Journal of International Economics 114 (2018) 362–375

Contents lists available at ScienceDirect

Journal of International Economics

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

Good news is bad news: Leverage cycles and sudden stops☆

Özge Akıncı [a,*], Ryan Chahrour [b]

[a] Federal Reserve Bank of New York, 33 Liberty Street, New York, NY 10045, USA
[b] Department of Economics, Boston College, Chestnut Hill, MA,USA

ARTICLE INFO

Article history:
Received 19 November 2016
Received in revised form 26 July 2018
Accepted 26 July 2018
Available online 02 August 2018

JEL Codes:
E32
F41
F44
G15

Keywords:
News Shocks
Sudden Stops
Leverage
Boom-Bust Cycle

ABSTRACT

We estimate a model with an occasionally-binding collateral constraint, and find that half of productivity shocks are anticipated by households. In the estimated model, good news about productivity raises leverage, increasing the probability that a Sudden Stop occurs in future periods. In the run-up to the Sudden Stop, the economy exhibits a boom period with consumption and investment above trend, consistent with the data. During the Sudden Stop, the nonlinear effects of the constraint induce consumption and investment to fall substantially below trend and the trade balance to reverse sharply, as they do in the data. The risk created by good news is large, with nearly 90% of Sudden Stops occurring after positive news shocks.

1. Introduction

In this paper, we show that an estimated real business cycle model augmented with an occasionally-binding collateral constraint and a predictable component in productivity[1] can match observed business cycle patterns in emerging economies, including around periods known as Sudden Stops. Fig. 1 illustrates the patterns in a seven-year window around identified Sudden Stop events.[2] During the median Sudden Stop episode: (i) gross domestic product (GDP) and private consumption fall about 4 percentage points below trend; (ii) private investment falls 20 percentage points below trend; (iii) the trade balance-to-GDP ratio experiences a reversal of about 6 percentage points; (iv) asset prices fall, and; (v) the country's external debt-to-GDP ratio drops by almost 10 percentage points. In the run-up to these events, the economy experiences a significant trade deficit and rising debt, while GDP, consumption and investment are all above their respective trends.

A predictable component in productivity is important for the model to generate realistic Sudden Stop dynamics. In our model, agents faced with improving growth prospects optimally choose to borrow against their higher future income, increasing their leverage in good times and bringing them closer to an occasionally binding constraint on their debt holdings. On average, the good news is realized, leading to higher long-run consumption and output for the household. However, because good news also brings households closer to the constraint on their leverage, it exposes them to a greater risk that an unfavorable future shock will eventually lead the constraint to bind, thereby leading to a worse outcome *ex post* than they might otherwise have realized had all shocks arrived as surprises. In this sense, good news leads agents to engage in optimistic behavior that is both rational, since it is validated

☆ The views expressed in this paper are solely the responsibility of the authors and should not be interpreted as reflecting the views of the Federal Reserve Bank of New York or the Federal Reserve System. Replication files and instructions can be found at www.chahrour.net/goodnews_replication.

* Corresponding author.
E-mail addresses: ozge.akinci@ny.frb.org (Ö. Akıncı), ryan.chahrour@bc.edu (R. Chahrour).

[1] Commonly known as "news" shocks. See Beaudry and Portier (2006) for an early example.

[2] We identify a Sudden Stop as a situation in which the cyclical component of GDP is at least one-and-a-quarter standard deviations below its trend level and the reversal in the trade balance-to-GDP ratio is at least one-and-a-quarter standard deviations above average. Our definition is similar to the one used in the literature. See, for example, Calvo et al. (2006) and Mendoza (2010). More details on our data and identification strategy are in Appendix A.

https://doi.org/10.1016/j.jinteco.2018.07.006
0022-1996/

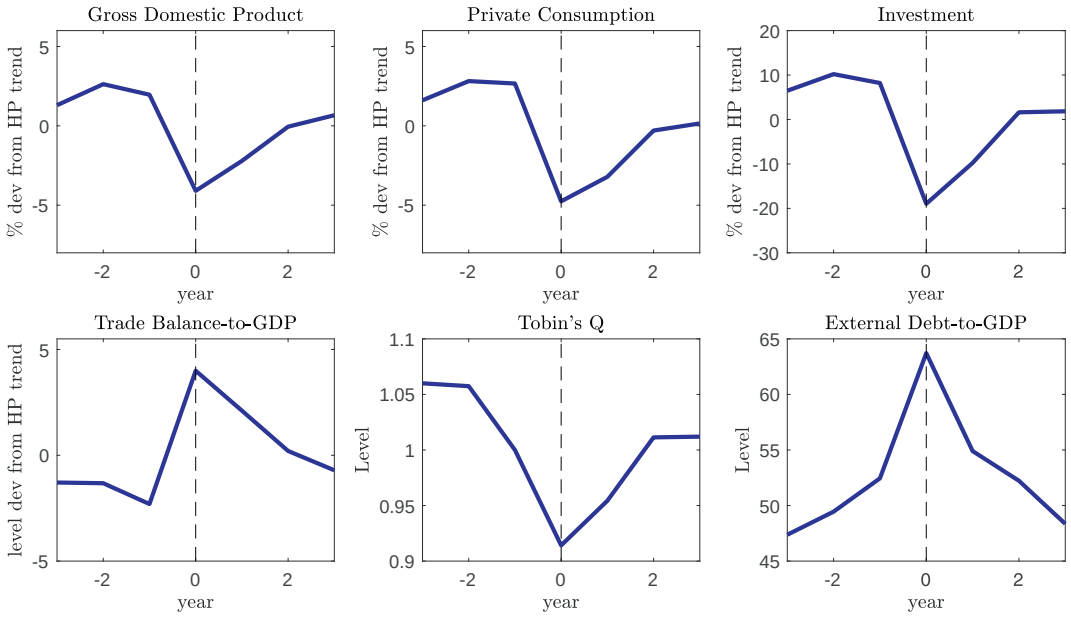

Fig. 1. Sudden Stop Event Study– Data.Note: Events are identified as periods in which the cyclical component of GDP is at least one-and-a-quarter standard deviations below its trend level and the reversal in the trade balance-to-GDP ratio is at least one-and-a-quarter standard deviations above average. The blue line is the cross-country median of the forty-two Sudden Stop events identified during the 1980-2015 period. The event window includes three years before and three years after the Sudden Stop events at date 0. GDP, investment, consumption and trade balance-to-GDP ratio are all HP detrended with a smoothing parameter 10. Tobin's Q and debt-to-GDP ratios are shown in absolute levels.

on average, but also risky, since it reduces the agents' ability to respond to negative shocks that might arrive in the future.

In order to establish that news shocks are quantitatively important for matching emerging economy data, we first estimate our model using a simulated method of moments that targets the standard deviations, as well as the zero and first order cross-autocorrelations of emerging economy GDP growth, consumption growth, investment growth, trade balance-to-GDP ratio, and country interest rates.[3] In addition to a shock to the predictable component of permanent productivity, the model is buffeted by exogenous unexpected disturbances to permanent productivity and the country interest rate. We find that the estimated model assigns just over half of fluctuations in productivity to its predictable component. Bootstrapped confidence bands indicate this share lies between 36 and 68%, which is both statistically and economically significant.

The empirical properties of the trade balance provide crucial identifying information for our estimated news share. Shocks to the country interest rate can account for some fluctuations in the trade balance, and also its modest counter-cyclicality, but their observed size is not large enough to account for its total volatility. Mean-reverting (non-permanent) productivity shocks lead to a strongly positive trade balance during economic booms, a pattern so counter-factual that we do not consider them in our baseline estimation.[4] Meanwhile, unanticipated permanent productivity shocks lead to relatively small fluctuations in these variables and also cannot match observed volatility. In contrast, news shocks, which imply a steeply rising profile of productivity over time, give agents an explicit reason to adjust consumption and investment today, even when current output is (relatively) unchanged. Thus, they lead to much larger— and more realistic — fluctuations in debt and the trade balance.

After demonstrating that the estimated model fits unconditional moments quite well, we show that it also predicts Sudden Stop events that closely resemble the events identified in Fig. 1. In particular, the model predicts booms in output, consumption, investment, asset prices and rising leverage whenever available information indicates high future growth rates for consumption, i.e. after positive news shocks. In the event of a sufficiently negative realization of actual productivity growth—or any other shock—the additional leverage accumulated by agents during the period of optimism causes the leverage constraint to bind, or to bind more strongly, leading to a debt-deflation spiral. The non-linear effects of the binding credit constraint deliver quantitatively realistic crashes in the event of a crisis, including a simultaneous and deep fall in consumption and borrowing that would otherwise be difficult to deliver in an economy with access to international financial markets.

Existing models of real business cycles, even those with credit market frictions, do not easily generate the set of facts cited above. These models typically require unusually large shocks to account for financial crises and many are designed to study the financial crises in isolation.[5] Moreover, these models have a difficult time generating output and consumption booms in the period leading into the crisis. This is true because good times are usually associated with improved asset prices and, thus, improved net worth of the borrowers, relaxing borrowing constraints according to most common specifications. Thus financial crises in these models, if they occur, typically occur only after a series of bad realizations of shocks. Anticipated shocks address this challenge by introducing the possibility that borrowing and leverage rise in response to good shocks, and therefore increase during times of expansion. Crises in this case can be triggered by good news followed by a bad realization, and indeed even when no change in fundamental is finally observed.

To our knowledge, this paper is the first to estimate a fully non-linear emerging economy business cycle model, and show that it can simultaneously match long run business cycle moments and Sudden Stop dynamics. Guerrieri and Iacoviello (2015) propose a piece-wise linear approach to solve models with occasionally-binding constraints, and Guerrieri and Iacoviello (2017) use this approach to estimate a

[3] Because the estimator targets *unconditional* moments, it is a good indicator of the overall patterns in the data but is not directly linked to dynamics surrounding Sudden Stops.

[4] The estimation results for the model augmented with mean-reverting productivity shocks are presented in Section5.

[5] See, among others, Gertler et al. (2007), Gertler and Karadi (2011), Gertler and Kiyotaki (2010).