International Review of Economics and Finance 21 (2012) 16–28

Contents lists available at ScienceDirect

International Review of Economics and Finance

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

External vulnerability, balance sheet effects, and the institutional framework — Lessons from the Asian crisis

Christian Mulder [a], Roberto Perrelli [a], Manuel Duarte Rocha [a,b,c,*]

[a] International Monetary Fund, 700 19th Street, N.W., Washington, D.C. 20431, USA
[b] CEF.UP, Faculdade de Economia, Universidade do Porto, Rua Dr. Roberto Frias, 4200-464 Porto, Portugal
[c] Faculdade de Economia, Universidade do Porto, Rua Dr. Roberto Frias, 4200-464 Porto, Portugal

ARTICLE INFO

Article history:
Received 3 September 2010
Received in revised form 5 April 2011
Accepted 5 April 2011
Available online 12 April 2011

JEL classification:
F31
F47
G15

Keywords:
Currency crises
Institutions
Corporate indicators
Early warning systems
Emerging markets

ABSTRACT

This study tests the balance sheet approach of "third-generation" explanations of external crises in emerging markets, looking in particular at the 1997–98 Asian crisis. Using unique datasets, we find that corporate sector balance sheets, macroeconomic balance sheets, and the legal environment have a significant impact on the likelihood of external crises, and some of which also on the depth of crises. These indicators supplement, rather than substitute, the traditional macroeconomic variables. Predictions point to potentially large improvements in the predictive power of models that include these indicators. The results highlight the importance of sound financial structures and institutional framework, alongside prudent macro policies, in limiting external vulnerability.

1. Introduction

The devastating and unexpected impact of the Asian crisis of 1997–98 on the economies of the affected countries has often been attributed to weaknesses in corporate sector balance sheets. This was not a feature that existing crisis models could explain. Early models of currency crises emphasized inconsistent macroeconomic policies leading to an erosion of reserves and eventual attack on the exchange rate. A second generation of models emphasized a combination of weak fundamentals and insufficient political stamina to fight costly currency crises, which provide an invitation to speculative attacks (see Flood & Marion, 1999 for an overview).

The countries at the core of the Asian crisis did not suffer from the traditional macro imbalances and weak fundamentals: inflation was low and fiscal balances about neutral. Banking and corporate weaknesses, however, were widespread. This inspired a "third generation" of external crisis models. Focusing on a balance sheet approach, this literature points to weaknesses or mismatches in the balance sheets of individual sectors of the economy and the country's aggregate balance sheet[1] – such as currency mismatches, maturity mismatches (illiquidity), excessive indebtedness (leverage), and low profitability. Some of these models focus on the corporate sector's side – viz. Krugman (1999), Caballero and Krishnamurthy (2001, 2003), Aghion, Bacchetta,

* Corresponding author at: Present address: Faculdade de Economia da Universidade do Porto, Rua Dr. Roberto Frias, 4200-464 Porto, Portugal. Tel.: +351 225571100; fax: +351 225505050.
E-mail address: mdrocha@fep.up.pt (M.D. Rocha).

[1] See, for example, Allen, Rosenberg, Keler, Setser, and Roubini (2002).

1059-0560/$ – see front matter
doi:10.1016/j.iref.2011.04.002

and Banerjee (2001, 2004), Bris and Koskinen (2002), and Schneider and Tornell (2004). They center on the existence of incomplete financial markets, which cause an over-reliance by firms on debt and foreign financing. Domestic financing is assumed to depend on limited domestic collateral, whose value collapses when the external financing constraint is tightened, for example due to a drop in investors' confidence. As a result, loans are called and companies sharply curtail productive new investment or close, contributing to a sharp fall in demand and further declines in the value of collaterals.

These explanations for the crises have testable implications. The worse the corporate balance sheets, the more vulnerable countries are to external crises. Some studies have tried to explain the differences in corporate financial structure, notably Claessens, Djankov, and Xu (2000) and Claessens, Djankov, and Nenova (2000), by including the legal and tax regimes. Stylized facts (e.g., Stone, 2000) indeed suggest that crises with a corporate element lead to sharp falls in investment and output. However, thus far little systematic empirical research has been undertaken to examine the impact of corporate balance sheets on the incidence and depth of crises. In particular, on how well the balance sheet approach helps to explain the likelihood and depth of the Asian crisis.

This paper seeks to fill this void by using corporate sector indicators, derived from individual corporations' balance sheets, to test whether these affect the likelihood and depth of external crises in emerging market economies during the 1990s, with special reference to the Asian financial crisis—which inspired the third-generation models. The importance of studying these episodes is critical since the imbalances in international trade and reserves accumulation that originated in the aftermath of the Asian crisis have been linked to the global financial crisis of 2008–09 (see Obstfeld, 2010).

This study also seeks to find evidence of the role of the corporate sector through the banking sector. Using data on corporate sector balance sheets allows us to study indirectly the impact that banks' balance sheets have on external crises. We do this by testing whether a large exposure of the banking sector to the corporate sector, in combination with weak corporate indicators, enhances the vulnerability to crises.

In addition, we empirically investigate the effects of macroeconomic balance sheet indicators, as well as indicators of legal regimes. The study of macroeconomic balance sheet indicators allows capturing important details that are not available at the corporate level.[2] We examine the influence of macro indicators and indicators of the legal regime because the quality of lending decisions arguably plays an important role in the incidence and depth of crises and the quality of such decisions is, in turn, affected by the overall institutional framework. The potential for government bailouts is, for example, often considered a prime indicator of the quality of the decisions. We use macro institutional indicators that may be indicative of the likelihood that the government will allow the private sector to service its debts without the imposition of exchange restrictions, on the reason that the potential imposition of such restrictions may lead to uncertainty and an early withdrawal of capital.

Finally, we test the importance of the implementation of corporate governance standards, which the international community has highlighted in the wake of these crises, by considering indicators of the legal regime, including creditor and shareholder rights. Such variables may affect how soundly the private sector conducts its business, and their exposure to sudden large-scale withdrawal of external finance, and more generally may be indicative of the government's desire to let the private sector be responsible for its own business.

To test the validity of these indicators, we examine their explanatory power in different models, so as to have a clear test of their influence over and above existing explanations. The first is a probit model of the likelihood of external crises over the coming 24 months, which outperforms acclaimed models in the literature.[3] The second is an estimation of the depth of crises, which lends itself to evaluate policies that limit the impact of systemic emerging market crises on individual countries.

The paper is organized as follows. In Section 2 we discuss the theory behind the indicators and their selection. In Section 3 we present the estimation results for the crisis probability, followed by those for the crisis depth in Section 4. Section 5 concludes.

2. The candidates for crisis indicators

2.1. Corporate balance sheet indicators

Good data on corporate sector balance sheets are hard to come by. They are not part of usual statistical data collection sets. To overcome this problem, for this study we have tapped a large private database, Worldscope. This database contains data on corporations that publish annual reports for a range of countries, including the most important emerging market economies from 1991 onwards. We consider the balance sheet information for the 1991–99 period in a sample of 19 countries.[4] From this database we selected the non-financial corporations and computed median observations for each year. Using the median rather than the average limits the risk of data pollution by large outliers caused by misclassification, or the presence of near defunct corporations.

The Worldscope database contains a vast list of corporate variables. From this list we select a core set that are common in the business literature, and which are investigated for example by Claessens, Djankov and Xu (2000) in their study of corporate financial structure. They can be classified in four categories: variables that reflect (1) the degree of financial leverage (debt over equity), (2) the maturity structure of debt financing, (3) the availability of liquidity, and (4) the profitability and cash flow of a company.

[2] In particular, there are usually no data on breakdowns by residency or currency available at a micro level, as the reporting of corporations in their annual reports does not focus on breakdowns that are relevant for balance of payments analysis.

[3] See Frankel and Saravelos (2010) for a recent review of the literature on early warning indicators and application to the 2008–09 global financial crisis.

[4] Our sample comprises the following 19 countries: Argentina, Brazil, Chile, Colombia, Egypt, India, Indonesia, Israel, Jordan, Korea, Malaysia, Mexico, Pakistan, Peru, Philippines, South Africa, Thailand, Turkey, and Venezuela. This sample was selected on the basis of data availability – i.e. for which it was possible to obtain balance sheets data from Worldscope – being close to the sample of 23 countries used by Berg and Pattillo (1999).