



# Risk, external adjustment and capital flows<sup>☆</sup>

Martin D.D. Evans

Department of Economics, Georgetown University, United States



## ARTICLE INFO

### Article history:

Received 2 August 2013

Received in revised form 13 December 2013

Accepted 20 December 2013

Available online 8 January 2014

### JEL classification:

F3

F4

G1

### Keywords:

International capital flows

External adjustment

Open-economy macro models

Habits

Incomplete markets

Collateral constraints

## ABSTRACT

This paper studies the process of external adjustment. I develop an open economy model with endowment and preference shocks that can account for the empirical behavior of real exchange rates, interest rates and consumption in the U.S. and Europe. The model includes cross border holdings of bonds and equity, and financial frictions that impede international risk-sharing. I find that external adjustment following endowment shocks predominantly takes place via trade flows, consistent with the intertemporal approach to the current account. In contrast, preference shocks that change investors' risk aversion induce adjustment via the trade and valuation channels; where the latter includes the effects of unexpected capital gains and loss on existing cross border holdings and changes in the expected future return differentials between foreign assets and liabilities. The model estimates imply that the valuation channel of external adjustment is more important for the U.S. than the trade channel. Consistent with this implication, I show that forecasts of future return differentials contributed most to the volatility of the U.S. net foreign asset position in the post Bretton-Woods era.

© 2013 Elsevier B.V. All rights reserved.

## 1. Introduction

A central challenge in international macroeconomics is to understand how unexpected changes in economic conditions in one country are transmitted internationally via international trade and financial markets. In principle, the process of external adjustment can take place via changes in consumption and investment decisions that generate international trade flows, via unexpected variations in asset prices, and through changes in risk premia that produce portfolio reallocations driving international capital flows. In practice, our understanding of the process is very incomplete. What factors determine the importance of these different adjustment channels? Does greater integration of world financial markets facilitate adjustment or simply increase an economy's susceptibility to adverse foreign shocks? Are the persistent and large imbalances in current accounts and net foreign asset positions we observe across the world consistent with a well-functioning adjustment process or are they a symptom of a fragile international financial system?

Unfortunately, standard open economy macro models give limited guidance on these questions. In canonical models where all international borrowing and lending take place via a single risk free bond, external

adjustment takes place entirely via the current account reflecting revisions in forward-looking consumption and investment decisions. This perspective on adjustment, referred to as the intertemporal approach to the current account (see, e.g., Obstfeld and Rogoff, 1995), ignores the fact that there are large cross border holdings of many financial assets in different currencies, not just holdings of a single risk free bond. As such, it is silent on the possible adjustment roles played by unexpected capital gains and losses on existing holdings and expected capital gains and losses on future holdings that compensate investors for risk. These valuation effects may be empirically important. Gourinchas and Rey (2013) observe that changes in the net foreign asset positions of many countries appear to be increasingly influenced by capital gains and losses. Are these gains and losses unanticipated; or do they represent, in part, compensation for risk? More generally, are these financial effects benign, reflecting efficient risk sharing, or do they impede adjustment? The aim of this paper is to make progress on these questions. For this purpose I develop a new open economy model that allows for multiple channels of external adjustment and use it to assess their empirical importance.

The model is built around a standard core. There are two countries, each populated by a continuum of infinitely-lived households with preferences exhibiting home bias defined over the consumption of two perishable traded goods. Households have access to a wide array of financial assets: domestic equity and risk free bonds as well as foreign equity and bonds. Their optimal portfolio decisions are the driver of international capital flows in bonds and equity. On the production side I assume that the world supply of each traded good follows an

<sup>☆</sup> This paper was prepared for the International Seminar on Macroeconomics held at the Bank of Italy in June 2013. I thank the Guest Editor, Gita Gopinath; the anonymous referees; the discussants, Jeffrey Frankel and Robert Kollmann; and the other seminar participants for their many useful comments. Any remaining errors are my own.

E-mail address: [evansmdd@gmail.com](mailto:evansmdd@gmail.com).

exogenous endowment process and that there are no impediments to international goods trade. I add three key elements to this simple structure: collateral constraints that limit international borrowing, a portfolio friction that limits the flexibility households have in re-allocating their wealth among foreign bonds and equity, and habits in households' preferences (adapted from Campbell and Cochrane, 1999). The first two elements make markets incomplete so households' portfolio decisions affect equilibrium consumption, savings and international trade flows. The third element allows me to compare external adjustment following temporary output/endowment shocks with the adjustment following heteroskedastic preference shocks that change households' risk aversion. The financial and macro effects of these risk shocks are quite different from output/endowment shocks and play a central role in my analysis.

The model identifies two distinct adjustment processes; one triggered by output shocks and one triggered by risk shocks. Adjustment following output shocks occurs via international trade and unexpected capital gains. For example, a shock that temporarily raises the output of the domestic good induces a deterioration in the terms of trade (i.e. a fall in the relative price of domestic to foreign traded goods), and a rise (fall) in domestic (foreign) aggregate consumption. These adjustments ensure goods market clearing in the presence of home consumption bias. They also imply a jump depreciation in the real exchange rate followed by an expected future appreciation, and a fall in the domestic real interest rate relative to the foreign rate as households smooth consumption intertemporally-consistent with uncovered interest parity (UIP). The shock also produces higher domestic dividends together with unexpected capital gains on domestic equity and foreign asset holdings that finance domestic trade deficits until it dissipates. In sum, output shocks produce adjustments via international trade and unexpected gains/loses on existing net foreign asset positions. Quantitatively, most adjustment takes place via trade, referred to as "the trade channel" by Gourinchas and Rey (2007).

Adjustments triggered by risk shocks follow a different pattern because they change the risk premia embedded in expected future returns on domestic and foreign assets. For example, a shock that temporarily increases the risk aversion of domestic households induces an immediate appreciation in the real exchange rate. This improves international risk sharing (i.e., it reduces the difference between marginal utility across countries) but it also produces unexpected capital losses on domestic equity and foreign asset positions when domestic marginal utility is high. Households view these adverse valuation effects as more likely in the future because the current risk shock increases the likelihood of future shocks (via heteroskedasticity), so in equilibrium the risk premia on domestic equity and foreign assets (equity and bonds) rise to compensate. As a result, the risk shock produces an initial unexpected capital loss on the domestic net foreign asset position and higher expected future returns on foreign assets relative to liabilities until its effects dissipate. Beyond these external valuation adjustments, the risk shock increases domestic precautionary saving which lowers the real interest rate. As a consequence, there is a fall in real interest differential and a rise in the foreign exchange risk premium (the risk premium embedded in the expected excess return on foreign bonds) that together match the expected real depreciation rate following the shock. Unlike the pattern following output shocks, these adjustments are inconsistent with UIP. The risk shock also produces a trade surplus because the appreciation in the exchange rate improves the terms of trade. However, external adjustment via trade is quantitatively much less important than through the capital gains/loses and risk premia variations, collectively referred to as "the valuation channel" by Gourinchas and Rey (2007).

Clearly, these adjustment processes are quite different: temporary output shocks primarily trigger adjustment via the trade channel, while risk shocks mainly produce adjustment via the valuation channel. The contributions of these channels to actual adjustment thus depends on the relative importance of (temporary) output and risk shocks as

drivers of international business cycles. To address this issue, I estimate the parameters of endowment and habit processes (driven by output and risk shocks respectively) so that the second moments for equilibrium real depreciation rates, interest rates and consumption growth rates in the model match their counterparts in quarterly U.S. and E.U. data. This estimation procedure reveals that risk shocks are a much more important driver of exchange rate, interest rate and consumption dynamics in U.S./E.U. data than temporary output shocks. The key reason for this is that risk shocks produce a strong negative correlation between future depreciation rates and the current real interest differential via variations in the foreign exchange risk premium, whereas endowment shocks produce a positive correlation consistent with UIP. In U.S./E.U. data, future depreciation rates are strongly negatively correlated the current interest differential, so the incidence of risk shocks needs to be high for the model to replicate this feature of the data. The high incidence of risk shocks also allows the model to match the empirical volatilities of real depreciation rates, interest differentials and consumption growth rates.

My estimation results imply that valuation effects (driven by risk shocks) should play an important role in the U.S. external adjustment process. To investigate this implication of the model, I estimate the role of valuation effects in the U.S. process. Gourinchas and Rey (2007) first studied the empirical importance of the trade and valuation channels of external adjustment in the U.S. using an approximation that linked a country's external position to forecasts of future net export growth (identifying the trade channel) and forecast of future returns on foreign assets and liabilities (identifying the valuation channel). They found that the valuation channel accounted for approximately 30% of the cyclical variations in U.S. external position between 1952 and 2004. I use a similar approximation to estimate the contribution of forecast revisions for net export growth and returns to the variance of the U.S. net foreign asset position between 1973 and 2007. My estimates indicate that the valuation channel was more important than the trade channel during this period, contributing between 60 and 88% of variance. When I perform the same calculations with data from the estimated model, I find that the valuation channel accounts for 86% of the variance in the net foreign asset position.

Finally, I examine the implications of the estimated model for the behavior of international capital flows. Since households can hold domestic and foreign bonds and equity, the model allows for complex patterns of bond and equity inflows and outflows as part of the external adjustment process. Once again, these patterns depend on the shock triggering adjustment. Output shocks produce very small capital flows because they have negligible effects on households portfolio decisions. The international trade flows induced by the shocks are finance by capital gains/loses on existing positions and changes in dividends. In contrast, risk shocks produce debt and equity flows as households re-allocate their portfolios in the face of changing risk premia and risk aversion. It is here that the effects of financial frictions in the model appear most clearly. Intuitively, the portfolio friction stops the equilibrium risk premia on foreign equity and bonds from adjusting to a point where all households are willing to maintain their pre-existing holdings, so flows arise as household establish new optimal positions. These flows are also affected by the presence of collateral constraints. Unexpected capital losses that push households closer to the point where the constraint binds induce portfolio re-allocations that amplify the capital flows produced by the portfolio friction. According to the model estimates, the presence of collateral constraints doubles the size of the debt and equity capital flows induced by risk shocks.

The remainder of the paper is divided into six sections. The model I develop draws on several lines of research from the asset-pricing and open-economy macro literatures. Section 1 discusses this research and explains where I extend existing work. Section 2 presents the model. Section 3 explains how I solve and calibrate the model to match the U.S. and E.U. data. In Section 4 I identify the elements that contribute to the external adjustment process. Section 5 contains my quantitative

Download English Version:

<https://daneshyari.com/en/article/963069>

Download Persian Version:

<https://daneshyari.com/article/963069>

[Daneshyari.com](https://daneshyari.com)