Discussion of Tille and Stoffels
Swiss external financial exposure: Benefit or burden?

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Summary of Paper

- Very important and welcome analysis of the exchange rate exposure of a financially very open small economy.
- Point of departure: foreign currency exposure is mismeasured by traditional (trade weighted) effective exchange rates. A proper summary of exposure requires calculation of a financially weighted exchange rates
- Main findings:
  - Depreciation of the Swiss Franc has offset earnings on Swiss foreign assets since early 2000s
  - But Swiss external position seems to provide some diversification of business cycle risk.

My comment

- Analysing valuation effects and currency exposures: a refresher
- An international perspective on currency exposures and a question
- The risk sharing role of the Swiss IIP

Measuring currency exposure (Lane & Stambaugh (2008))

$$\Delta NFA_t = CA_t + VAL_t$$

$$\begin{aligned} VAL &= KG_t^A - KG_t^L \\ &= kg_t^A A_{t-1} - kg_t^L L_{t-1} \end{aligned}$$

To what extent are valuation effects sensitive to exchange rate changes

$$\frac{\partial VAL_t}{\partial E_t} = \frac{\partial kg_t^A}{\partial E_t} A_{t-1} - \frac{\partial kg_t^L}{\partial E_t} L_{t-1}$$

Clearly, the answer will depend on currency composition. Can we develop an index for E that takes account of this, so that we can summarize $\frac{\partial VAL_t}{\partial E_t}$ in one neat number?

Let

$$\frac{\partial kg_t^A}{\partial E_{jt}} = \omega_{jt}^A \text{ and } \frac{\partial kg_t^L}{\partial E_{jt}} = \omega_{jt}^L$$

be the share of currency j in assets (A) and liabilities (L). Then

$$\begin{aligned} \frac{\partial VAL_t}{\partial E_{jt}} &= \left[\omega_{jt}^A s_{t-1} - \omega_{jt}^L (1 - s_{t-1})\right] \left[A_{t-1} + L_{t-1}\right] \\ &= \omega_{jt} \left[A_{t-1} + L_{t-1}\right] \end{aligned}$$

where

$$\begin{aligned} s_{t-1} &= \frac{A_{t-1}}{A_{t-1} + L_{t-1}} \\ \omega_{jt} &= \omega_{jt}^A s_{t-1} - \omega_{jt}^L (1 - s_{t-1}) = \text{net exposure w.r.t currency } j. \end{aligned}$$

Then define a currency index

$$
\begin{aligned}
I_t^A &= I_{t-1}^A \left[1 + \sum_j \omega_{jt}^A \Delta e_{jt}\right] \\
I_t^L &= I_{t-1}^L \left[1 + \sum_j \omega_{jt}^L \Delta e_{jt}\right]
\end{aligned}
$$

so that the total value of valuation effects due to exchange rate fluctuations is

$$
\begin{aligned}
VAL_{it}^{XR} &= \sum_j \frac{\partial VAL_t}{\partial E_{jt}} \Delta e_{jt} \\
&= \left[\left[\sum_j \omega_{jt}^A \Delta e_{jt}\right] s_{t-1} - \left[\sum_j \omega_{jt}^L \Delta e_{jt}\right] (1 - s_{t-1})\right] [A_{t-1} + L_{t-1}] \\
&= \left[i_t^A s_{t-1} - i_t^L (1 - s_{t-1})\right] [A_{t-1} + L_{t-1}] \\
&= i_t^F [A_{t-1} + L_{t-1}]
\end{aligned}
$$

- Remark 1: Can also be done at the individual asset category.
- Remark 2: Exposure increases in national leverage.

International perspective

Trade and financially weighted exchange rates are generally VERY different (L&S 2008)

Table 1: Correlations between Financial and Trade-Weighted Exchange Rate Indices

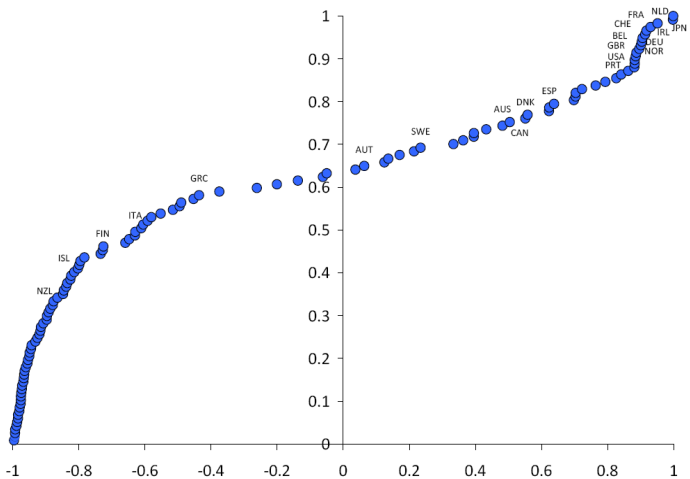
Group	Statistic	Assets Liabilities	Assets Trade	Liabilities Trade	Net Finance Trade	Exports Imports
All	mean	0.96	0.90	0.86	-0.30	0.95
	median	0.98	0.95	0.92	-0.72	0.98
Advanced	mean	0.97	0.92	0.88	0.41	0.97
	median	0.98	0.93	0.89	0.70	0.98
Dev. & Emging	mean	0.96	0.90	0.86	-0.47	0.95
	median	0.99	0.96	0.95	-0.82	0.98
Developing	mean	0.96	0.88	0.84	-0.61	0.94
	median	0.99	0.95	0.94	-0.89	0.97
Emerging	mean	0.94	0.93	0.88	-0.13	0.98
	median	0.97	0.97	0.95	-0.37	0.99

Correlations between the percentage change in monthly Financial and Trade-weighted Exchange Rates Indices. Monthly data, 1990.1-2004.12. Full sample of countries.

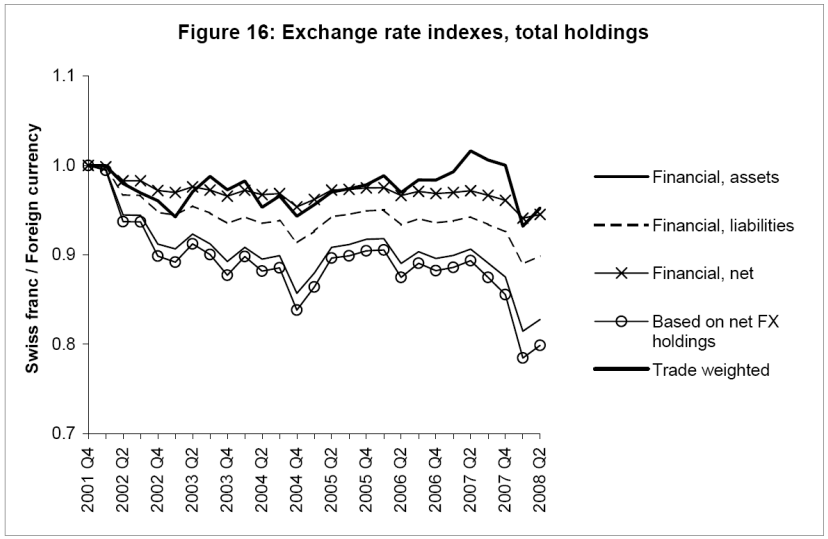
But this masks a lot of heterogeneity:

L&S (2008)

Figure 2: Distribution of Correlation between Net Financial and Trade-Weighted Exchange Rate Indices: All Countries.



Stoffels and Tille



Switzerland is special in that trade and (net) financial exchange rates are actually very *similar*.

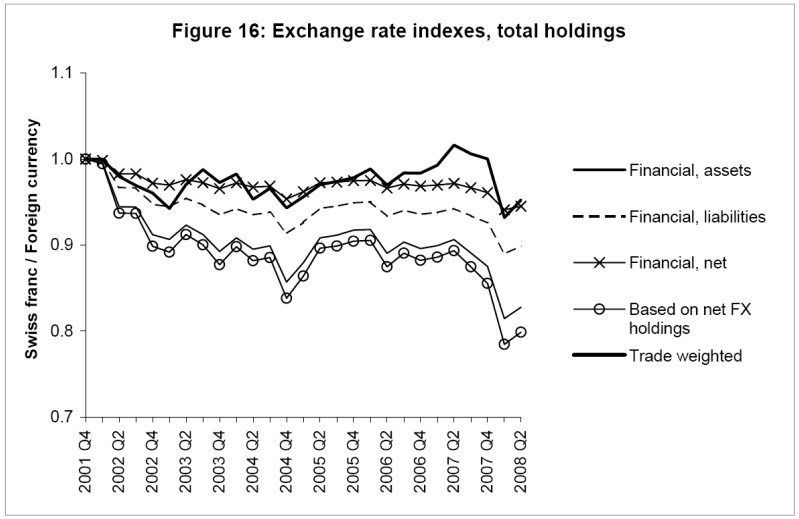
Then

$$
\begin{aligned}
I^T &\approx I_t^F \\
I^T &\approx \left[\sum_j \omega_{jt}^A \Delta e_{jt}\right] s_{t-1} - \left[\sum_j \omega_{jt}^L \Delta e_{jt}\right] (1 - s_{t-1}) \\
&= \omega_{CHt}^F + \sum_{j \neq CH} \omega_{jt}^F \Delta e_{jt} = \omega_{CHt}^F + I^{NFX}
\end{aligned}
$$

so that we can decompose the variance of the trade-weigted exchange rate approximately as

$$
1 \approx \frac{cov(I^T, \omega_{CHt}^F)}{var(I^T)} + \frac{cov\left(I^{NFX}, I^T\right)}{var(I^T)} = \beta_{CH} + \beta_{RoW}
$$

- First term: comovement of I_T with share of domestic currency in (net) international position
- Second term: comovement of I_T with net financial 'trade' weighted exchange rate, akin to the one defined in the paper.



- From fig. 16 see that I^{NFX} appreciated big time, whereas I_T has appreciated much less.
- So probably $\beta_{RoW} >= 1 -> \beta_{CH}$ near zero or even negative.
- Note that Swiss net international CHF position pretty balanced overall.
- ω^F_{CHt} is constant or decreases when *trade-weighted* exchange rate depreciates.
- Does this only reflect 'hedge fund' structure of national portfolio?
- What does it imply for the correlation between trade and (net) financial weights?

Diversification of Macroeconomic Risk: A little CAPM

$$C_{t+1} = (1 + n + (g + r_L n) + (r_A - r_L)a$$

where $n = (A - L)/Y = a - L/Y$. Then with $u(C_{t+1})$ a monotonic trafo of $E(C_{t+1}) - \frac{\gamma}{2} var(C_{t+1})$, we get

$$a = \frac{E(r_A - r_L)}{\gamma var(r_A - r_L)} - \frac{cov(g + r_L n, r_A - r_L)}{var(r_A - r_L)}$$

But is this the correct budget constraint for the Swiss resident? Maybe not:

- part of the return on foreign liabilities does affect the Swiss net external position but not the net wealth position of the swiss resident. (Think of valuation gains on Swiss equity held by foreigners)
- GDP growth may not be the relevant growth rate for the endowment of the average Swiss resident. Ultimately, what you wish to diversifiy is not tomorrow's GDP risk but, on the margin, your consumption risk.

Why might that matter empirically?

$$a = \frac{E(r_A - r_L)}{\gamma var(r_A - r_L)} - \frac{cov(g + r_L n, r_A - r_L)}{var(r_A - r_L)}$$

- Consumption growth is less volatile than GDP growth. That should help drive up a ceteris paribus.
- Consumption growth is often less correlated than GDP with returns, exchange rates. That might help as well.

Does it help? Some empirical illustrations

Table: GDP-based, yield based (FDI and PF holdings only)

Correlation with		Covariance with		n	0%	110%
GDP	0.12	GDP	0.00%	Hedging	-18%	-22%
GDP + il*n	0.10	GDP + il*n	0.00%	Exp gap	3740%	

Table: Consumption based, yield-based (FDI and PF-holdings only)

Correlation with		Covariance with		n	0%	110%
Cons	-0.18	Cons	0.00%	Hedging	3%	44%
Cons + il*n	-0.36	Cons + il*n	-0.01%			

Table: GDP-based, yield based (all assets)

Correlation with		Covariance with		n	0%	110%
GDP	0.11	GDP	0.00%	Hedging	-33%	-67%
GDP + il*n	0.19	GDP + il*n	0.00%	Exp gap	9379%	

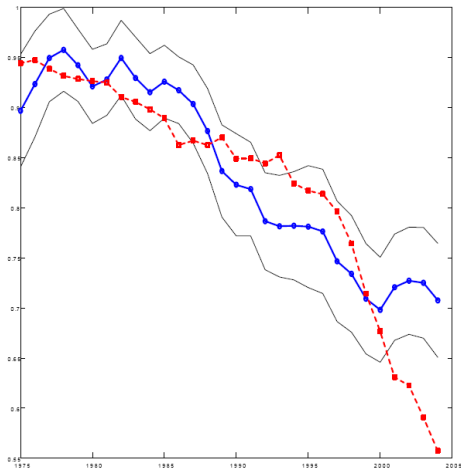
Table: Consumption based (yield, all assets)

Correlation with		Covariance with		n	0%	110%
Cons	-0.17	Cons	0.00%	Hedging	6%	66%
Cons + il*n	-0.41	Cons + il*n	0.00%			

Broader implications

- These results on yields tie in with empirical literature that has started to document an impact of financial asset positions on international consumption and income patterns. (Kose et al. (2007), Imbs and Fratzscher (2007), Sorensen et al (2007), Artis and Hoffmann (2006/08)).

Figure 1: The increase in consumption risk sharing 1975-2004.



Notes: The blue (solid /dots) line is the sequence of cross-sectional estimates of $(1-\lambda_t)$. The red (dashed/ squares) line is $1-\lambda_t^{GFA} = 1.01 - 0.1\overline{GFA}_t$ where $\overline{GFA}_t$ is the cross-country mean gross foreign asset position. The thin (black) solid lines are the plus/minus two standard deviation bands for $1-\lambda_t$. These standard deviations are obtained using a jackknife resampling procedure.

- Here: evidence that there better risk sharing is not only aligned with growth in diversification asset trade (Obstfeld (2004))
- Actual PF composition also supports risk sharing.