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Sovereign default risk premia: Evidence from the default swap market

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ABSTRACT

This study explores the risk premia embedded in sovereign default swaps using a term structure model. The risk premia remunerate investors for unexpected changes in the default intensity. A number of interesting results emerge from the analysis. First, the risk premia contribution to spreads decreases over the sample, 2003–07, and rebounds at the start of the 'credit crunch.' Second, daily risk premia co-move with US macro variables and corporate default risk. Third, global factors explain most of Latin American countries' premia, and local factors best explain European and Asian premia. The importance of global factors grows over time. Finally, conditioning on lagged local and global variables at a weekly frequency, sovereign risk premia are highly predictable.

1. Introduction

> '*Changes in the outlook for the US economy appeared to have a larger impact on asset prices in emerging markets than local events*' (Bank of International Settlements, December 2006).

Prior to the start of the 'subprime' crisis emerging market economies' (EMEs) sovereign spreads reached all times lows. Over this period several countries implemented a number of financial, economic and fiscal reforms, therefore enhancing their stability. However, as reflected in the quote above, improved country fundamentals (default risk), or local events, alone seem insufficient to explain such a remarkable decline in sovereign spreads. Moreover, the drop in sovereign spreads over the 2003–07 period is common across a large number of EMEs. This stylized fact may suggest that investors' strong appetite for EMEs' sovereign bonds (default risk premia) was a key driver behind the common fall in EMEs' sovereign spreads. In other words, the reduction in default risk premia appeared to have a greater effect than reduced default risk in explaining this decline. It is therefore important to study the evolution of default risk premia to understand the decline in sovereign spreads. We do this by using a simple term-structure model to extract sovereign default risk premia embedded in default swap contracts. Our sample consists of eight of the most traded emerging market (EM) sovereign default swaps covering Asia, Europe and Latin America. We then study the economic determinants of sovereign default risk premia, by analyzing their sensitivity to local and global factors.

Our analysis is of interest both for portfolio managers and policy makers. Portfolio managers are concerned with the degree of diversification of their international bond portfolios. To the extent that EM sovereign risk premia are driven by global factors, then

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an EM sovereign bond portfolio is likely to be under-diversified. To this end, investing in EM bonds may yield excess returns that to some extent are historically replicable by a portfolio of US stock and bond positions (Longstaff et al., 2008). Of course, portfolio managers are also concerned with predicting the direction of sovereign spread changes, and therefore of sovereign risk premia. By contrast, from a policy perspective, it is important to determine whether country risk is fairly priced. EMEs could otherwise be vulnerable to severe episodes of repricing of risk. Such episodes are often associated with periods of ample global liquidity, resulting in a lack of discrimination among borrowers. It is therefore important to identify which countries' risk premia are more sensitive to global risk factors. These countries may benefit from adopting economic policies that insulate their economies from external shocks.

To study investors' expectations embedded in sovereign default swaps, we estimate a parsimonious one-factor term structure model. Following Longstaff et al. (2005), the time-varying intensity of default is a latent factor, modeled as a standard square-root process, entering the default swap pricing formula. By exploiting the time-series and cross-section dimensions, we are able to separately identify the objective parameters of the intensity of default and the parameters of the market price of risk. To estimate the model parameters, we adopt a quasi-maximum likelihood procedure, where the extended Kalman filter follows Duffee (1999), among others. Based on the parameter estimates we then recover a measure of investors' risk aversion. This risk premium remunerates the investor for unexpected changes in the intensity of default. Next, we address the question of whether local or global factors drive investors' aversion to sovereign risk. To answer to this question, we extensively review several events which had an impact on EM debt through the lens of our (abstract) proxy for EM risk aversion. We complete the analysis by regressing this common measure of EM risk premium on local and global variables. This analysis is then repeated more in-depth for each country risk premium. In particular, we look at contemporaneous and lagged global and local variables, at daily and weekly frequencies, respectively. We then analyze the market timing ability of global and local factors to predict the direction of risk premia changes in and out of sample.

Our results show higher risk-neutral default probabilities than the pseudo-objective counterpart for most of the sample, which is consistent with the view that investors demanded a premium to hold EM debt. We find that a common factor explains about 90% of the risk premia variation across countries, confirming our hypothesis that sovereign risk premia strongly co-moved during our sample. Interestingly, such common factor loads particularly on Latin American countries. Moreover, we find that default risk premia progressively tailed off towards the end of the sample and eventually turned negative for some countries. As the 'credit crunch' unfolded default risk premia strongly increased, but investors' appetite for EM debt quickly rebounded. Moreover, major turning points of our 'abstract' EM risk premium tend to be linked to US macroeconomic news.[1] By contrast, there is weak anecdotal evidence that country-specific events caused significative swings in investors' appetite for EM debt. For example, major risk premia changes were not associated with changes in country ratings. That said, EMEs proved resilient to several episodes of turbulence that originated in developed countries. In particular, the mild or non-synchronous EMEs' reactions to periods of global repricing of risk suggest that EMEs 'decoupled' from advanced economies during several episodes.

A number of interesting results also emerge from the daily regressions of risk premia on local and global factors. We find that changes in global factors play a major role in explaining changes in Latin American countries' risk premia, but the opposite is true for European and Asian countries. Moreover, the importance of global factors grew over time. However, towards the end of the sample local factors still prevailed in the Philippines and Turkey. We then use the same set of lagged local and global factors to predict weekly changes in risk premia in and out of sample. We find that local factors are generally correctly signed and significant. For example, positive returns to the local stock market generally predict decreasing risk premia. While a rising spread on the EM bond index predicts rising countries' risk premia. As for the global factors, we find that positive returns to the SP&100 anticipate decreasing sovereign EM risk premia. Interestingly, rising US corporate spreads predict falling risk premia in EMEs. This finding may confirm the anecdotal evidence of 'decoupling' of sovereign spreads from US corporate spreads during several episodes. More fundamentally, we find a widespread evidence of market timing; the relative performance of local variables is particularly strong in sample, while both local and global variables present a remarkable market-timing power out of sample, by recursively estimating our predictive model.

Our study relates to the literature on global risk aversion and sovereign credit spreads, which goes back to Eichengreen and Mody (2000), among others.[2] However, differently from these studies, we directly extract a measure of risk aversion from market data. The first studies to back out a measure of EM risk aversion from credit default swaps are Zhang (2003) for Argentina, and Pan and Singleton (2008) for Mexico, Turkey and Korea.[3] Both studies show that global factors determine investors' reward for emerging debt. Similarly, Longstaff et al. (2008), using monthly sovereign credit default swap data for a cohort of 26 developed and less-developed sovereigns, find little evidence of any unique sovereign risk premium.

Motivated by these earlier studies on the nature of sovereign credit risk, we use the technique recently developed by Pan and Singleton (2008) to extract sovereign risk premia. However, we use a different process for the intensity of default and estimation technique. More fundamentally, our sample covers a larger and more geographically diverse group of sovereigns, during a period of ample liquidity, which eventually ends with the outset of the 'credit crunch'. This sample is therefore particularly suitable for analyzing the evolution and determinants of EM sovereign risk premia. More generally, our goal is to contribute to the literature on

[1] The 'abstract' EM risk premium is the time series associated with the first principal component of the estimated country-specific risk premia.

[2] See for example Diaz and Gemmill (2006), Garcìa-Herrero and Ortiz (2005), Gonzales-Rozada and Levy-Yeyati (2006), Mody and Taylor (2003), and Remolona et al. (2007). For more general studies on the impact of global factors on emerging markets, see Bakshi et al. (2008), Harvey (1991), and Ilmanen (1995).

[3] Ueno and Baba (2007) exploit a similar framework using a sample of Japanese banks' CDS data. Interestingly, Carr and Wu (2007) link default swaps to currency options for Brazil and Mexico over the 2002–05 period.