Carry trade and negative policy rates in Switzerland

Low-lying fog or storm?

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UGA Université Grenoble Alpes

CREg Centre de Recherche en Economie de Grenoble

FURB Universidade Regional de Blumenau

Motivation

- International spillovers of negative interest rate policy (NIRP) is a very recent strand in the literature (e.g. Arteta, Kose, Stocker and Taskin 2016[1])
- Twofold interest in the Swiss franc:
    1. In times of turmoil, it is a major safe haven currency. Overall, also a funding currency of carry trade activities.
    2. Due to the "interest rate bonus" (Kugler and Weder 2002[2]) and the NIRP, the impacts of the Swiss National Bank's actions resonate far beyond Switzerland
- Lack of robust empirical papers analyzing the pervasive effects of the carry trade activity

[1] Arteta, Carlos, Ayhan Kose, Marc Stocker, and Temel Taskin. 2016. “Negative Interest Rate Policies: Sources and Implications.” *Policy Research Working Paper Series* 7791. The World Bank.

[2] Kugler, Peter, and Beatrice Weder. 2002. “The Puzzle of the Swiss Interest Rate Island: Stylized Facts and a New Interpretation.” *Aussenwirtschafhet* 57 (01): 49–64.

What do we do?

In the context of the NIRP in Switzerland...

- We use data from hedge funds to investigate the behavior of the Swiss franc carry trade
    - Four major currencies: US dollar, euro, Japanese yen, and British pound
    - Disentangle the funding currency and safe haven effects
- Our Swiss franc carry trade proxy allows the investigation of different target currencies (bilateral analysis)
    - Volume approach using weekly CFTC data (non-commercial traders), based on Fong (2013)[3]
    - Uncovered interest rate parity (UIP), impact on asset prices, and systemic risk

[3] Fong, Wai Mun. 2013. "Footprints in the Market: Hedge Funds and the Carry Trade." *Journal of International Money and Finance* 33 (March): 41–59.

What do we find?

Using all available data at the time (Dec 23, 2014 to Nov 24, 2020), excluding the selection bias...

- Major findings:
  - Distinctive behavior for the Swiss franc as funding and safe have currency
  - The UIP is violated for the USD, EUR and JPY models
  - Hedge funds are able to move asset prices
  - An increased systemic risk is linked to a higher Swiss franc carry trade activity

Data and SVAR model

Table 1. Description of variables

Variable	Definition	Source
IRD_i	Interest rate differential using the 12-Month London Interbank Offered Rate (LIBOR) and spot (LIBOR) rates for target currencies (USD, EUR, JPY, and GBP)	FRED
VIX^*	Market sentiment: CBOE DJIA Volatility Index	FRED
CT_i	Net position of Swiss franc-funded carry trade by target currencies, following Fong (2013)	CFTC
SM^*	Domestic stock market: Swiss Market Index ^SSMI	BIS
ER_i^*	Nominal exchange rates (cross rates): USD/CHF, EUR/CHF, CHF/JPY, GBP/CHF	Yahoo Finance
FSM_i^*	Foreign stock markets: USD - S&P 500 (^GSPC), EUR - EURONEXT 100 (^N100), JPY - Nikkei 225 (^N225), GBP - FTSE 100 (^FTSE)	Yahoo Finance

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- Yahoo Finance data was obtained and checked/cleaned with R packages quantmod and BatchGetSymbols. Overall, the problem with this source is related to individual stocks, not indices.

CFTC data

- Some caveats:

> I. Bias in the classification of the traders
>
> II. Trades identified as speculative may not result from carry trades
>
> III. Only a small proportion of foreign exchange market activity is executed through exchanges (mostly OTC)
>
> --- Galati, Heath and McGuire (2007)[3]

- As mentioned by market participants, CFTC data tends to be indicative of the trend of carry trade activity (Bank for International Settlements 2015)[4].

[3] Galati, G., A. Heath and P. McGuire (2007), 'Evidence of carry trade activity', *BIS Quarterly Review*. [4] Bank for International Settlements (2015), *Currency Carry Trades in Latin America*, Bank for International Settlements.

Econometric model

- Structural vector-autoregressive (SVAR) model with Cholesky identification
  - Ordering: $IRD_i \rightarrow VIX \rightarrow CT_i \rightarrow ER_i \rightarrow FSM_i \rightarrow SM$

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Table 2. Exogenous variables for each model

Model	VAR lag length (p)	Exogenous variables
USD	2	$VIX_{t-3}, CT_{USD,t-3}, ER_{USD,t-3}, FSM_{USD,t-3}, SM_{t-3}$
EUR	2	$VIX_{t-3}, CT_{EUR,t-3}, ER_{EUR,t-4}, FSM_{EUR,t-3}, SM_{t-3}$
JPY	1	$VIX_{t-2}, CT_{JPY,t-2}, ER_{JPY,t-2}, FSM_{JPY,t-2}, SM_{t-2}$
GBP	1	$VIX_{t-2}, CT_{GBP,t-2}, SM_{t-2}$

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GBP	1	$VIX_{t-2}, CT_{GBP,t-2}, SM_{t-2}$

- Selection of the VAR lag length follows a step-wise approach: unit-root tests and Lagrange-multiplier (LM) test for residual autocorrelation

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- Selection of the VAR lag length follows a step-wise approach: unit-root tests and Lagrange-multiplier (LM) test for residual autocorrelation
  - Robustness checks: (1) different ordering, based on Granger causality tests, (2) non-stationary model, (3) model with time dummies, and (4) model excluding the carry trade proxy

Results for the Impulse Response Functions (IRFs)

Swiss franc carry trade activity is impacted...

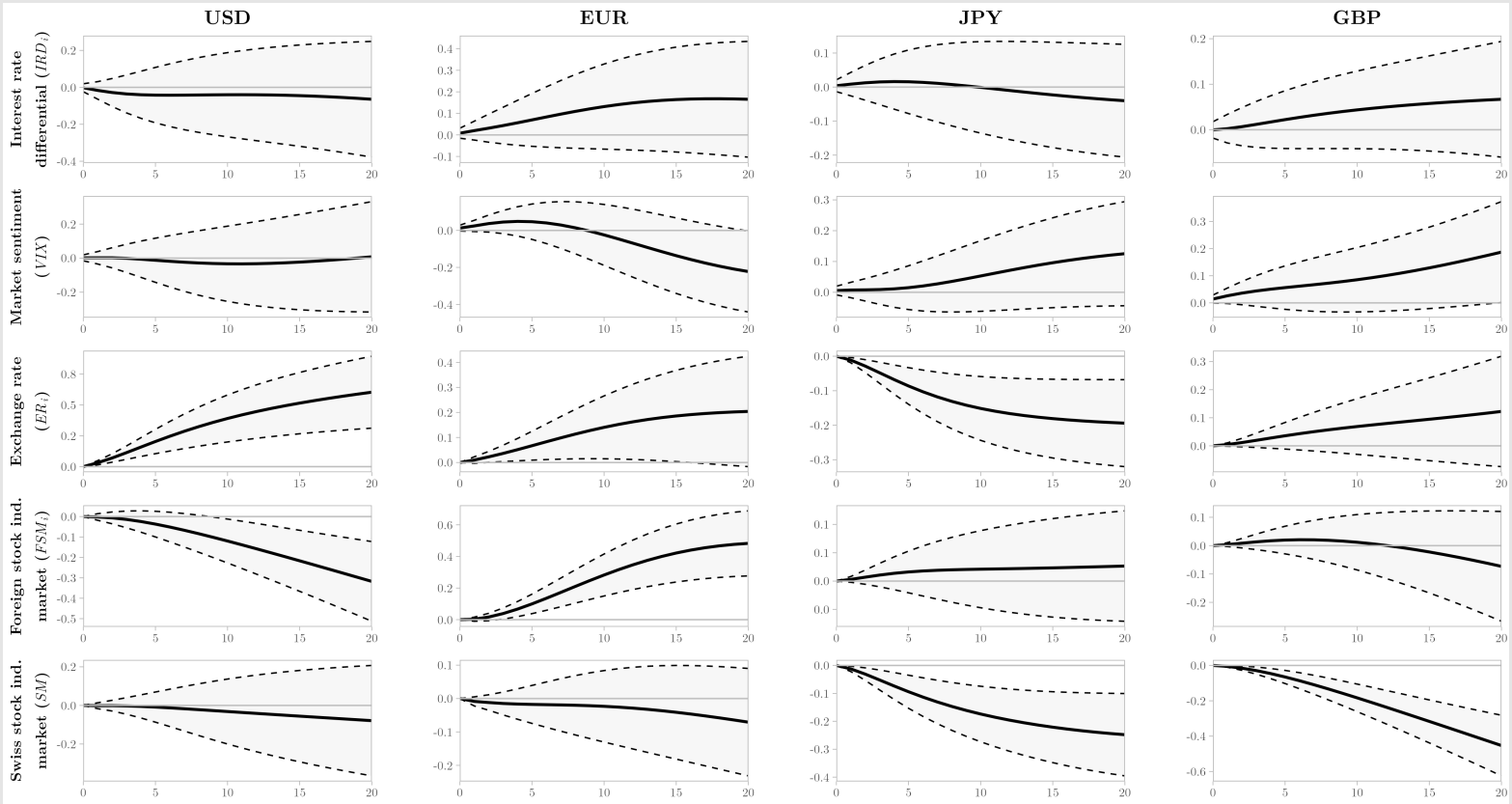

Figure 1. Cumulative structural carry trade (*CT*) responses to variables impulses in each model

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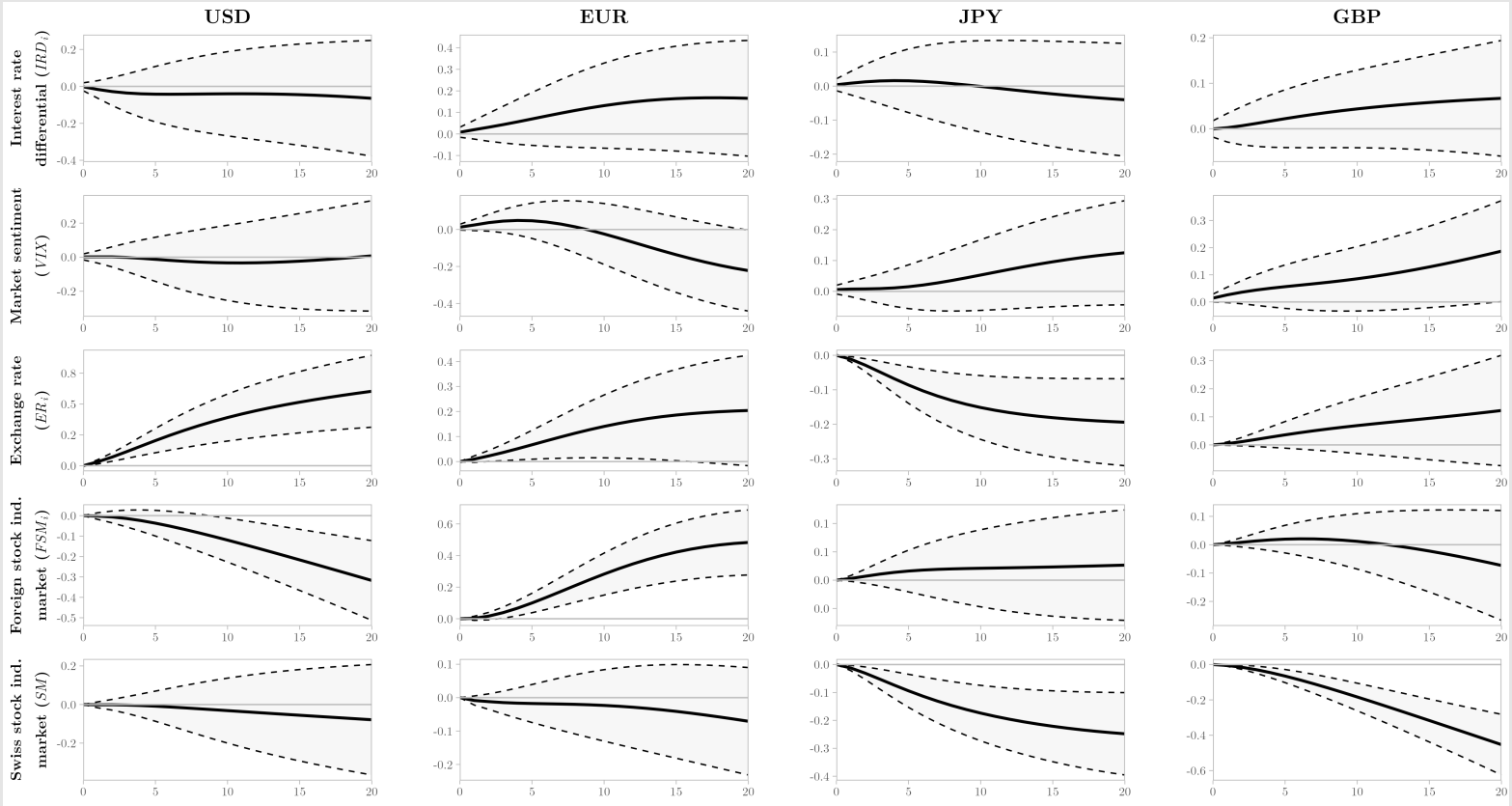

Figure 1. Cumulative structural carry trade (*CT*) responses to variables impulses in each model

Target currency	IRD_i	VIX	ER_i	FSM_i	SM
USD			+	-	
EUR			+	+	
JPY			-		-
GBP					-

An increased Swiss franc carry trade activity...

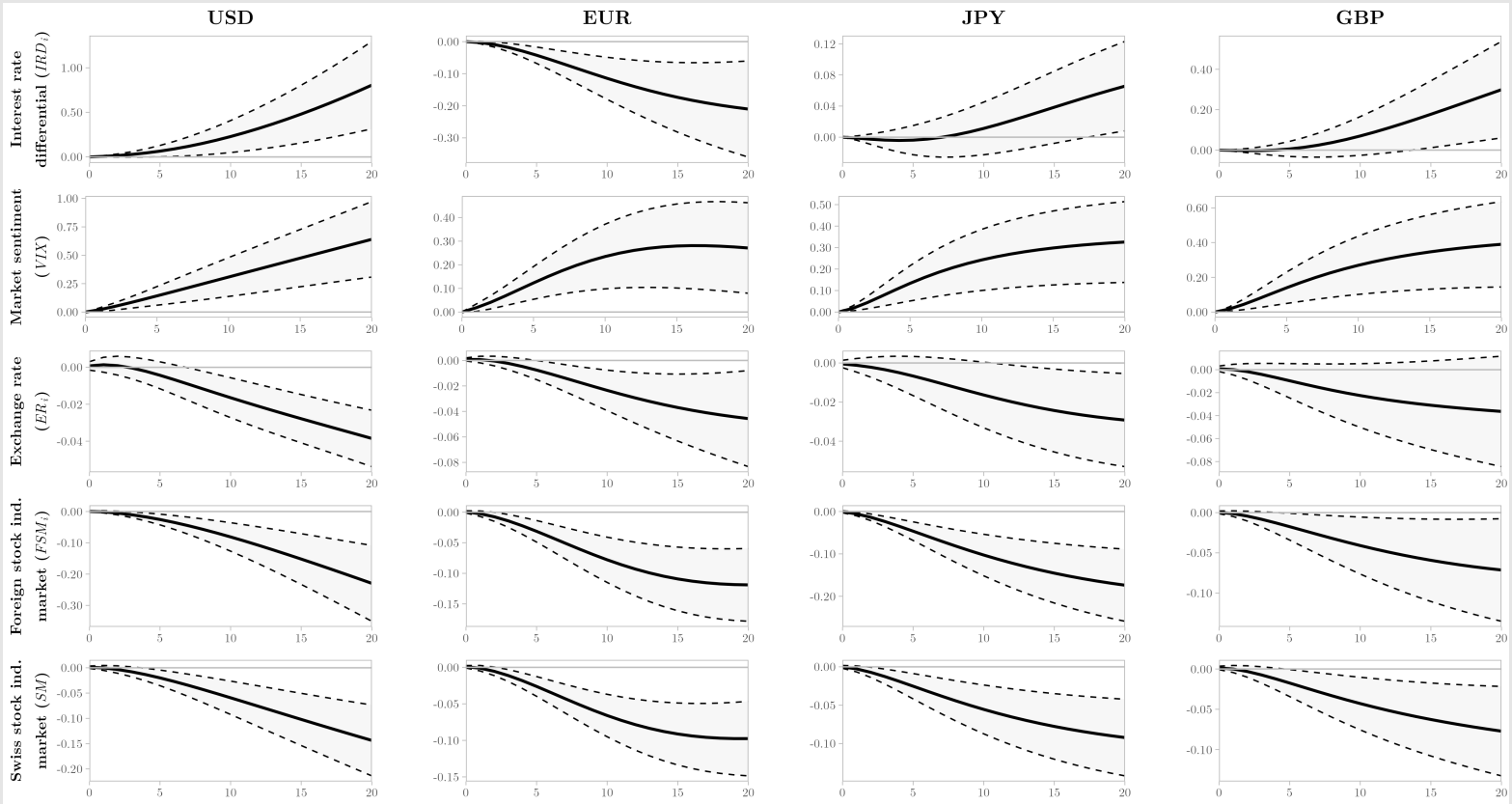

Figure 2. Cumulative structural variables responses to carry trade (*CT*) impulses in each model

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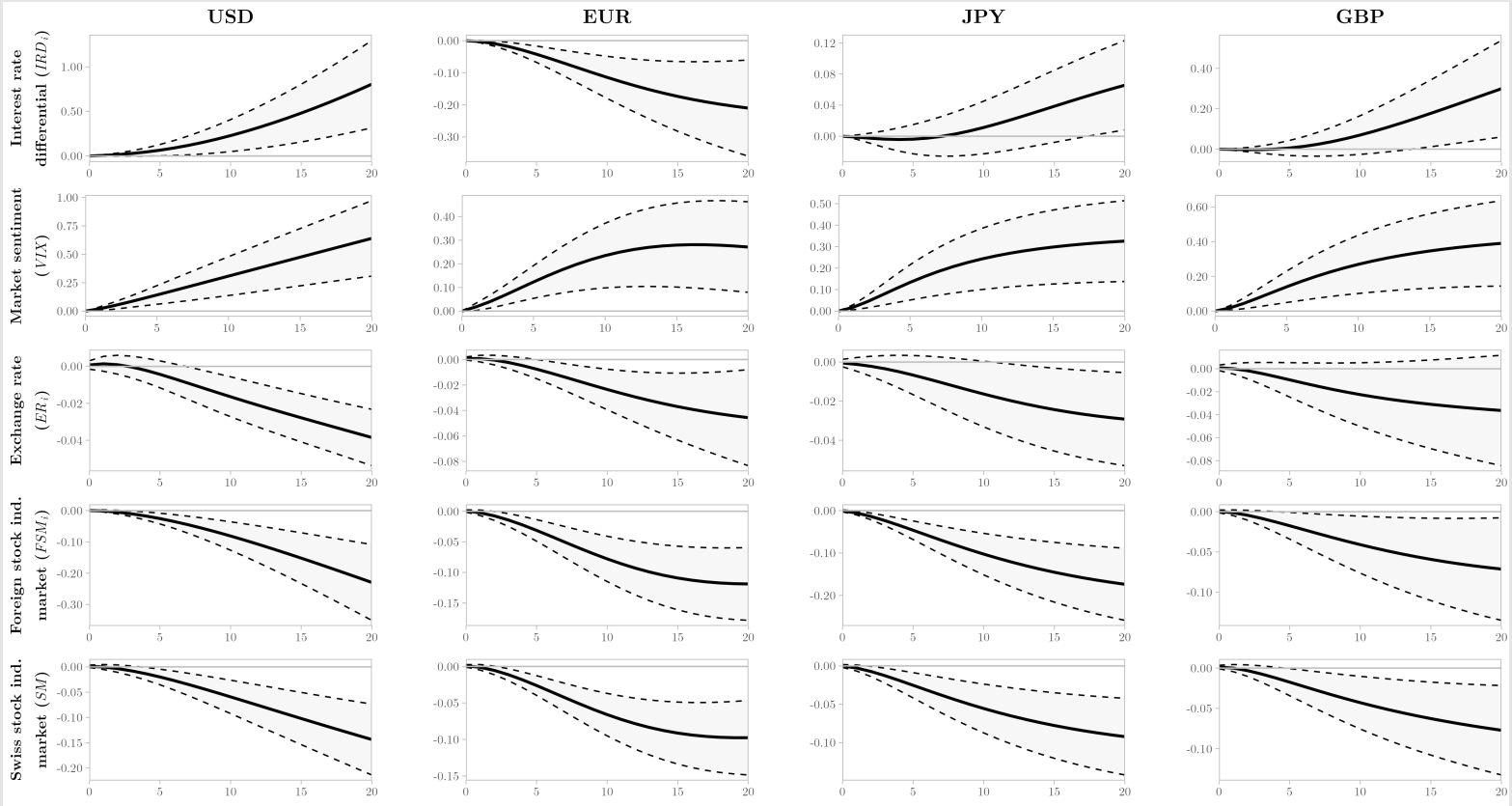

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Target currency	IRD_i	VIX	ER_i	FSM_i	SM
USD	+	+	-	-	-
EUR	-	+	-	-	-
JPY	-	+	-	-	-
GBP	-	+		-	-

Results for the Granger causality tests using the Toda-Yamamoto approach

Swiss franc carry trade activity is Granger-caused by...

	CT_{USD}	CT_{EUR}	CT_{JPY}	CT_{GBP}
IRD_i	0.0483**	0.7511	0.9286	0.0558*
VIX	0.9823	0.2604	0.4740	0.5320
ER_i	0.0015***	0.1818	0.0241**	0.0002***
FSM	0.8945	0.3664	0.1994	0.0034***
SM	0.9624	0.3845	0.0787*	0.2506
All variables	0.0311**	0.5404	0.3112	0.0097***

Swiss franc carry trade activity Granger-causes...

	IRD_i	VIX	ER_i	FSM_i	SM
CT_{USD}	0.1881	0.0217**	0.3625	0.0656*	0.0442**
CT_{EUR}	0.0810*	0.0600*	0.0648*	0.0281**	0.0169**
CT_{JPY}	0.5202	0.0395**	0.7120	0.0017***	0.0255**
CT_{GBP}	0.8517	0.0300**	0.1296	0.0931*	0.0442**

Both tables show the p-value of the test for the absence of Granger causality.
Null hypothesis is that one variable does not Granger-cause the other variable.
***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Concluding remarks

- The paper extends the carry trade literature by investigating empirically the effects of the Swiss NIRP

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    - CHF depreciation increases CT (all models but GBP)
    - Higher FSM impacts positively CT (EUR)
    - UIP failure, where CT impacts ER (USD, EUR and JPY)
    - Higher CT appreciates the CHF (USD and EUR)

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- Safe haven currency
    - Higher FSM impacts negatively CT (USD)
    - Higher SM impacts negatively CT (JPY and GBP)
    - Higher CT depreciates the CHF (JPY)
    - Higher CT increases VIX (all models)

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- Swiss franc carry trade is explored with four target currencies ($, €, ¥, £)
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    - Higher FSM impacts positively CT (EUR)
    - UIP failure, where CT impacts ER (USD, EUR and JPY)
    - Higher CT appreciates the CHF (USD and EUR)
- Safe haven currency
    - Higher FSM impacts negatively CT (USD)
    - Higher SM impacts negatively CT (JPY and GBP)
    - Higher CT depreciates the CHF (JPY)
    - Higher CT increases VIX (all models)
- Additionally, for all models, there is also evidence that CT increases systemic risk (higher CT increases VIX) and moves asset prices (higher CT increases FSM and SM)

Thank you!

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