Comments on "The Financial Accelerator and International Business Cycles under Alternative Monetary Regimes"

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Introduction: The model

This paper builds a micro-founded macroeconomic model with two economies and studies the effect of financial frictions on macroeconomic dynamics. There are four different setups that the authors compare: a flexible exchange rate regime with and without financial frictions and a monetary union with and without frictions. The model is a non-trivial adaptation of the Bernanke, Gertler and Gilchrist (1999) financial accelerator model. In brief, it is of the class of Dynamic New Keynesian models with imperfect competition that justifies the presence of Calvo-type price stickiness.

The financial frictions are introduced via a costly state verification problem in which the investors need outside capital to complete their projects. The optimal contract is solved endogenously as in the original contribution of Bernanke, Gertler and Gilchrist (1999). The outcome of the financial frictions introduction is the presence of a wedge between the risk free rate and the cost of capital. More importantly this wedge – known as the external finance premium – is inversely related to borrower's net worth (i.e. the amount of capital that the entrepreneur can put in the project) and fluctuates procyclically. This latter feature leads to amplification of business cycle fluctuations since adverse output shocks reduce cash flows, production, employment and the overall net worth of the entrepreneurs, which in turn leads to a reduction in the access to outside financing and amplification of the initial decline in output. The financial accelerator is present in both countries, which are linked by trade and capital flows.

Experiments, mechanics of the model and key predictions

The model is calibrated using reasonable parameter values and then simulated under three assumptions about the nature of the exogenous productivity shock and the monetary regime: (a) Domestic shock with flexible exchange rates; (b)
Domestic shock in a monetary union; (c)

Common shock in a monetary union. To understand the mechanics of the model, let's focus first on dynamics following a domestic shock under a flexible exchange rate regime. There are four key effects stemming from a positive innovation in domestic productivity: standard wealth effect; standard intertemporal substitution effect; substitution effect between home and foreign goods; and investment relocation effect. The productivity increase in the home country leads to higher output and work effort, increase in consumption, investment, decline in the external finance

premium (setting the stage for the financial accelerator), and increase in interest rates. The positive shock is transmitted to the foreign country via an increase in consumption of foreign goods and at the same time capital inflows from foreign to home. The mechanisms in the model lead to an increase in output, investment and employment abroad, but a decline in foreign consumption. This can be rationalized since the home increase in the demand for foreign goods requires increase in foreign production and therefore investment, but the only way investment can increase in the foreign economy faced with capital outflows is by a cut in consumption. The surprising effect is the one on interest rates – while interest rates at home increase, in the foreign country they decline. This is hard to reconcile with the increase in capital outflows from the foreign country and with the increased demand for capital in the world. It will be interesting to analyze the driving force behind this dynamics. A reasonable starting point is to simulate the model under flexible prices in order to restrict the number of potential sources of this surprising negative correlation in interest rates across countries.

Another unconventional result is the analysis of the domestic productivity shock in a monetary union. In this case the dynamics of the foreign country are completely reversed relative to the flexible exchange rate regime – output, investment, and labor decline, while interest rates increase. There is again a negative correlation between interest rates at home and abroad. It is clear that the negative correlation is driven by the changes in the terms of trade and the opposite effect they have on the marginal product of capital in the two countries. Nonetheless, it is surprising that the changes in the shadow price of capital does not overcome this negative correlation.

The most interesting results can be stated in the form of empirical predictions. First, the model clearly demonstrates that the impact of shocks is stronger in countries with more financial frictions, for example in countries where investment is predominantly financed by bank loans. Second, the model implies conditional negative correlation of output between countries (states) forming a union. The conditioning is on the realization of *idiosyncratic* productivity shocks. Third, the magnitude of this correlation is determined by the degree of financial markets imperfections – more frictions imply larger magnitude of the negative correlation between output across countries.

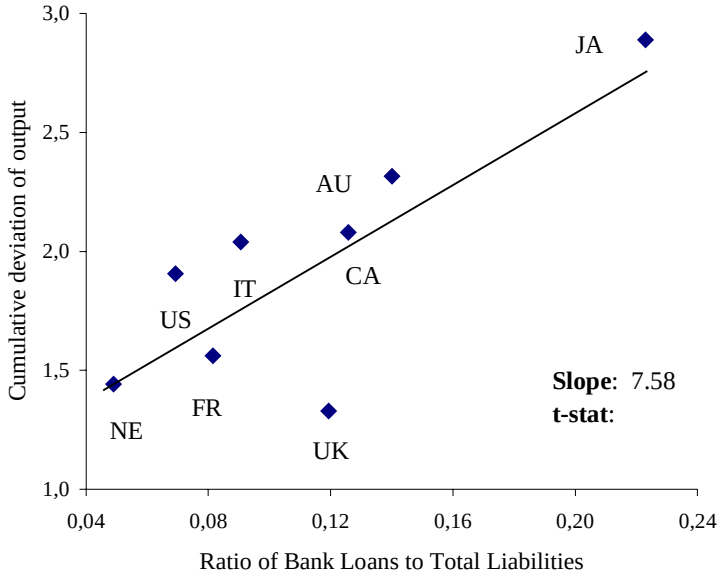
Are the predictions consistent with the empirical evidence?

Unfortunately there are no studies that link the output correlation across countries conditional on idiosyncratic productivity shocks and the degree of financial market imperfections. As to the first prediction, there are several papers that document the importance of financial frictions in the propagation of shocks. Most of these studies use national data and rely on the distinction between small and large firms and the assumption that small firms face higher external finance premium.[1]

[1] See Bernanke, Gertler and Gilchrist (1999) for a summary and a concise guide to the literature.

The cross-country studies are somewhat limited and mostly descriptive. In a recent paper, I provide some econometric evidence on the importance of financial markets imperfections in the propagation of monetary policy shocks. I use several measures of financial frictions, but the one most relevant for the paper by Gilchrist, Hairault and Kempf is the measure of bank loans to total liabilities for non-financial corporations. The index of the monetary policy effect on output is constructed by summing up the deviation of output from trend in the first eight quarters following a monetary policy shock. The Figure below plots the correlation between output deviation from trend and bank loans, while the Table provides several nonparametric measures of association between the two variables. Both parametric and nonparametric tests confirm the strong link between the power of monetary policy to affect output and financial frictions proxied here by the dependence on bank loans. This finding is an empirical confirmation of the argument by Gilchrist, Hairault and Kempf that output effects of monetary policy depend on the firms' reliance on bank loans.

FIGURE: Deviation of Output from Trend and Bank Loans



Notes: The results for the cumulative deviation are calculated on the basis of the vector autoregressions reported in Mihov (2001). The horizontal axis plots the five-year average (1985-89) of the ratio of bank loans to total liabilities of non-financial corporations.

TABLE: Nonparametric Measures of Association between Cumulative Impulse Responses and the Ratio of Bank Loans to Total Liabilities

	Correlation between cumulative impulse responses and bank loans
Spearman's Rank-Order Correlation Coefficient	**0.738** (0.025)
Kendall's Rank-Order Correlation Coefficient τ	**0.643** (0.016)
Kendall's Partial Rank-Order Correlation Coefficient $\tau_{xy,z}$ (conditional on the share of manufacturing in GDP)	**0.581** (0.021)

Notes: The numbers in the brackets are exact or approximate p-values for the null hypothesis that there is no correlation between cumulative impulse responses and bank loans. For more details see Mihov (2001).

Extensions

Forward-looking interest rate rules. A natural extension of the current model is to allow for a proper reaction function for the monetary authority. This extension will help in answering some very important questions. For example, a key issue is whether the reaction to inflation and the output gap in the Taylor rule should depend on degree of misalignment in financial frictions in the two economies composing the union.

Volatility/covariance tables. The impact of financial frictions on macroeconomic dynamics will be more thoroughly evaluated in a study that produces also volatility and covariance tables. How do financial frictions affect the volatility of the economy in a flexible exchange rate setting and in a monetary union? In an exercise that simulates the path of the two economies buffeted by productivity shocks, it is interesting to study how financial frictions amplify or dampen correlation across countries under the two alternative regimes. In other words, does the financial accelerator mechanism lead to a larger degree of de-synchronization in a monetary union? Answering this question will shed some light not only on the mechanisms at work in the theoretical model, but will also imply normative conclusions about the importance of financial markets harmonization.

Is this the right comparison? Flexible exchange rates vs. a monetary union. Finally, to make the model applicable in the analysis of the European Monetary Union, the correct comparison seems to be between fixed exchange rates and a monetary union. As Wyplosz (1997) argues the option of flexible exchange rates has never been seriously discussed among the core of the EMU countries – it is socially undesirable and politically infeasible. Of course, since one of the authors has already constructed a model with fixed exchange rates in Gertler, Gilchrist and Natalucci (2001), it seems that this extension should not be too difficult to implement.

Conclusion

The paper has delivered an interesting and important extension of the financial accelerator model to an open-economy setup. I think that the next step is to test empirically the predictions of the model and to provide further theoretical analysis by incorporating a forward-looking reaction function and by studying the implied variance-covariance structure of the model.

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