Discussion of Husted, Rogers, and Sun's Uncertainty, Currency Excess Returns, and Risk Reversals (Internal Fed Workshop on Exchange Rates, September 2017)

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The Question

- Does the carry trade excess return and the risk reversal react to heightened Macro, Financial, or Policy Uncertainty in a way consistent with theory?
- Several measures of uncertainty examined.
- Yes. Evidence shows higher uncertainty raises carry trade returns and makes risk-reversals more negative.

Background

- In another paper by HRS
  - Constructed news-based measure of US monetary policy uncertainty (MPU)
  - Showed, through VARs, that shocks to MPU are quantitatively as important as monetary policy shocks for macroeconomy
- Part of Active research program that quantifies 'uncertainty'
  - News based
    - ★ Baker, Bloom, and Davis: Economic policy uncertainty
    - ★ Husted, Rogers, and Sun: US Monetary policy uncertainty
  - Data based. Surprise volatility
    - ★ VIX
    - ★ Jurado, Ludvigson, and Ng: Macro and financial uncertainty
    - ★ Ozturk and Sheng: Global Macro uncertainty
    - ★ Scotti: Real-time macro release surprises, global
    - ★ Rossi, Sekhposyan, and Soupre: Knightian uncertainty

Paper Highlights

- Daily currency excess returns at 3-month horizon, realtive to the US.
- Sort by $i^* - i$ into 5 portfolios.
- If $i^* > i$, short the USD. Otherwise, go long the USD. Rebalance portfolios every 65 days.
- Regress each portfolio's excess return on alternative measures of macroeconomic, monetary, financial uncertainty.
  - Jurado, Ludvigson, and Ng (2015, 2016): Econometric, macro and financial
  - Carlston and Ochoa (2016): Implied vol on swap rates
  - Baker, Bloom,a nd Davis (2015): News-based monetary policy
  - Husted, Rogers, and Sun (2017): Refined news-based monetary policy

Complete Markets Framework

- Define expected excess return

$$E_t\left(z_{t+1}\right) = E_t \ln\left[\frac{\left(1+r_t^*\right)}{\left(1+r_t\right)}\frac{S_{t+1}}{S_t}\right] \simeq E_t\left(r_t^* - r_t + \Delta \ln\left(S_{t+1}\right)\right),$$

- Euler equations give

$$E_t\left(z_{t+1}\right) = \ln\left(\frac{E_t M_{t+1}}{E_t M_{t+1}^*}\right) - \left[E_t\left(\ln\left(M_{t+1}\right)\right) - E_t\left(\ln\left(M_{t+1}^*\right)\right)\right], \quad (1)$$

- Backus, Foresi, and Telmer (2001) show,

$$E_t\left(z_{t+1}\right) = \sum_{j=2}^{\infty} \frac{\kappa_{j,t} - \kappa_{j,t}^*}{j!}, \quad (2)$$

$\kappa_{j,t}$ is $j-th$ conditional cumulant of the log SDF, Cumulants $1-3$ are central moments $1-3$

Complete Markets Framework. Assume CRRA

- Suppose foreign risky (pays premium).
- What contributes to foreign risk?

$$E_t\left(z_{t+1}\right) = \frac{\gamma^2}{2}\underbrace{\left(Var_t\left(\Delta c_{t+1}\right) - Var_t\left(\Delta c^*_{t+1}\right)\right)}_{A} + \frac{\gamma^3}{6}\underbrace{\left(sk_t\left(\Delta c^*_{t+1}\right) - sk_t\left(\Delta c_{t+1}\right)\right)}_{B}$$

  - (A) Precautionary saving
  - (B) Δc^*_{t+1} positively skewed, Δc_{t+1} negatively skewed. Procyclical interest rates and foreign currency value

- How does MPU move these quantities?

Results Summary

Table: Comparison of b_1 estimates

2002m4-2015m12. t-ratios in parentheses					
Low	(2)	(3)	(4)	High	Panel
Financial Uncertainty					
74.57*	47.99	32.39	94.28**	21.60	48.39**
(2.37)	(1.25)	(1.09)	(3.26)	(0.58)	(3.31)
Macro Uncertainty					
38.61	17.10	45.98	92.99**	113.7**	62.45**
(1.22)	(0.45)	(1.49)	(2.99)	(2.83)	(3.98)
MPU-BBD					
5.171*	5.803*	6.597**	6.697**	4.271	5.637**
(2.42)	(2.19)	(2.99)	(2.88)	(1.46)	(5.09)
Swaption Uncertainty					
9.55*	18.10**	18.10**	16.70**	15.40*	15.40**
(2.29)	(3.37)	(4.27)	(3.49)	(2.41)	(6.89)
MPU-HRS					
-1.040	1.309	0.256	-1.321	-3.326	-0.700
(-0.45)	(0.47)	(0.11)	(-0.56)	(-1.12)	(-0.61)

Comments

- Regressing HOQ_{t+1} on I_t. Interest differential determined at t. Is this the same as regressing currency depreciation of the portfolios on MPU?

- Interest rates are 3-month TBill yields.
  - Are these tradable assets for the carry trade?
  - Can you short TBills of India, Mexico, Japan?
  - Lustig and Verdelhan used in their 2007 AER paper.

- HRS-MPU measures US monetary uncertainty.
  - Carry trade done by global investors.
  - Portfolio of carries–global return
  - Global measure of uncertainty versus US measure for this application

Thinking Constructively

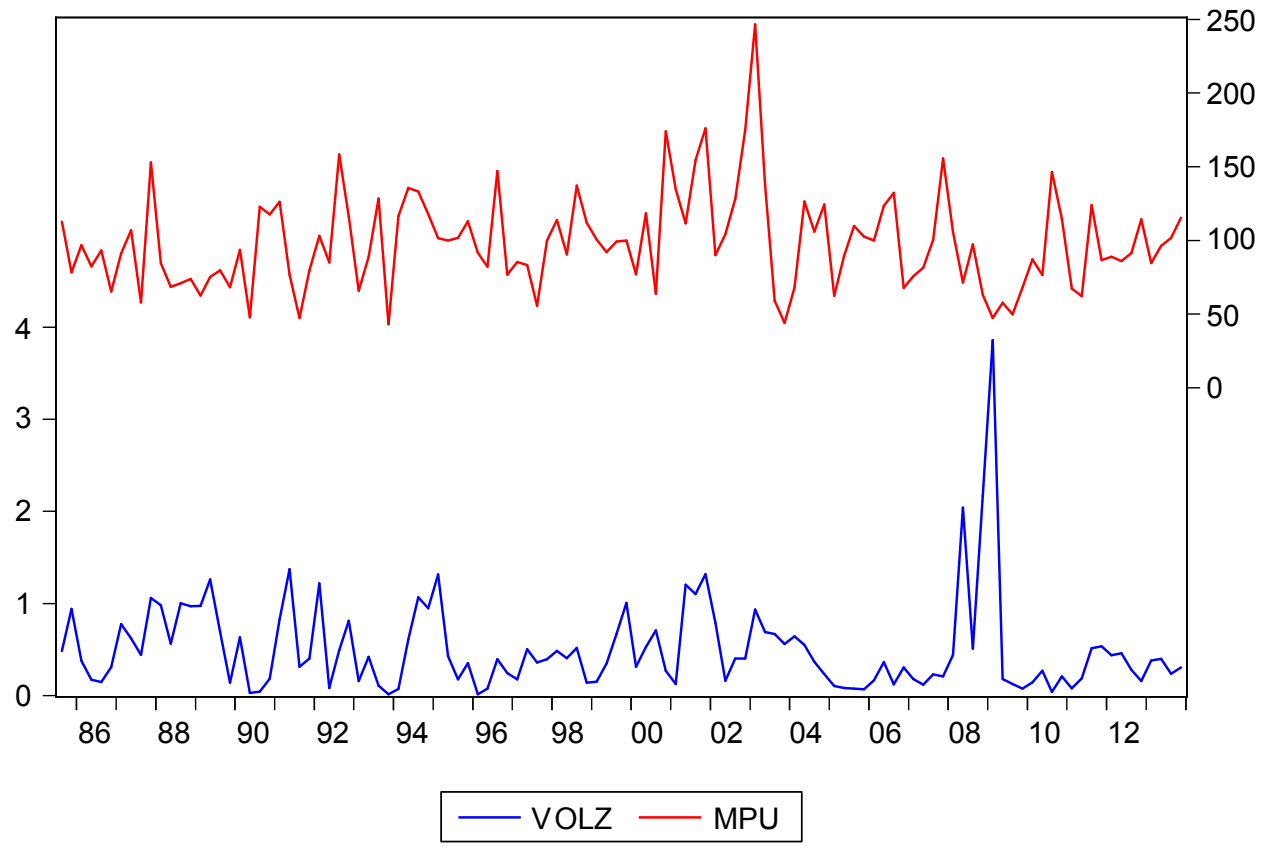
- A risk factor?
- $z_{t,i} = c_i + \beta_i \sigma_t + \epsilon_{t,i}$
  $\bar{z}_i = a + \lambda \beta_i + \alpha_i$

Table: Two-Pass Estimation of the Single-Factor Beta-Risk Model on Monthly Carry Excess Returns

			Single-Factor Model				
Factor	λ	t-ratio	γ	t-ratio	R^2	Test-stat	p-val.
BBD Global	-0.423	**-3.300**	0.184	0.096	0.919	4.112	0.533
HRS MPU	-1.634	-1.400	8.445	1.360	0.351	3.341	0.648

Thinking Constructively

- Correlations among the different measures is low.
  - Each measuring very different things. Exactly what?
- Can MPU be incorporated in modeling? Estimated an interest rate feedback rule. Plot absolute policy shocks against MPU



Conclude

- Currency excess returns react to measures of macro/financial uncertainty
- Broader, global measures get more support
- With regard to HRS-MPU
  - Pricing fixed-income securities,
  - Understanding yield curve dynamics
- Incorporation of MPU into macro models