Comments on "Determinants of Asia-Pacific government bond yields"

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1. Summary of the paper

This paper studies how global and local factors drive local currency (LC) sovereign yields in four Asia-Pacific (AP) countries – China, Korea, Singapore and Indonesia – through the lens of a cross-country term structure model. The analysis distinguishes between the currency risk component of the yields, measured as spreads of LC AP yields over US dollar-denominated AP yields, and the credit risk component, measured as spreads of US dollar-denominated AP yields over US Treasury yields.

The authors (Chernov, Creal and Hördahl) proceed in two steps. First, they examine the dynamics of a large observable state vector that includes four US factors – two macro factors and two yield curve factors; and six local factors for each AP country – currency depreciation, two macro factors, the divergence of two local yield factors from the US counterparts and a credit risk factor. US factors are assumed to be autonomous and their dynamics are estimated using a standard vector autoregression (VAR). The local factors are assumed to depend on both their own lags and the lagged US factors in a fashion that is identical across countries (except for the drift) and their dynamics are estimated using panel regressions with fixed country effects.

Next, the authors incorporate insights from the panel regressions into an unspanned macro term structure model, in which US yields are driven by the US factors only, local yields are driven by both US factors and each country's local factors, and the macro factors are not completely spanned by yields. The estimated model suggests that currency risk components are mostly driven by US shocks, while credit risk premiums are mostly driven by local shocks.

This paper is a useful contribution to emerging market economy (EME) bond pricing literature, which often focuses on credit risks but largely ignores the currency risk dimension of those bonds.

2. Market integration and liquidity differences

The separation between currency and credit risk premiums relies on the accuracy of the proxies used to measure those risk premiums. If the various bond markets are segmented, such that different investor clienteles hold LC versus US dollar-denominated AP bonds, the differences between LC and US dollar-denominated AP yields may reflect factors other than currency risks. Relatedly, any liquidity differences

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among the LC AP bond market, the US dollar-denominated AP bond market and the US Treasury market would contaminate the risk measures.

No US dollar-denominated local bonds are available for China and Indonesia, and the authors construct synthetic US dollar-denominated yields by adding sovereign credit default swap (CDS) spreads to LC yields. They verify that for Korea, this approach replicates the observed US dollar-denominated Korean bond yields accurately. However, the CDS markets for China and Indonesia may not be as developed, as integrated with the bond markets or as liquid as in Korea. In addition, the assumption that a common pricing kernel prices both LC currency yields and CDSs may be especially problematic for China, as it faces severe restrictions on capital movement.

3. Comments on the VAR analysis

The authors may want to test the robustness of their results against alternative macro variables. For example, the unemployment rate may be a better measure of the cyclical position of the economy than industrial production (IP) growth. Bauer and Rudebusch (2017) also show that level indicators, such as the unemployment rate, have higher explanatory power in simple monetary policy rules than growth indicators such as IP growth, and are better spanned by bond yields. Another consideration is that monthly consumer price index (CPI) inflation and IP growth rates might be too noisy. Switching to annual variables and including more lags may help increase the information content of these variables.

The panel regression assumes that the dynamics of the state variables is the same across AP countries. It would be helpful to know by how much the data support this restriction. For example, the authors could run pairwise VARs and test whether the coefficients are statistically different.

In addition, it will be interesting to see whether China provides another anchor to the other AP countries in addition to the United States. Table 1 shows pairwise correlations across countries for the macro and yield factors. For AP countries other than China, the local yield factors appear highly correlated with the US yield factors; however, the local macro variables appear more closely correlated with those from China than those from the United States. The correlations between China and the United States appear weak for all variables.

Cross-country correlations Table 1

Yield level

	US	China	Singapore	Korea
China	–0.15			
Singapore	0.94	–0.18		
Korea	0.66	–0.08	0.49	
Indonesia	0.64	–0.31	0.67	0.63

Inflation

	US	China	Singapore	Korea
China	–0.13			
Singapore	–0.14	0.35		
Korea	–0.11	0.18	0.75	
Indonesia	–0.18	0.13	0.61	0.60

Yield slope

	US	China	Singapore	Korea
China	0.21			
Singapore	0.90	0.13		
Korea	0.65	0.51	0.44	
Indonesia	0.48	0.56	0.45	0.37

IP growth

	US	China	Singapore	Korea
China	0.07			
Singapore	0.18	0.24		
Korea	–0.05	0.23	0.17	
Indonesia	0.10	0.04	0.07	0.05

Finally, some VAR parameter estimates reported in Table 3 of the paper are a bit puzzling and may merit further examinations. For example, in the US block, the yield level and slope factors have no predictive power for future IP growth, inconsistent with previous literature documenting the predictive power of the yield curve for future economic growth. The interest rate level predicts future inflation with a positive sign, contradicting the notion that higher yields are disinflationary. In the exchange rate equation, LC appears to appreciate following an increase in local credit risk, while the US dollar appears to depreciate following stronger US growth, both of which are somewhat counterintuitive.

4. Comments on the term structure model

The large size of the state vector would give rise to a huge number of term structure parameters to be estimated if no restrictions are imposed. To reduce the dimensionality, the authors adopts the framework of unspanned macro risks proposed by Joslin, Priebsch and Zhu (2014). In particular, it's assumed that macro variables affect yield curve factors under the physical measure but not under the risk-neutral measure. This assumption implies that the effects of macro variables on expected future short rates and on term premiums exactly offset, and macro variables have no additional explanatory power for current yields beyond the yield factors.

To examine whether empirical evidence supports this restriction, Table 2 reports adjusted R^2 from predictive regressions of one-year ahead Korean yields and excess returns on various combinations of yield principal component (PC) factors and macro factors (either monthly or annual). Local macro factors appear to have additional predictive power when added to either local PCs or all PCs, and therefore satisfy the unspinning condition. By contrast, US macro variables, currency depreciation and credit factors do not appear important for predicting future local yields, as including those variables in the last two rows generally leaves the R^2 little changed from that using US and local yield PCs and local macro variables only. It is also worth noting

that annual macro variables appear to be more informative about future yields and returns than monthly variables, likely due to a higher signal-to-noise ratio.

Redictive one-year ahead yields and excess bond returns (adjusted R^2)

(10-year Korea local currency bond) Table 2

	Monthly macro (208 obs.)		Annual macro (197 obs.)	
	Yield	Excess return	Yield	Excess return
US PC	73%	25%	68%	27%
Local PC	77%	36%	76%	29%
All PC	81%	47%	80%	43%
Local PC + local macro	77%	38%	78%	33%
All PC + local macro	81%	47%	86%	57%
All PC + all macro	82%	48%	86%	59%
All variables	83%	52%	86%	58%

References

Bauer, M and G Rudebusch (2017): "Resolving the spanning puzzle in macro-finance term structure models," *Review of Finance*, vol 21, no 2, pp 511–53.

Joslin, S, M Priebsch and K Singleton (2014): "Risk premiums in dynamic term structure models with unspanned macro risks", *Journal of Finance*, vol 69, no 3, pp 1197–233.