetric monetary policy transmission mechanisms. Thirdly, there are implications for the choice of the appropriate monetary policy strategy of the ECB, provided that price stability is not the overriding objective of monetary policymakers.

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