Journal of International Money and Finance 56 (2015) 178–201

Contents lists available at ScienceDirect

Journal of International Money and Finance

journal homepage: www.elsevier.com/locate/jimf

Government spending, monetary policy, and the real exchange rate☆

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ARTICLE INFO

Article history:
Available online 17 October 2014

JEL classification:
F31
F41

Keywords:
Incomplete markets
Monetary policy
Public spending shocks
Real exchange rate
Small open economy
Sticky prices

ABSTRACT

Both the traditional Mundell-Fleming-Dornbusch framework and standard dynamic general-equilibrium models with complete financial markets predict that an unanticipated increase in public spending in a given country appreciates its currency in real terms. This prediction, however, contradicts the findings of a number of recent empirical studies, which instead document a significant and persistent depreciation of the real exchange rate following an expansionary government spending shock. In this paper, we rationalize the findings of the empirical literature by proposing a small-open-economy model that features three key ingredients: incomplete and imperfect international financial markets, sticky prices, and a not-too-aggressive monetary policy. The model predicts that in response to an unexpected increase in public expenditure, the long-term real interest rate rises less than the country's debt elastic interest-rate premium. As a result, the long-term real interest rate differential vis-a-vis the rest of the world falls, leading the domestic currency to depreciate in real terms. We establish this result both analytically, within a special version of the model, and numerically for the more general case.

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☆ Financial support from SSHRC and FRQSC is gratefully acknowledged. We are grateful to two anonymous referees for very helpful comments and suggestions. We also thank Patrick Fève, Federico Ravenna, and Nicolas Vincent for useful discussions.

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http://dx.doi.org/10.1016/j.jimonfin.2014.09.010
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1. Introduction

Both the traditional Mundell-Fleming-Dornbusch (MFD) framework and standard dynamic general-equilibrium models with complete financial markets predict that an unanticipated increase in public spending in a given country appreciates its currency in real terms. In the MFD model, this appreciation results from the rise in aggregate demand induced by the increase in public spending, which falls more heavily on domestically produced goods, raising their relative price with respect to foreign goods. In dynamic general-equilibrium models with complete markets, the real appreciation ensues from a risk-sharing condition that relates the real exchange rate to the ratio of marginal utilities of consumption across countries. As long as the composition of the consumption basket differs across countries (due, for example, to home bias in preferences), an increase in public spending in the domestic country raises the tax burden of domestic households relative to the rest of the world, which in turn raises the relative shadow value of wealth in the domestic country and appreciates its currency in real terms.[1]

This prediction, however, appears to be at odds with the data. Several empirical studies indeed find that the real exchange rate depreciates persistently in response to an unexpected exogenous increase in government expenditures (Corsetti and Müller, 2006, Kim and Roubini, 2008, Müller, 2008, Monacelli and Perotti, 2010, Enders et al., 2011, Ravn et al., 2011, and Bouakez et al., 2014). This result holds across different countries, sample periods, and identification schemes, and is thus increasingly becoming a generally accepted stylized fact. Fig. 1 provides an additional evidence of this fact. It depicts the dynamic response of the real exchange rate to a positive public spending shock, obtained from a panel structural vector auto-regression (SVAR) using quarterly data from Australia, Canada, Sweden, and the United Kingdom. Details about the variables used in estimation, sample period, data construction and identification method are provided in the note below Fig. 1 and in Appendix A. The figure shows that the increase in public spending leads to a persistent depreciation the currency in real terms (relative to pre-shock value), which is statistically significant for the first 6 quarters after the shock.

To the extent that the response of the real exchange rate to public spending shocks is likely to play a critical role in determining the size of the spending multiplier in open economies, it is important to build macroeconomic models that are able to account for the empirical evidence just discussed. In this paper, we rationalize this evidence by proposing a small-open-economy model that combines three key features: (*i*) incomplete and imperfect international financial markets, (*ii*) sticky prices, and (*iii*) a not-too-aggressive monetary policy. Under incomplete financial markets, the real exchange rate is no longer pinned down by the ratio of marginal utilities of consumption, but instead by (the negative of) the long-term real interest rate differential vis à vis the rest of the world. The interest rate differential in turn involves a country premium that is assumed to be increasing in the economy's foreign debt, as in Kollmann (2002), Schmitt-Grohé and Uribe (2003), and Senhadji (2003). This debt-elastic premium is meant to capture frictions in international financial markets stemming, for instance, from the possibility of default or from agency costs. By raising demand for both domestically produced and foreign goods, an increase in public spending raises domestic inflation and deteriorates the current account. When prices are sticky and monetary policy does not react too aggressively to (expected) inflation, the resulting increase in the long-term real interest rate is smaller than the increase in the (cumulative) country premium. As a result, the long-term real interest rate differential falls, leading the domestic currency to depreciate in real terms.

We illustrate this mechanism within a special deterministic version of our model in which we abstract from capital and where we restrict the real interest rate to remain constant at its steady-state value at all times. This is achieved by assuming that the monetary authority changes the nominal interest rate one for one with expected inflation. The constancy of the real interest rate, which is only possible under sticky prices, implies that consumption also remains constant in response to transitory shocks. We can then solve the model analytically (up to a first-order approximation) and show that an

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[1] If the composition of the consumption basket is identical across countries, market completeness implies that the wealth effects of an increase in public spending are shared equally across countries. In this case, the shadow value of wealth rises by an equal amount domestically and abroad and the real exchange rate remains unaffected.

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