



The relation between sovereign credit rating revisions and economic growth[☆]



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ARTICLE INFO

Article history:

Received 20 October 2014

Accepted 21 October 2015

Available online 30 October 2015

JEL classification:

F34

F62

G24

O47

Keywords:

Economic growth

Sovereign credit rating revision

Capital flows

ABSTRACT

A country's economic growth exhibits a significant response to sovereign rating changes: a one-notch upgrade (downgrade) causes an increase (decline) of about 0.6% (0.3%) in re-rated countries' five-year average annual growth rates. The results hold after accounting for other determinants of economic growth and potential endogeneity problems, and are robust to the use of quarterly data. Changes in country rating affect economic growth via the interest-rate and capital-flow channels: narrower sovereign bond yield spreads and increased capital inflows are associated with upgrades, which stimulate re-rated countries' economic performance, and the converse holds for downgrades.

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1. Introduction

Sovereign credit rating agencies use a combination of economic, social, and political factors to assess a rated country's capacity and willingness to honor its current and future debt obligations in full and on time. Reinhart (2002) indicates that sovereign credit ratings are useful in predicting sovereign distress. When a sovereign defaults, it may incur reputation costs, lose assets abroad, worsen its access to international capital markets, and impede international trade (Bulow and Rogoff, 1989; Duffie et al., 2003). Recent

sovereign rating downgrades of several European countries by the major credit rating agencies show how important it is to examine the effects of revisions in sovereign credit ratings.

Negative sovereign rating changes typically lead to significant increases in sovereign bond yields (Cantor and Packer, 1996). Sovereign bonds represent "benchmark securities". That is, sovereign bond yields serve as the benchmark for interest rates in borrowing countries (Gande and Parsley, 2005; Dittmar and Yuan, 2008). Changes in sovereign credit risk may also trigger reweighting of global debt portfolios, which would affect the cost and the flow of capital across countries (Longstaff et al., 2011). Institutional investors such as pension funds and money market funds are prohibited from buying non-investment-grade securities (Becker and Milbourn, 2011). Stock markets can be adversely affected by negative revisions in sovereign ratings (Kaminsky and Schmukler, 2002; Brooks et al., 2004). Positive sovereign rating announcements are associated with an immediate reduction in sovereign credit default swap spreads (Ismailescu and Kazemi, 2010). Sovereign rating downgrades result in an increase in stock and bond market volatilities (Afonso et al., 2014). Negative sovereign rating events lead to significant spillover effects on yield spreads of sovereign bonds (Gande and Parsley, 2005; Afonso

[☆] We thank Carol Alexander (the Managing Editor), Geert Bekaert, Dosoung Choi, Kim Wai Ho, Chia-Wei Huang, Frank C. Jen, Cheng-few Lee, Yanzhi Wang, and especially two anonymous referees for helpful comments and suggestions. Sheng-Syan Chen and Hsien-Yi Chen gratefully acknowledge financial support from Excellent Research Projects of National Taiwan University and Ministry of Science and Technology of Taiwan (NSC100-2410-H-468-011), respectively.

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et al., 2012; Beetsma et al., 2013) and on stock market returns (Ferreira and Gama, 2007).¹

While a variety of studies on the effects of revisions in sovereign credit ratings are insightful, they do not consider explicitly how rating changes affect re-rated countries' economic growth, perhaps the most important aspect of national economic performance (Quinn and Toyoda, 2008). Sovereign rating revisions could affect the re-rated country's economic growth through the interest-rate and capital-flow channels. Negative revisions of sovereign credit ratings tend to increase relative debt burdens, so a re-rated country and its businesses will find it harder to raise funds in international capital markets. Unregulated capital outflow following negative rating changes could also increase the cost of capital and restrict credit, which in turn dampens real economic activity, leading eventually to slow growth or recession. Positive sovereign rating revisions would have just the opposite effect.

The hypothesis of changes in capital flows associated with sovereign rating changes can be explained by a flight-to-quality argument. That is, investors will shift capital away from riskier investments to the safest possible investment vehicles in the face of uncertainty in international financial markets (Bernanke et al., 1996; Hartmann et al., 2004; Pavlova and Rigobon, 2008). Caballero and Krishnamurthy (2008) argue that severe flight-to-quality episodes involve uncertainty about the entire environment, not just risk about asset payoffs. Reinhart and Rogoff (2004) assert that credit markets and political risk are the main reasons that explain the patterns of international capital flows. Arteta and Hale (2008) find a large and significant decline in foreign credit to domestic private firms in emerging markets during sovereign debt crisis periods.

Capital flows are significant because they influence the interest rate at which a country can borrow in international financial markets (Henry, 2000, 2003; Sandleris, 2008; Broner et al., 2010). The level of interest rates will affect investment and thus economic performance. A number of authors provide evidence on how capital flows and interest rates contribute to the promotion of investment and output growth. Bekaert and Harvey (1998, 2000) suggest that increases in private equity flows are associated with a lower cost of capital and positive macroeconomic performance in emerging markets. Levine and Renelt (1992) show robust relations among economic growth, foreign direct investment (FDI), and human capital. Borensztein et al. (1998) suggest that FDI plays an important role in the process of technology diffusion, contributing more to economic growth in developing countries than domestic investment. Alfaro et al. (2004) find that countries with more developed financial systems can gain significant economic growth advantages from FDI. Lane and Milesi-Ferretti (2001) show that the growth of gross stocks of equity and FDI is related to gross domestic product (GDP) in both industrialized and developing countries. Neumeyer and Perri (2005), Aguiar and Gopinath (2007), and Arellano (2008) document co-movement among interest rates, capital flows, and economic growth in emerging economies.

To sum this up, when a sovereign rating drops (i.e., country risk is higher), investors might shift investment from high-risk countries with political disorder, financial turmoil, or volatile economic conditions to less risky markets in other countries. One would expect negative sovereign rating revisions to be associated with increased interest rates and net capital outflows. Credit restriction would inhibit activity in the real economy, and ultimately may lead to a reduction in subsequent economic output. The converse holds for positive sovereign rating revisions.

We examine changes in Standard & Poor's (S&P) long-term foreign currency sovereign credit ratings for 103 countries during 1982–2012. The growth rate of real per capita GDP exhibits a significant response to sovereign credit rating changes. A one-notch rating upgrade results in an increase of about 0.6%, and a one-notch rating downgrade results in a decline of about 0.3%, in the subsequent five-year average annual growth rates of re-rated countries. The effects of sovereign rating revisions on economic growth are stronger when an upgraded country has a higher level of economic openness, when a downgraded country has greater external debt or external deficit, or when a re-rated country's rating is close to the investment-grade threshold. Our findings hold after accounting for other determinants of economic growth, financial liberalization, financial crises, economic development status, debt level, investor protection, quality of institution, future growth expectations, and potential endogeneity problems. We mitigate the endogeneity concerns using a system generalized method of moments (system GMM) approach and a difference-in-differences framework. Using quarterly data to better disentangle changes in economic growth immediately before and after rating revisions does not change our results.

We use a three-stage least squares procedure to examine the transmission channels. We find changes in country rating will affect output growth through two channels: interest rate and capital flows. That is, rating upgrades result in reduced interest rates and increased capital inflows that stimulate economic growth. Rating downgrades, on the other hand, lead to increased interest rates and capital outflows, which in turn generate poor economic performance.

We also perform several robustness checks of the effects of sovereign credit rating revisions on the re-rated country's economic growth rates. We take into account the potential effects of different rating agencies (Moody's and Fitch), non-overlapping data, and alternative economic growth measures. Our conclusions remain unchanged. Thus, we find robust evidence that revisions in sovereign credit ratings do affect the economic growth prospects of re-rated countries.

The paper is organized as follows. Section 2 describes the sample selection process and empirical models. Section 3 presents the empirical results. Section 4 explores the transmission channels. Section 5 discusses robustness checks. Section 6 summarizes our findings.

2. Data and methodology

2.1. Sample

We collect S&P sovereign credit ratings for long-term foreign currency-denominated debt from the S&P website (<http://www.standardandpoors.com>). S&P is more active in making rating changes among rating agencies, hence providing a larger data set. S&P rating changes are less anticipated by market investors, precede the rating revisions of other rating agencies (Reisen and von Maltzan, 1999; Gande and Parsley, 2005; Ismailescu and Kazemi, 2010), and demonstrate the least dependence on other rating agencies (Alsakka and ap Gwilym, 2010).

Our sample consists of upgrades and downgrades in S&P sovereign ratings covering the period 1982–2012.² Our analysis also incorporates changes in the credit outlook of a country that are released by S&P, because they add information regarding a sovereign's credit health (e.g., Ismailescu and Kazemi, 2010). Using a method similar to that in Gande and Parsley (2005), we construct a "comprehensive credit rating" measure. The numerical codings

¹ The are also a large number of studies that analyze the determinants of sovereign credit ratings (e.g., Cantor and Packer, 1996; Afonso et al., 2011; Erdem and Varli, 2014).

² Sample countries are shown in Online Appendix Table A1.

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