Discussion:

"Carry Trades and Currency Crashes"

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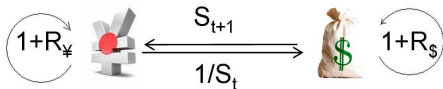
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Overview

- Goal: link carry trade and dynamics of FX
  $\hookrightarrow$ Many interesting results

- I focus on the following three:
  - Carry trade increases probability of currency crashes
  - Co-movement among currencies with similar interest rates
  - Unwinding of carry trade when volatility is high

Intuition

$$S_{t+1}$$
$$1/S_t$$

- Returns (logs): $z_{t+1} = r_{\$,t} - r_{\yen,t} - s_t + s_{t+1}$

- Carry trade increases probability of currency crashes
  $\hookrightarrow$ Plantin and Shin 2007: traders cannot trade continuously; can take only limited positions + funding externalities $\Rightarrow$ slow building of positions with rapid unwinding

- Co-movement among currencies with similar interest rates
  $\hookrightarrow$ Investors trade similar currencies in the same direction

- Unwinding of carry trade when volatility is high
  $\hookrightarrow$ Common volatility component across markets; easier to violate margin requirements; common liquidity problems
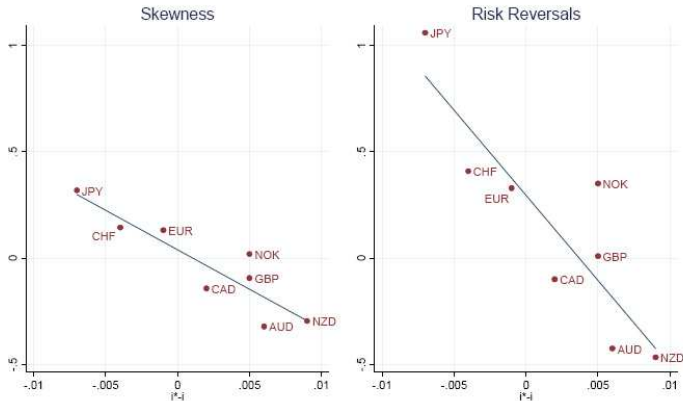
Crossection of Skewness

Figure 2: Crossection of skewness (Panel A) and risk-reversals (Panel B) for different interest differentials $i^* - i$.

Skewness Forecast

Table 3: Forecasting crashes and the price of crash risk

|	Skewness$_{t+1}$	Skewness$_{t+1}$	Skewness$_{t+1}$	RiskRev$_t$	RiskRev$_t$
$i_t^* - i_t$	-28.51	-22.18	-27.34	-15.51	-30.70
	(11.59)	(12.59)	(11.52)	(29.20)	(25.91)
z_t		-3.34	-2.11		7.87
		(0.60)	(0.69)		(1.39)
Futures$_t$	-0.26	0.13	0.18	1.16	0.27
	(0.12)	(0.15)	(0.14)	(0.19)	(0.12)
Skewness$_t$	0.12	0.18	0.17	0.10	-0.02
	(0.05)	(0.05)	(0.05)	(0.09)	(0.10)
RiskRev$_t$			-0.16		
			(0.04)		
R^2	0.12	0.18	0.21	0.20	0.41

- Why is physical and risk-neutral skewness so different?

Skewness

- Skewness in FX is driven by extremal events
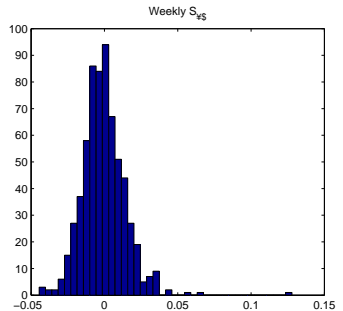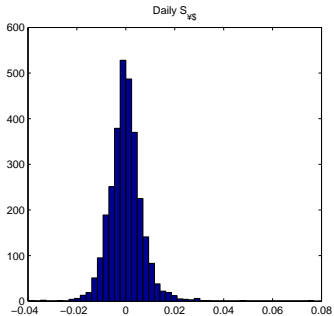
Tails
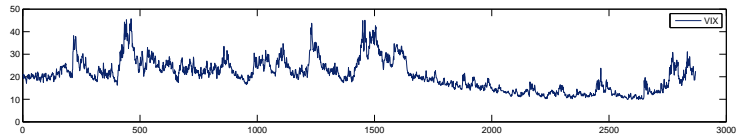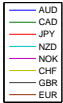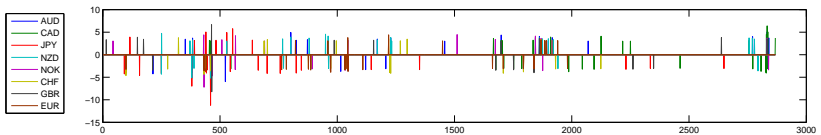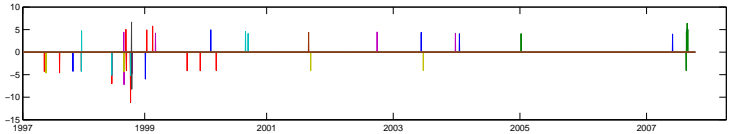
- Is sample skewness a good measure of currency crashes?

Correlation of FX changes

Table 7: Correlation of FX rate changes and magnitude of interest rate differentials

	(1)	(2)	(3)	(4)
$\lvert i_1^* - i_2^* \rvert$	-10.89	-6.62	-16.39	-13.41
	(3.81)	(3.62)	(4.05)	(6.41)
$\rho(i_1^*, i_2^*)$	0.63	0.28	0.70	0.32
	(0.16)	(0.08)	(0.17)	(0.08)
Average $\rho(\Delta s_1, \Delta s_2)$	2.54	2.56		
	(0.08)	(0.08)		
Time Fixed Effects			Yes	Yes
Country-Pair Fixed Effects				Yes
	0.18	0.36	0.05	0.03

Correlation of FX changes

- Interest rates converge over the period + economies get more integrated $\Rightarrow$ mechanical relation?

Figure: Interbank interest rates
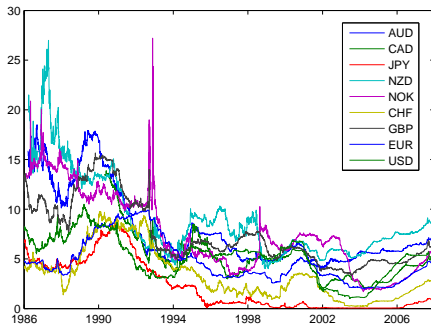
VIX and FX

Table 4: Sensitivity of weekly carry trade positions, price of skewness insurance, and carry trade returns to changes in VIX

	$\Delta\text{Futures}_t$	$\Delta\text{Futures}_{t+1}$	$\Delta\text{RiskRev}_t$	$\Delta\text{RiskRev}_{t+1}$	z_t	z_{t+1}
$\Delta\text{VIX}_t\times\text{sign}(i^*_{t-1} - i_{t-1})$	-1.47	-1.29	-5.33	-2.74	-0.43	-0.03
	(0.77)	(0.57)	(2.64)	(3.39)	(0.11)	(0.11)
Futures_{t-1}	-0.09	-0.10				
	(0.01)	(0.01)				
RiskRev_{t-1}			-0.16	-0.11		
			(0.02)	(0.02)		
R^2	0.04	0.06	0.08	0.04	0.00	-0.00

VIX and FX

- Low(high) interest rate FX tends to appreciate(depreciate) when volatility is high (Table 4; Lustig, Roussanov & Verdelhan 2008)
  ↪ Table 4: R^2 is low ⇒ non-linear relation

	Unconditional									VIX>30							
	AUD	CAD	JPY	NZD	NOK	CHF	GBP	EUR		AUD	CAD	JPY	NZD	NOK	CHF	GBP	EUR
AUD	1.00								AUD	1.00							
CAD	0.44	1.00							CAD	0.38	1.00						
JPY	0.27	0.11	1.00						JPY	-0.20	-0.09	1.00					
NZD	0.79	0.38	0.24	1.00					NZD	0.63	0.08	-0.23	1.00				
NOK	0.42	0.28	0.28	0.39	1.00				NOK	0.13	-0.01	0.54	0.14	1.00			
CHF	0.37	0.22	0.39	0.34	0.72	1.00			CHF	-0.13	-0.04	0.64	-0.11	0.86	1.00		
GBP	0.39	0.26	0.28	0.38	0.52	0.60	1.00		GBP	-0.03	0.06	0.67	-0.07	0.84	0.86	1.00	
EUR	0.43	0.27	0.34	0.41	0.78	0.92	0.62	1.00	EUR	-0.12	-0.02	0.65	-0.12	0.90	0.94	0.90	1.00

Carry trade revisited

- What is the optimal strategy/portfolio?

Figure: Barclays Intelligent Carry ETN

Source: Barclays Capital as of 2/15/08.

Summary

- Interesting and important question

- Overall supportive evidence for sudden FX moves and unwinding of carry trades

- Wanted: a dynamic model of carry trade that can be taken to the data