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US Rates and Emerging Markets Spreads

Eduardo Levy-Yeyati
UTDT and Barclays Capital

and

Tomás Williams
UTDT

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Eduardo Levy-Yeyati

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Tomás Williams

UTDT

Abstract

While many studies document the influence of global liquidity and risk aversion on emerging markets spreads, less is known about their link with the US yield curve –a point that becomes more relevant at today´s historically low US rates. In this note, we examine the channels through which emerging markets spreads could be affected by changes in the US Treasury curve, and their economic importance in light of realistic scenarios, accounting for the differential response from investment and non investment grade economies, and during periods of financial distress. We find that a UST curve steepening (e.g., due to an oversupply of Treasuries) represents a more important risk factor for emerging market spreads than a monetary policy tightening.

JEL Classification Codes: F34, E43, G15

Keywords: Sovereign Spreads, Emerging Markets, US rates, US yield curve, Risk appetite

I. Introduction

Global factors have a deep impact on the price of emerging market debt, as it is driven by the risk premium demanded by international investors and international liquidity conditions, much in the same any other non-investment grade fixed income security. While the influence of the former has been well documented in the literature[1], the role of the latter has received less attention in recent years. Moreover, while most emerging markets have undergone structural changes that reduced their exposure to a global tightening (Levy Yeyati et al. 2009), it is natural, with spreads in many cases close to historical lows, to expect some headwinds from shifts of the US Treasury (UST) yield curve expected for 2010.[2] In this note, we try to shed light on the link between US rates and emerging market spreads, and to quantify the impact of the former on the financing costs of the emerging world.

II. First glance

A first glimpse to the link between US rates and emerging market spreads comes from the exponential spread-rating link illustrated in **Figure 1**, which for a given time *t* could be formally expressed as:

$$ln\,(spread_{it}) = \alpha_t + \beta_t\, rating_{it} + \mu_t. \quad (1)$$

Regressing this cross-country equation for different periods (in our case, months), we can extract a series of estimated β_t and α_t (where an increase in the former or a decline in the latter reflect rotation and steepening of the spread-rating curve), and plot them against the Fed Funds rate and the short UST yield (**Figure 2**). The advantage of this exercise is that it allows us to focus on the effect of US rates above and beyond the ratings up cycle that characterized the emerging world in the 2000s. In addition, the figure identifies financially tranquil and distressed (turmoil) periods based on the intensity of the flight to quality to short US Treasuries (according to whether the ratio of government to total assets under management in money market funds, *Govt_totalMM,* is below or above the sample median).

The figure highlights a few preliminary stylized facts. First, a widening of the short end of the UST curve is associated with a steepening of the emerging markets spread-ratings curve, possibly a reflection of growing risk factors rather than monetary policy. Second, a normal

[1] See, i.e.., Gonzalez Rozada and Levy Yeyati (2008), and Grandes (2007).

[2] In particular, the beginning of a rate tightening cycle, and the steepening of the US Treasury yield curve due to the undoing of quantitative easing (Broda, Ghezzi and Levy Yeyati, 2009).

tightening cycle such as the one prior to the recent crisis does not seem to exert much influence on the spread-ratings curve, possibly because, in the absence of financial distress, higher US rates are typically associated with lower risk premiums.

What about a steepening in the UST curve? The figure suggests that, in financially tranquil times, an increase in the UST term premium (as measured by the difference between Barcap´s 7y10y UST index yield and the Fed Funds rate) affects the spread-rating curve through a smaller alpha and a larger beta (the correlations between the term premium and the betas and alphas are a statistically significant 0.7 and -0.44, respectively). Thus, during these times, a steepening of the UST curve brings two effects to the spread-ratings curve: a steepening, combined with a parallel downshift, worsening the relationship for low-graded countries. Instead, while the correlation between the term premium and the betas during episodes of financial distress is a statistically significant 0.44, there is no correlation with the corresponding alphas, indicating that the steepening of the spread-rating curve is the dominating effect.

III. Methodology

Perhaps the reason why the connection between US rates and emerging markets spreads has been less straightforward in the economic literature lies in the fact that changes in US rates may reflect very different things. Even at a simplified level, we can distinguish at least two supply-side stories and one demand-side story behind an upswing in the UST curve. On the supply front, monetary tightening may shift up the curve and crowd out capital flows from emerging economies (a channel documented by Calvo, Leiderman and Reinhart, 1994, for portfolio flows, and, Levy Yeyati, Panizza and Stein, 2007, for FDI). Related to the former but more relevant for longer durations, rates may widen due to an increase in the net supply of Treasuries to the market (e.g., due to deficit financing in the aftermath of recessions, or monetary contraction, as under a potential undoing of the quantitative easing of 2009). On the demand front, the reversal of a "flight to quality", namely, the decline in the preference for money, money-like instruments, or riskless assets in general driven by a renewed appetite for risk and duration, could steepen the curve regardless of the pace of monetary tightening.

In order to assess more rigorously the channels through which the Treasury curve influences emerging markets spreads, we extend González Rozada and Levy Yeyati´s (2008) model of sovereign spreads. More precisely, in addition to the Treasury rate (proxied by the yield of Barcap´s 7y10y UST index, *7y10y*), the sovereign rating (a*rating*) and the US high yield

corporate spread (*HY*), we control for monetary policy (proxied by the Fed Funds rate, *fedfunds*), and two aspects of risk aversion: the demand for liquidity (proxied by the government to total MM fund ratio, *Govt_totalMM*), and the perceived riskiness of risky assets (proxied by the *VIX* index).[3] Finally, as an additional explanatory factor, we include the international reserves-to-GDP ratio (*resratio*), which has been shown to systematically reduce spreads beyond what is captured by ratings (Levy Yeyati, 2008).[4]

We adopt a step-by-step estimation approach to highlight the direct and indirect channels at play. We start with the following model of the US yield curve:

$$\ln(ust7y10y_t) =$$

$$\gamma_0 + \gamma_1 \ln(fedfunds_t) + \gamma_2 \ln(govttotalMM_t) + \gamma_3 \ln(VIX_t) + \varepsilon_t \quad (2)$$

Note that, after controlling explicitly for monetary policy and risk aversion, ε_t could be interpreted as capturing autonomous changes in long US rates driven by Treasury supply shocks. The second step estimates the impact of changes of the UST curve on high yield US corporate spreads (as noted, a well-documented determinant of emerging market spreads):

$$\ln(HY_t) = \delta_0 + \delta_1 \ln(fedfunds_t) + \delta_2 \ln(govttotalMM_t) + \delta_3 \ln(VIX_t) + \delta_4 \ln(ust7y10_t) + \eta_t \quad (3)$$

Finally, we estimate how each of these variables affect emerging market spreads (adding sovereign ratings and the reserve ratio):

$$\ln(spread_{i,t}) = \beta_{0,t} + \beta_{1,t} arating_{i,t} + \beta_{2,t} \ln(fedfunds_t) + \beta_{3,t} \ln(govttotalMM_t) + \beta_{4,t} \ln(VIX_t) + \beta_{5,t} \ln(ust7y10_t) + \beta_{6,t} \ln(resratio_{i,t}) + \beta_{7,t} \ln(HY_t) + \mu_t \quad (4)$$

The combination of these three equations allows us to calculate the indirect and direct effects of US rates on spreads.

[3] VIX is the ticker symbol for the Chicago Board Options Exchange Volatility Index. A high value corresponds to a more volatile (risky) market.

[4] Our data consists of a panel of 19 emerging countries with monthly observations going from January 2000 to October 2009.

Our data consists of a panel of 19 emerging countries with monthly observations going from January 2000 to October 2009 (**Table 1** reports key descriptive statistics).

IV. Results

Our main findings are presented in **Table 2**. Column 1 shows that US rates increase less than proportionally (i.e., the curve flattens) as a results of a Fed hike, and that they are affected differently by the preference for liquidity and risk aversion (positively in the first case, negatively in the second): Treasuries benefit from a flight to quality but suffer relative to shorter-term US paper with a run for cash. In turn, the second specification shows that high yield corporate spreads are not significantly altered by monetary policy but respond to both risk aversion proxies. Finally, Column 3 reports significant direct effects from risk aversion and Treasury supply shocks (where the latter is captured here by the influence of 7y-10y US rates once monetary policy and risk aversion are controlled for), but no direct influence from the Fed Funds rate on emerging market spreads.

Do these effects weaken or disappear as countries become investment grade credits? To what extent our findings are driven by the episodes of financial distress? To answer these questions, we re-estimate our equation (3) interacting the controls with an investment-grade dummy (Column 4), and a tranquil period dummy (defined as those when *Govt_totalMM* is below our sample average, Column 5).[5] As can be seen, the effect of long US rates and liquidity preferences weaken significantly for high grade economies, while the influence of US monetary policy increases, as expected given the higher credit risk premium and the generally lower liquidity of non-investment grade credits. In turn, the impact of the Fed funds rate changes is positive in tranquil times (along the lines described in the introduction) but turns negative in times of turmoil, as monetary policy tends to looses in response to the widening of risk premiums.

How large are the effects estimated in the table? To gauge the full impact of UST curve moves, we need to work through the indirect channels estimated in the previous two columns. **Table 3** summarizes the result of such an exercise.[6] The first column reports the results based on the findings in column 3. Interestingly, monetary tightening, perhaps the channel most often emphasized as a source of near term vulnerability for emerging market credits, appears to have

[5] Alternative criteria based on the VIX or stock market performance yield comparable results.
[6] For simplicity, we test independent 100 bps hikes in the short and long end of the UST curve.

virtually no effect. It is an autonomous steepening of the US yield curve that yields the economically important response. Specifically, a 100bp Fed hike would lead to a [0.212*0.583]*100 bps=12 bps widening of the spread (acting only by the indirect channel of affecting the *ust7y10y*). By contrast, a 100 bps steepening of the UST curve due to a supply shock (as measured by an increase in the 7y10y Treasury yield, *ceteris paribus*) would lead to a 58 bps increase in spreads –similar to the effect of an autonomous 100bp increases in US high yield corporate spreads.[7] Of the remaining lines of the table, which illustrate the findings in the interaction regressions, two results stand out: the stronger negative effect of a Fed hike in tranquil times, and the considerably widening of non-investment grade spreads in the event of a steepening of the US curve.

V. Final Remarks

Overall, our study suggests that, positive US economic surprises that bring forward the undoing of quantitative easing and fuel the ongoing US rate steepening may translate into higher spreads for emerging markets, even if the Fed delays the monetary tightening and despite the offsetting effect of an increase in appetite for duration and risk.. Moreover, as financial markets normalize, a shift of the US yield curve from the current lows may exert a negative influence on emerging market spreads, particularly for non-investment grade countries, a source of spread variability comparable to that arising from the same economy, as the most commonly highlighted impact of a widening of US high yield corporate spreads.

[7] Finally, assuming that our two risk aversion proxies go back halfway to their pre-crisis, end-2007 levels, emerging market spreads would decline by roughly 45 bps. More precisely, by [0.377*0.591+0.485+0.239*0.583]*50=42 bps with the partial reversion in MM, and by [-0.104*(0.583)+0.972*0.591+0.205]*4.5=3 bps with the fall in the VIX.

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Table 1. Descriptive Statistics

	Variables								
Statistics	EM spreads	arating	Fed Funds	ust7y10y	US HY	VIX	GovttotalMM	Reserve Ratio	Term Premium
Observations	2079	2079	120	120	120	120	119	2249	120
Mean	532.99	12.86	3.04	4.65	612.46	21.91	0.214	0.123	1.61
Median	363.57	13.00	2.56	4.67	584.07	20.77	0.219	0.112	1.81
Std.Dev.	544.20	2.93	1.99	0.89	317.53	9.10	0.074	0.061	1.48
Min	35.9	6.50	0.12	2.04	232.85	10.42	0.102	0.012	-0.89
Max	4656.90	21.50	6.54	6.23	1840.41	59.89	0.408	0.384	4.05

Table 2: Disentangling the effect of the UST curve on emerging markets spreads

	ln (7y10y)	ln (HY)	ln (Spreads)	ln(Spreads) Rating split	ln (Spreads) Distress split
Variable	**1**	**2**	**3**	**4**	**5**
arating			0.158***	0.151***	0.155***
			(0.006)	(0.006)	(0.006)
ln (fedfunds)	0.212***	0.042	0.034	-0.009	-0.071**
	(0.026)	(0.037)	(0.022)	(0.025)	(0.03)
ln (resratio)			0.262***	-0.256***	-0.232***
			(0.03)	(0.03)	(0.03)
ln (govttotalMM)	0.239***	0.377***	0.485***	0.549***	-0.161
	(0.069)	(0.112)	(0.052)	(0.054)	(0.156)
ln (VIX)	-0.104***	0.972***	0.205***	0.146***	0.470***
	(0.032)	(0.052)	(0.05)	(0.055)	(0.092)
ln (ust7y10y)		-0.105	0.583***	0.777***	0.299***
		(0.118)	(0.07)	(0.08)	(0.098)
ln (HY)			0.591***	0.623***	0.352***
			(0.044)	(0.046)	(0.07)
ln (fedfunds)_D(1)				0.099**	0.258***
				(0.039)	(0.068)
ln (ust7y10y)_D(1)				-0.486***	0.262*
				(0.127)	(0.145)
ln (HY)_D(1)				-0.03	0.281***
				(0.069)	(0.072)
ln (govttotalMM)_D(1)				-0.237***	0.854***
				(0.084)	(0.144)
ln (VIX)_D(1)				0.136	-0.376***
				(0.102)	(0.106)
Observations	117	117	2017	2017	2017
R-squared	0.63	0.9	0.85	0.85	0.85

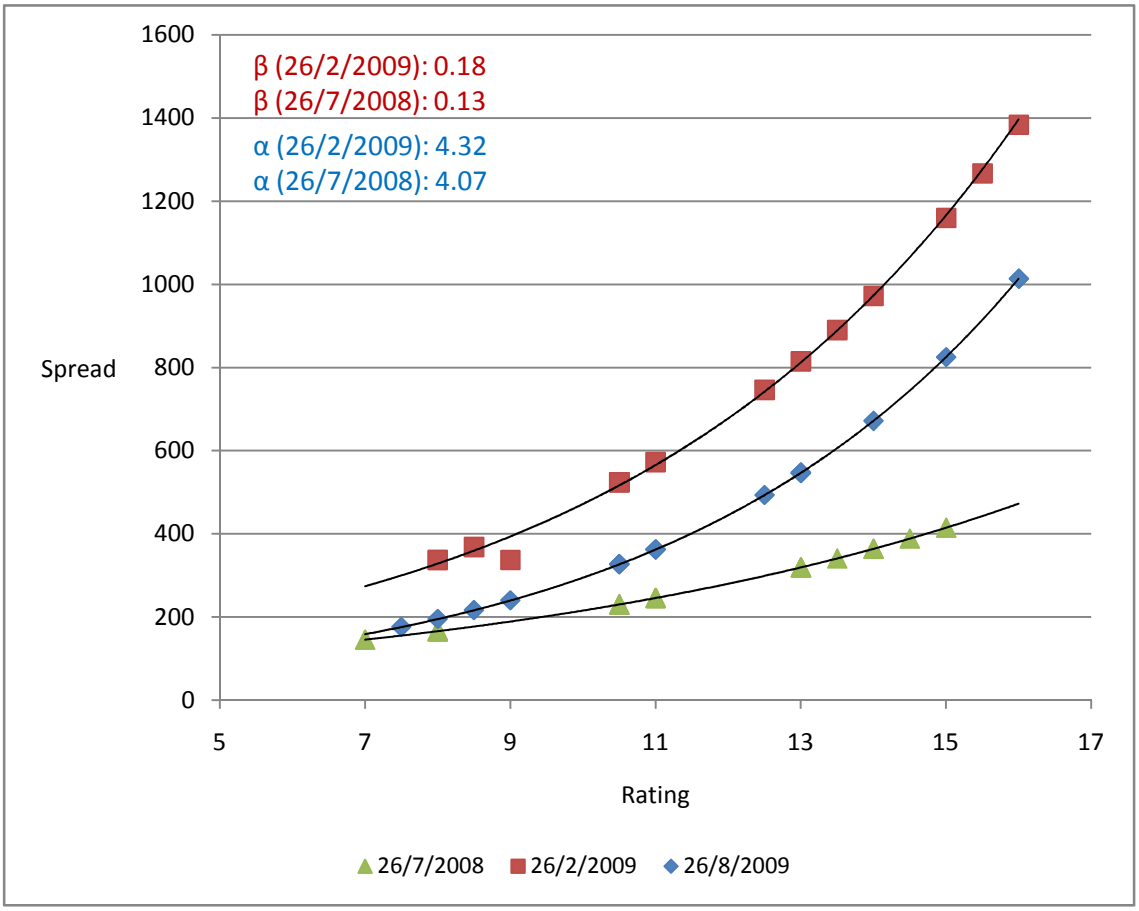
Note: The EM sample includes Argentina, Brazil, Colombia, Dominican Republic, Ecuador, Egypt, El Salvador, Hungary, Indonesia, Mexico, Panama, Peru, Philippines, Russia, South Africa, Turkey, Ukraine, Uruguay and Venezuela. Robust standard errors in parenthesis.*, **, *** denote significance at the 10, 5, and 1 percent levels. In Columns 4 and 5, _D(1) denotes that control variables are interacted with dummies for investment grade rating and tranquil periods, respectively. Source: Bloomberg.

Table 3: Effects of 100 bps hikes in the short and long end of the UST curve on EM spreads (in bps)

	Fed Funds	7y10y
Benchmark model	12.4	58.3
Distressed times	-0.8	29.9
Tranquil times	30.6	56.1
Non-investment Grade	16.5	77.7
Investment Grade	16.1	29.1

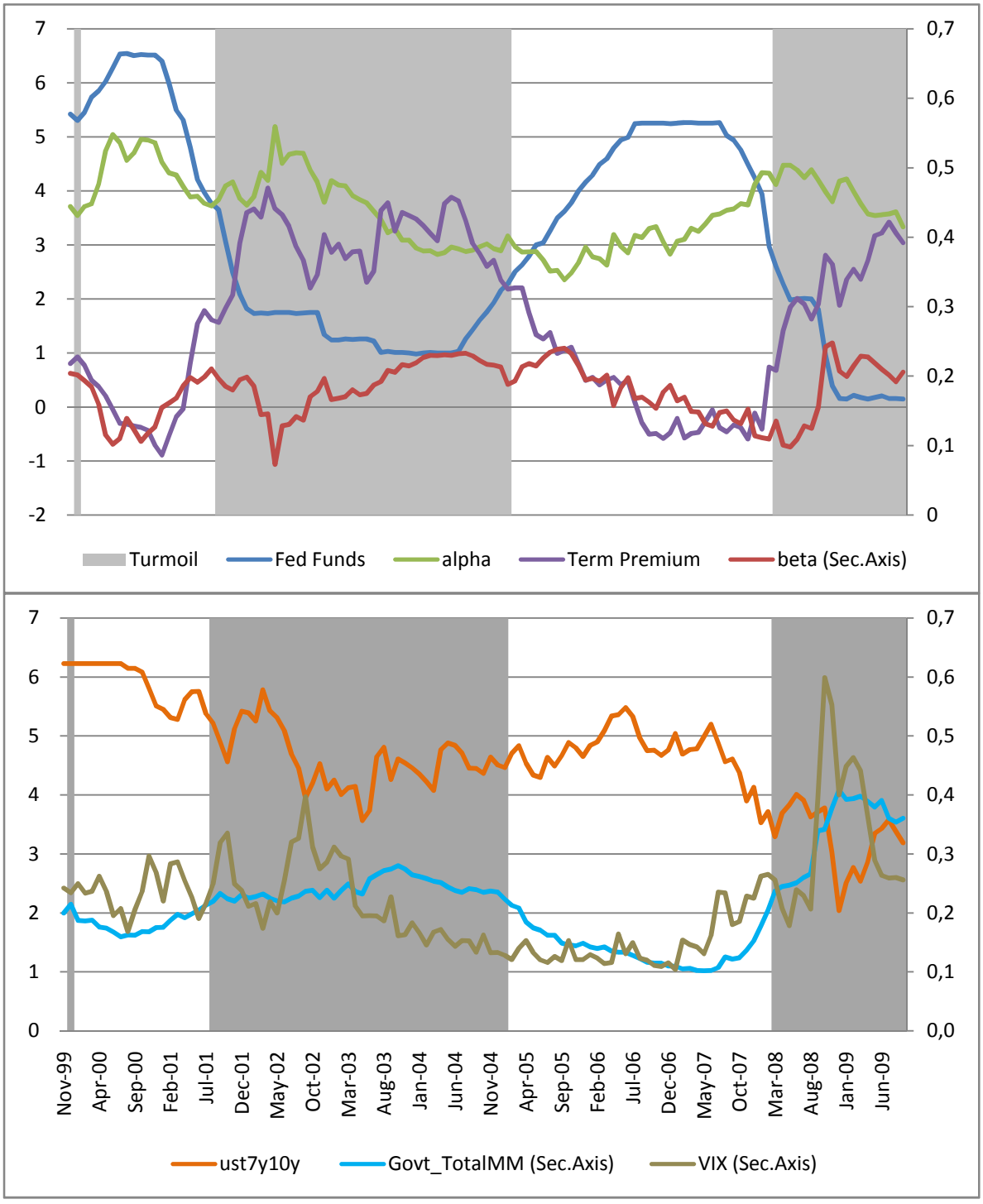
Note: For the calculations we consider only coefficient significant at least at 10%.

Figure 1: The Spread-Rating exponential curve



Note: The highest rating is assigned the number 1 and each notch down is associated with an additional 0.5. Source: Bloomberg.

Figure 2: The spread-rating curve in the last 10 years



Source: Bloomberg.