Journal of International Money and Finance 48 (2014) 271–290

Contents lists available at ScienceDirect

Journal of International Money and Finance

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

# External balances, trade flows and financial conditions

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ARTICLE INFO

*Article history:*
Available online 12 June 2014

*Keywords:*
Global imbalances
Foreign asset positions
Current accounts
Trade flows
International asset pricing

*JEL codes:*
F31
F32
F34

ABSTRACT

This paper studies how changing expectations concerning future trade and financial conditions are reflected in international external positions. In the absence of Ponzi schemes and arbitrage opportunities, the net foreign asset position of any country must, as a matter of theory, equal the expected present discounted value of future trade deficits, discounted at the cumulated world stochastic discount factor (SDF) that prices all freely traded financial assets. I study the forecasting implications of this theoretical link in 12 countries (Australia, Canada, China, France, Germany, India, Italy, Japan, South Korea, Thailand, The United States and The United Kingdom) between 1970 and 2011. I find that variations in the external positions of most countries reflect changing expectations about trade conditions far into the future. I also find the changing forecasts for the future path of the world SDF are reflected in the dynamics of the U.S. external position.

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## 1. Introduction

This paper studies how changing expectations concerning future trade and financial conditions are reflected in international external positions. Economic theory links a country's net foreign asset (NFA) position to agents' expectations in a precise manner. In the absence of Ponzi schemes and arbitrage opportunities, the NFA position of any country must equal the expected present discounted value of future trade deficits, discounted at the cumulated world stochastic discount factor (SDF) that prices all freely traded financial assets. In practice this means that changes in observed external positions of countries across the world should reflect changing expectations about future trade flows and future financial conditions represented by the world SDF, or some combination of the two. The aim of this

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http://dx.doi.org/10.1016/j.jimonfin.2014.05.018
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paper is to assess whether this is in fact the case. More specifically, the paper examines the extent to which changing expectations about future trade and financial conditions are reflected in the evolving external positions of 12 countries between 1970 and 2011.

To undertake this analysis, I present a new analytic framework that links each country's current NFA position to its current trade flows, expectations of future trade flows, and expectations concerning future returns on foreign assets and liabilities in an environment without arbitrage opportunities or Ponzi schemes. This framework incorporates several key features. First it accommodates the secular increase in international trade flows and national gross asset/liability positions that has taken place over the past 40 years. The secular growth in both trade flows and positions greatly exceeds the growth in GDP on a global and country-by-country basis. Between 1970 and 2011, the annual growth in trade and positions exceeds the growth in GDP by an average of 2.6 and 4.8 percent, respectively, across the countries studied.[1]

The second key feature concerns the identification of expected future returns. As a matter of logic, expected future returns on a country's asset and liability portfolios *must* affect the value of its current NFA position, so pinning down these expectations is unavoidable when studying the drivers of external positions. This is easily done in textbook models where the only internationally traded asset is a risk free bond, but in the real world countries' asset and liability portfolios comprise equity, FDI, bonds and other securities, with risky and volatile returns. Pinning down the expected future returns on these portfolios requires forecasts for the future returns on different securities and the composition of the portfolios. To avoid these complications, I use no-arbitrage conditions to identify the impact of expected future returns on NFA positions via forecasts of a single variable, the world SDF. SDFs play a central role in modern finance theory (linking security prices and cash flows) and appear in theoretical examinations of the determinants of NFA positions (see, e.g., Obstfeld, 2012). A key step in my analysis is to show how the world SDF can be constructed from data on returns and then used to pin down how expectations concerning future financial conditions are reflected in external positions.

In the empirical analysis I study the external positions of 12 countries (Australia, Canada, China, France, Germany, India, Italy, Japan, South Korea, Thailand, The United States and The United Kingdom). I first show how the world SDF can be estimated from data on returns and discuss how the estimates can be tested for specification errors. Next I turn to the identification of expectations. In theory, external positions reflect expectations concerning the entire future paths of trade flows and the world SDF, so we need to forecast over a wide range of horizons. For this purpose I use VARs – a common approach in the literature following Campbell and Shiller (1987). I then compare the present values of future trade flows and the world SDF based on the VAR forecasts with external positions. If the actual expectations embedded in the external positions are well represented by the VAR forecasts, the present values computed from those forecasts should be strongly correlated with the external positions. This implication is borne out by my empirical findings using the VAR forecasts for trade flows. Forecasts of trade flows far into the future are strongly correlated with the external positions of 10 countries I study. Evidence on the role of expected future financial conditions is less clear cut. While VAR forecasts for the world SDF suggest that there have been persistent and sizable variations in the prospective future financial conditions that are relevant for the determination of external positions, the forecasts are only weakly correlated with the positions of many countries. One notable exception to this pattern is the U.S., whose external position is strongly correlated with the forecasts.

These findings add to a growing empirical and theoretical literature on international external adjustment. The analytic framework I present is most closely related to the work of Gourinchas and Rey (2007a). They derive an expression for a country's NFA position from a "de-trended" version of the consolidated budget constraint (that governs the evolution of a country's NFA position from trade flows and returns), that filters out the secular growth in trade flows and positions mentioned above. Thus their analysis focuses on the "cyclical" variations in NFA positions, rather than the "total" variations. Similarly, Corsetti and Konstantinou (2012) use the consolidated budget constraint to derive an approximation to the current account that includes deterministic trends in the log ratios of consumption, gross assets and gross liabilities to output to accommodate the long-term growth in trade

[1] This feature of the data has proved to be a challenge for researchers studying the determinants of external positions, see e.g., Gourinchas and Rey (2007a) and Corsetti and Konstantinou (2012) discussed below.

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