



BANK FOR INTERNATIONAL SETTLEMENTS

# Comments on Signe Krogstrup and Cedric Tille: “What drives the funding currency mix of banks?”

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# Structure of comments

1. Summary paper
2. Literature and model in paper
3. Alternative literature
4. Empirical experiment: covered cost savings as driver of USD denominated debt issuance by euro area banks.
5. Comparison with alternative data-sources (BIS IBS in Annex)
6. Conclusions



# 1. Summary paper

- Very promising paper that may become important contribution to the literature
- Very few empirical studies exist on the foreign currency mix of banks
- Includes model + empirical testing
- Use of unique dataset

=> Many ideas from paper (and discussion)



# 1. Summary paper (cont.)

- Main findings:
  - Substantial heterogeneity in determinants funding currency mix of banks across countries and currencies
  - *Funding in CHF:*
    - Outside euro area: exchange rate developments and CHF lending.
    - Euro area countries not financial centres: CHF-home currency interest rate differentials.
    - Financial centres: risk considerations.
  - *Funding in other currencies:*
    - European EMEs: exchange rate movements and lending in CHF.



# 1. Summary paper (cont.)

- Main findings:

*Euro area banks, conclusion on p.3 paper:*

**“... funding activities (*in other currencies than CHF*) in euro area countries display little sensitivity to the various factors we consider. This suggests that funding in euro or US dollar is a steady feature reflecting structural considerations, whereas funding in Swiss franc is more an adjustment variable in response to the various drivers we consider”.**

*=> Alternative explanation: euro area banks choice between funding in euro or USD reflects opportunistic cost savings achieved by using currency swap markets (covered cost savings).*



## 2. Literature and model in paper

- Literature: discussion of following would be helpful:
  - What are banks' *motives* to fund in foreign currencies?
  - What are the *actual drivers* of the funding currency mix of banks?  
=> which *channels* do you want to model?
- Model:
  - Technically very nice set-up
  - Are *exchange rates* (expectations, volatility) the main driver of adjustments in the funding currency mix of banks?
  - What about the *actual cost* of funding in domestic versus foreign currencies:
    - Covered cost savings (hedged currency bargains)
    - Uncovered cost savings (unhedged currency bargains)



## 2. Literature and model in paper (cont.)

- Hypotheses:
  - Which *hypotheses* does the paper test?
  - Which *theory* (against which other theory)?
  - Which *variables* (against which other variables)?
- Empirical strategy:
  - *Robustness tests to validate choice of explanatory variables*
  - *Robustness tests to check alternative explanations*
  - (work in progress?)





## 3.1 Alternative literature: international bond markets, bank funding.

- Large body of international finance empirical literature on:
  - *Currency choice in international bond issuance:*
    - Yankee, Eurodollar, etc.
    - Sovereign and private sector issuance; advanced economies and EMEs.
    - “Off-shore” issuance.
  - Kim and Stultz, JFE, 1988; Miller and Puthenpurackal, JFI, 2002; Melnik and Nissim, EFR, 2003; Cohen, BIS QR, 2005; Siegfried et al., ECB WP, 2007; Hale and Spiegel, JIE, 2012.
- *Foreign currency/USD funding of banks:*
  - Relatively few but some interesting ones exist.
  - Ivashina et al., QJE, 2015.



## 3.2 Alternative literature: corporate finance.

- *Determinants of corporate foreign currency-denominated borrowing* (Geczy et al., JF, 1997; Graham and Harvey, JFE, 2001; Allayannis et al., JF, 2003; Kedia and Mozumdar, JB, 2003; McBrady and Schill, JFE, 2007; Munro and Wooldridge, BIS, 2010):
  1. Borrowing for “**operational incentives**”:
    - *Hedging* of foreign currency exposures: foreign currency debt issuance to hedge foreign currency cash-flows (hedging “on” and “off-balance sheet”).
    - Funding of *foreign operations* (business model).
  2. Recent literature: “**opportunistic borrowing**”: realize lower financing costs through *hedged* and *unhedged* cost savings:
    - **Covered cost savings** from deviations from *covered interest parity* (CIP) (*swap-covered borrowing*)
    - **Uncovered cost savings** from deviations from *uncovered interest parity* (UIP)



## 3.2 Alternative literature: corporate finance (cont.).

- *Other determinants of foreign currency-denominated borrowing:*
  3. *Segmented capital markets:*
    - Legal barriers
    - Informational costs
  4. *Taxes*
  5. *Liquidity in underlying debt and foreign exchange markets:*

Kedia and Mozumdar (JB, 2003) find that FX-M liquidity is the main driver of CHF bonds issued by US companies.

**Corporate finance literature is relevant for banks:** Empirical work on the drivers of bank leverage showed that standard corporate finance determinants of non-financial firms' capital structure are also highly significant for banks (Gropp and Heider, RFS, 2010).

=> corporate finance literature is highly relevant for Krogstrup/Tille paper.



## 4. Empirical experiment

- Krogstrup and Tille paper focuses on wholesale funding.
- I use own manually cleaned database (Dealogic) on bond issuance.
- Adrian van Rixtel, Luna Romo Gonzalez and Jing Yang, “The determinants of long-term debt issuance by European banks” (BIS WP, forthcoming).
- Around 50,000 bonds issued by 63 banks from 14 countries (11 euro area countries, UK, SE, CH) for 1999-2013.
- Identifying fields include currency of issuance.
- Luna Romo Gonzalez, ““Opportunistic funding in times of crisis: the drivers of euro area banks’ US dollar debt issuance”.  
=> *I am very grateful to Luna for her help in conducting this empirical experiment.*



## 4. Empirical experiment

- Long-run CIP based on currency swap rates (Popper, JIMF, 1991):

$$(i - i_*) = (c - c_*)$$

where:

$i - i_*$  = difference between domestic and foreign interest rates

$c - c_*$  = difference between currency swap fixed rates for domestic and foreign currencies

- The bank can achieve a reduction in its borrowing costs of  $\varepsilon^c$  when:

$$\varepsilon^c = (i - i_*) - (c - c_*) > 0$$

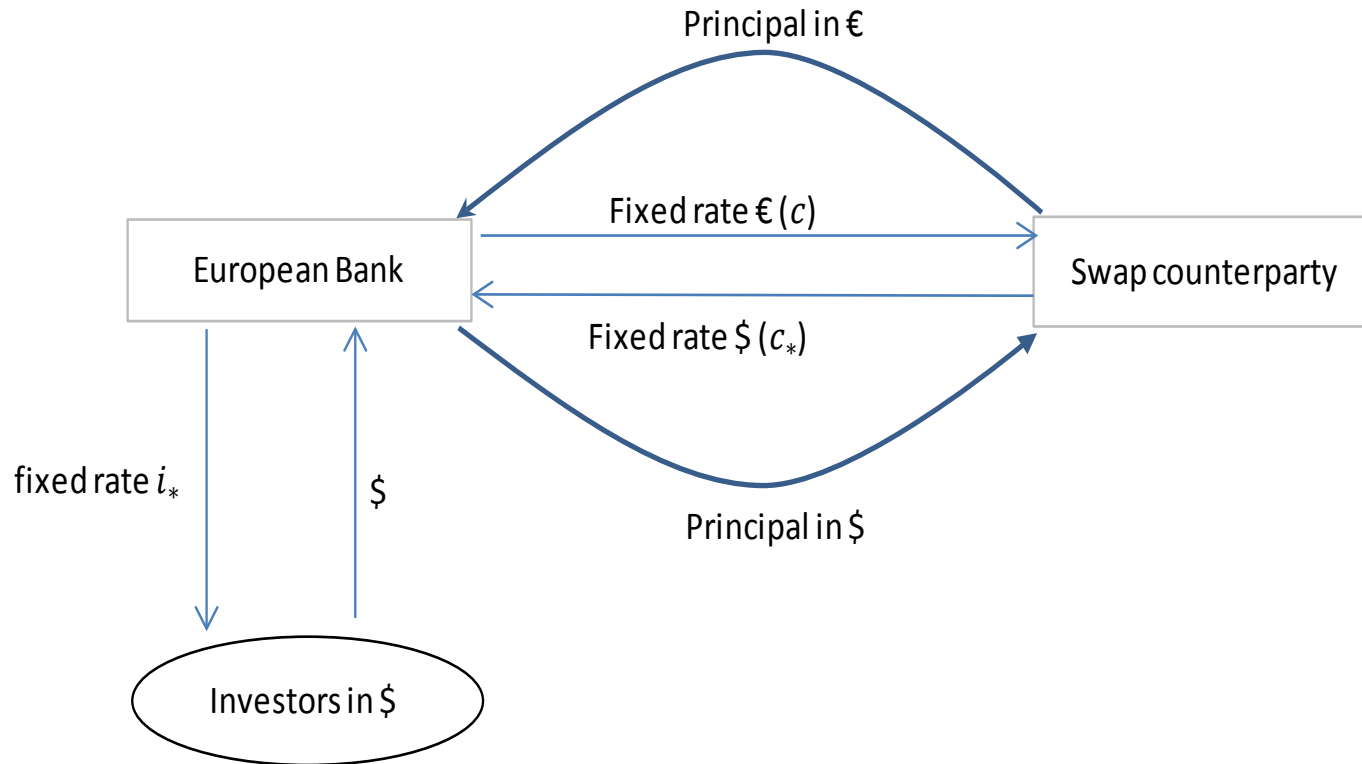
- Assume domestic currency = euro; foreign currency = USD =>

Hence: instead of issuing directly a euro-denominated bond, a euro area bank would issue a USD-denominated bond, swap the proceeds in euro, cover currency risk and realize cost savings of  $\varepsilon^c$   
=> the bank would create *synthetic euro-denominated debt*.



## 4. Empirical experiment: issue in USD and swap in euros.

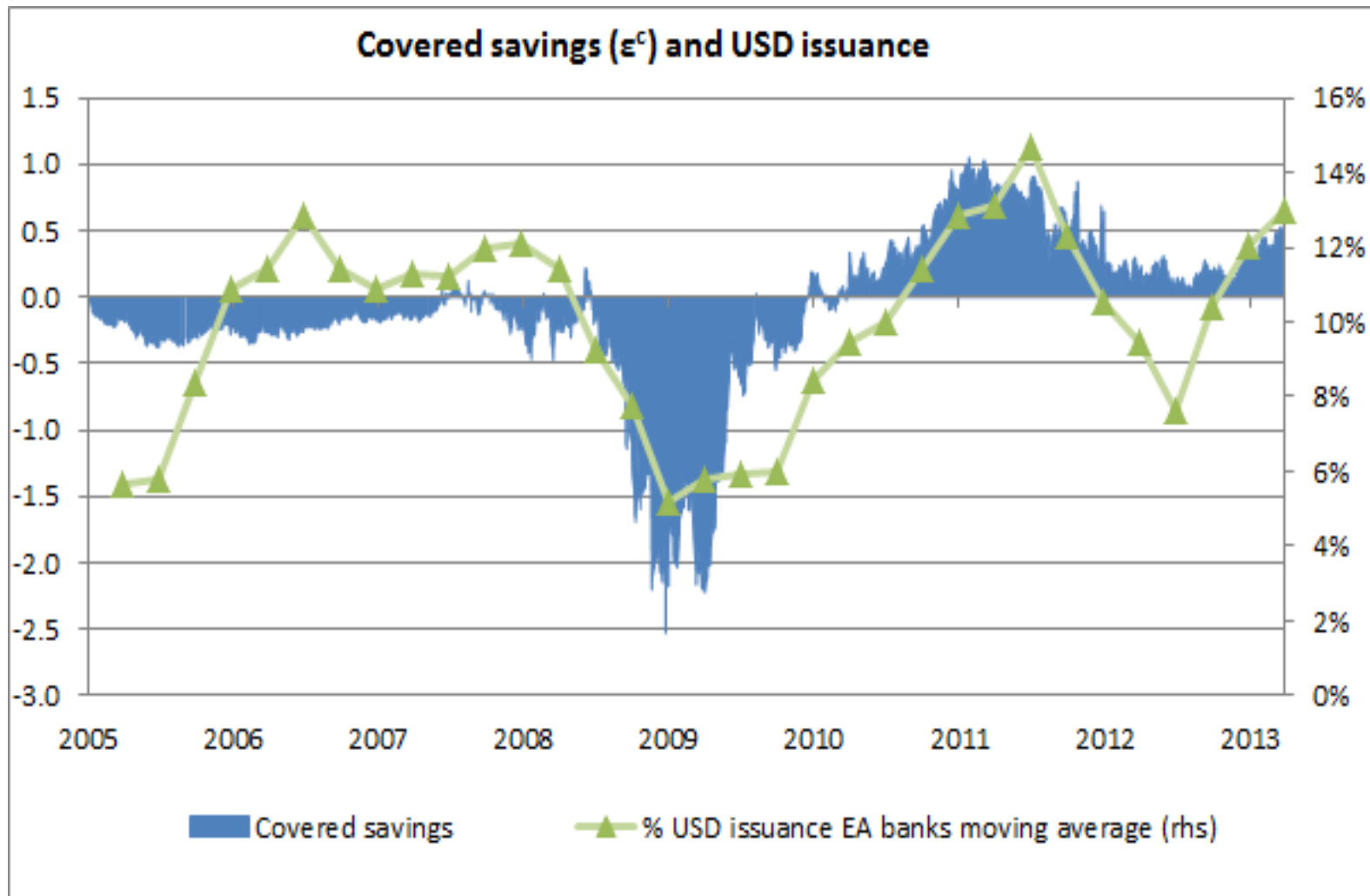
Figure 2: Creating a synthetic domestic-currency bond (a)



(a) For the sake of simplicity, we do not consider the broker or dealer that usually intermediates between the two swap counterparties.



## 4. Empirical experiment: when covered savings are positive (or less negative), issue more in USD and swap in euros.



## 4. Empirical experiment

- If opportunistic cost savings are driving the currency choice of debt issuance, one could argue from a very general perspective:
  - When covered cost savings are positive, euro area banks issue more in USD and swap proceeds in euro (synthetic euro-denominated debt).
  - When covered cost savings are negative, euro area banks issue more in euro and swap proceeds in USD (synthetic USD-denominated debt).
- Lots of IB research on this in 2011/2012 (SocGen, “Yankee Bond Basis Monitor”).
- [Modifications:
  - If not a hedging motive: banks issue USD-denominated debt and swap in euros to obtain a lower effective funding cost.
  - If a hedging motive (banks have USD exposure on assets side): banks issue USD debt for “on-balance sheet” currency hedging.]





## 4. Empirical experiment

- Covered cost savings:

$$\varepsilon^c = (i - i_*) - (c - c_*) = (i - i_\$) - (Z - Z_\$ + \alpha)$$

where:

$i - i_\$$  = interest rate differential (difference between euro area and US interest rates)

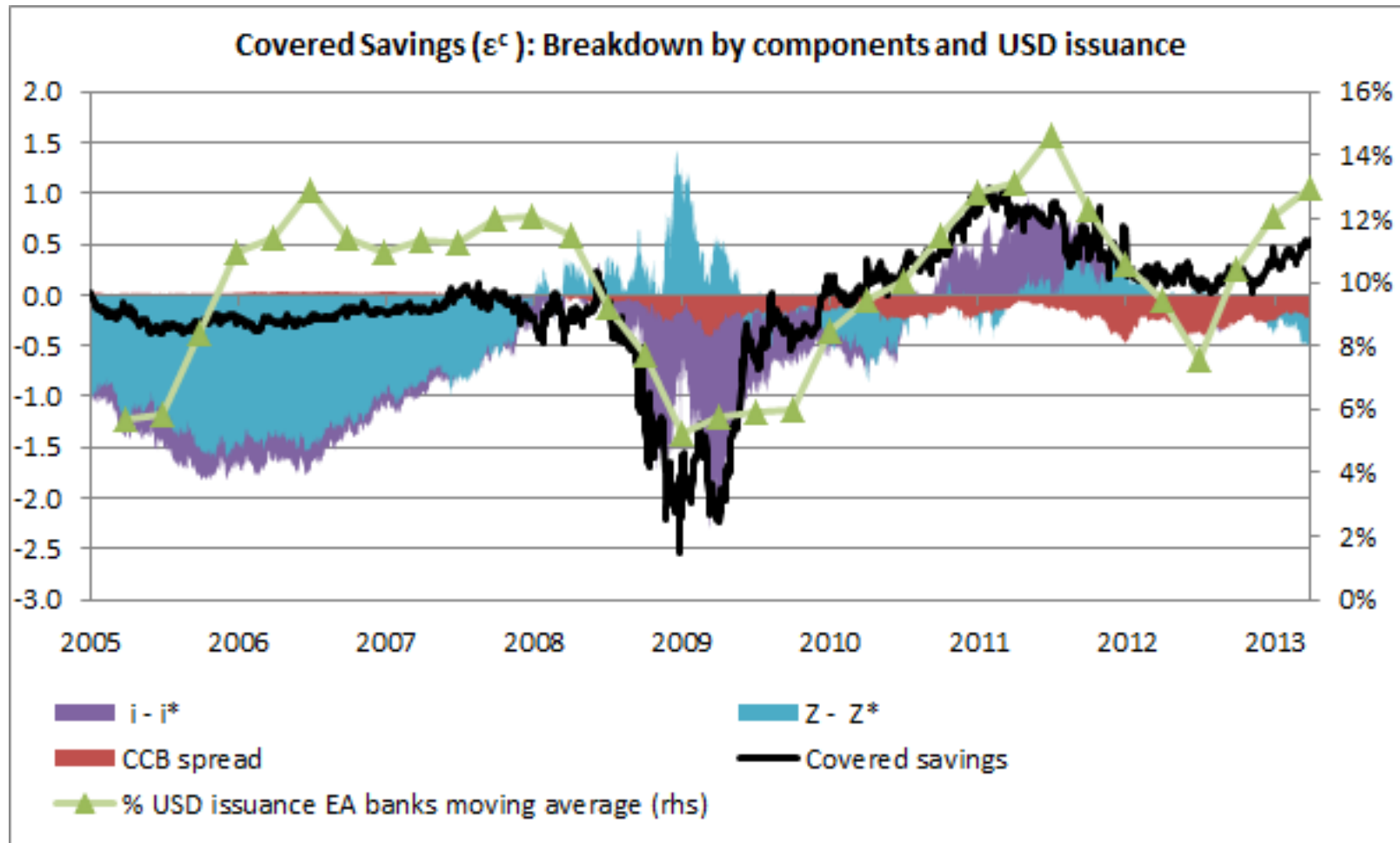
$Z - Z_\$$  = difference between interest rate swap spreads for euro and USD

$\alpha$  = cross currency basis swap spread (euro/USD) (CCB spread)

- Suggestion: maybe authors could plug cost benefits into their model?



## 4. Empirical experiment

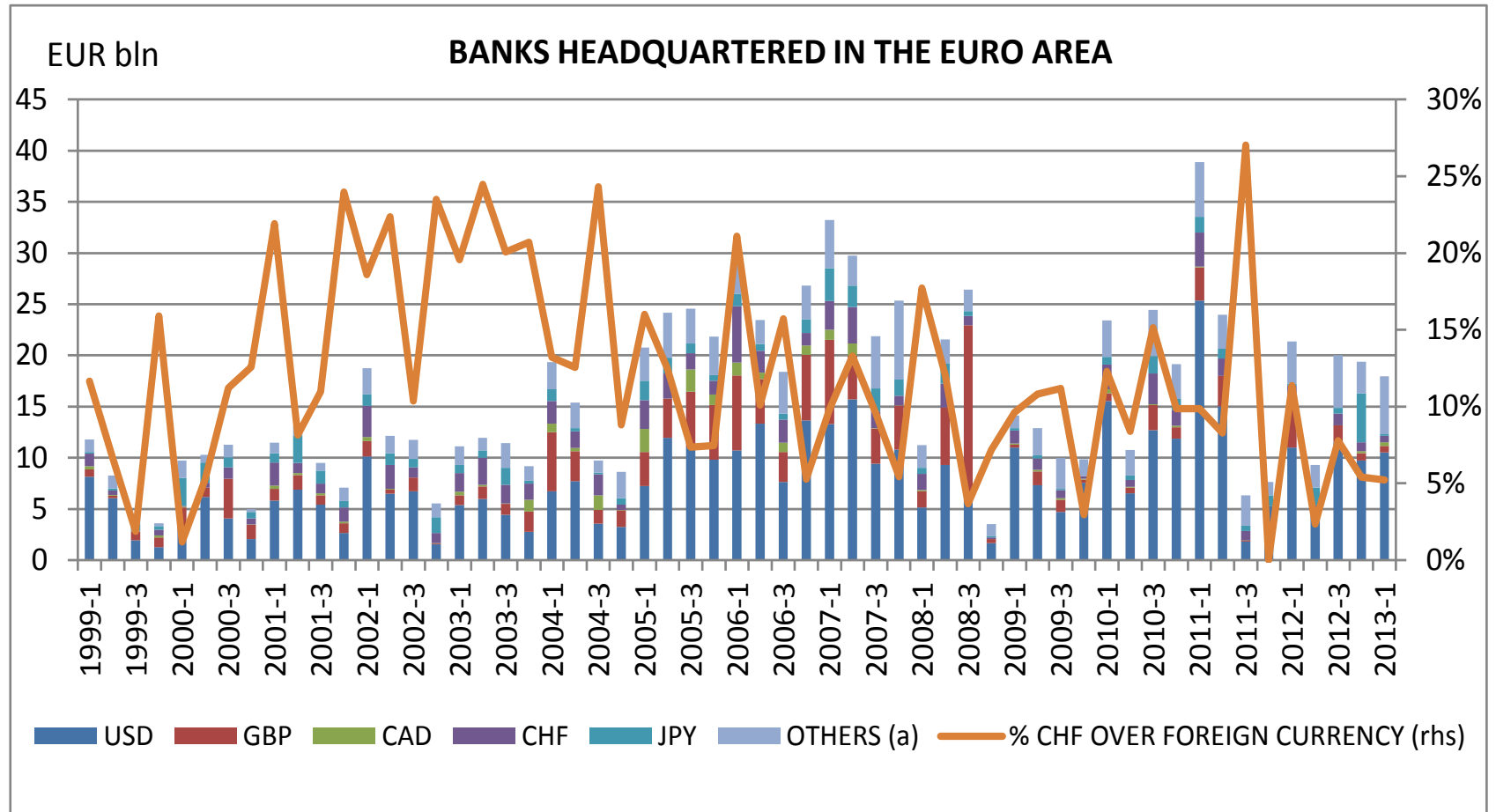


## 4. Empirical experiment: currency swap markets, CIP.

- Ivashina, Sharfstein and Stein (QJE, 2015):
  - Very nice paper that links USD lending and borrowing, frictions in currency swap markets and violations of CIP.
  - Fed swap lines to ECB reduced burden on currency swap markets for generating synthetic USD funding for euro area banks.
- Bacchetta and Merrouche (WP, 2015) is related paper on foreign currency borrowing by euro area corporations.



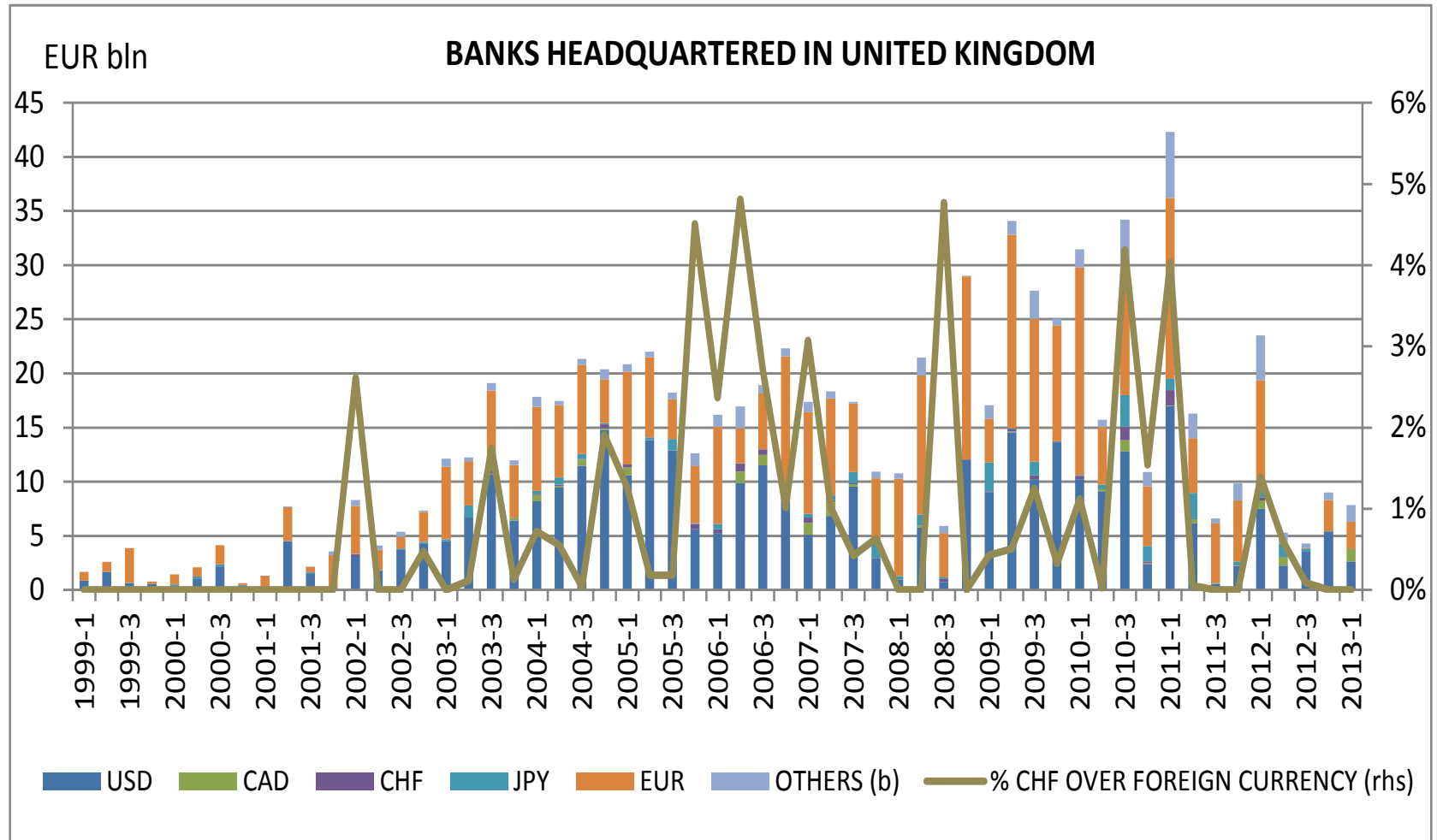
## 5. Comparison with alternative data (own database)



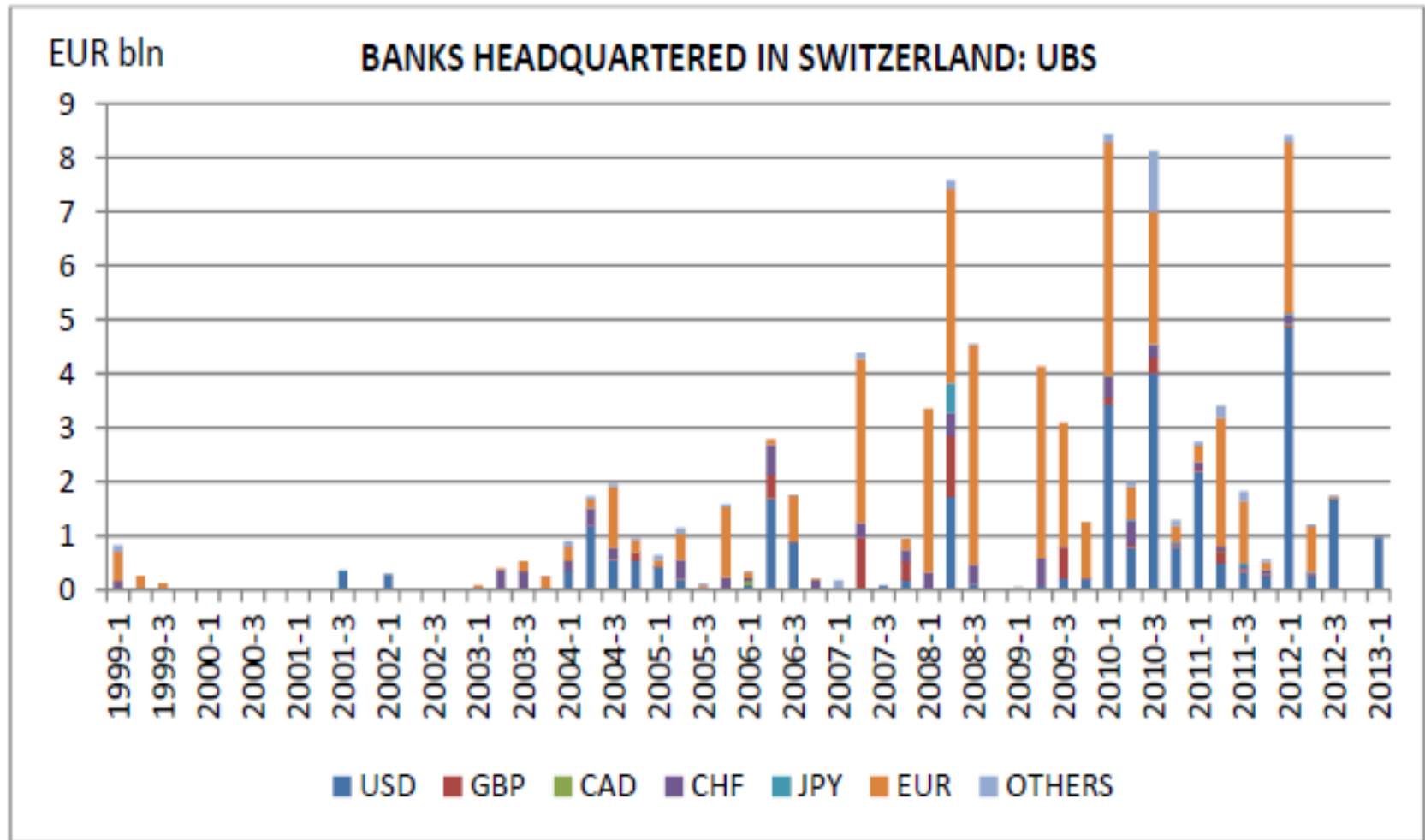
- Main adjustments in USD, declining role of CHF



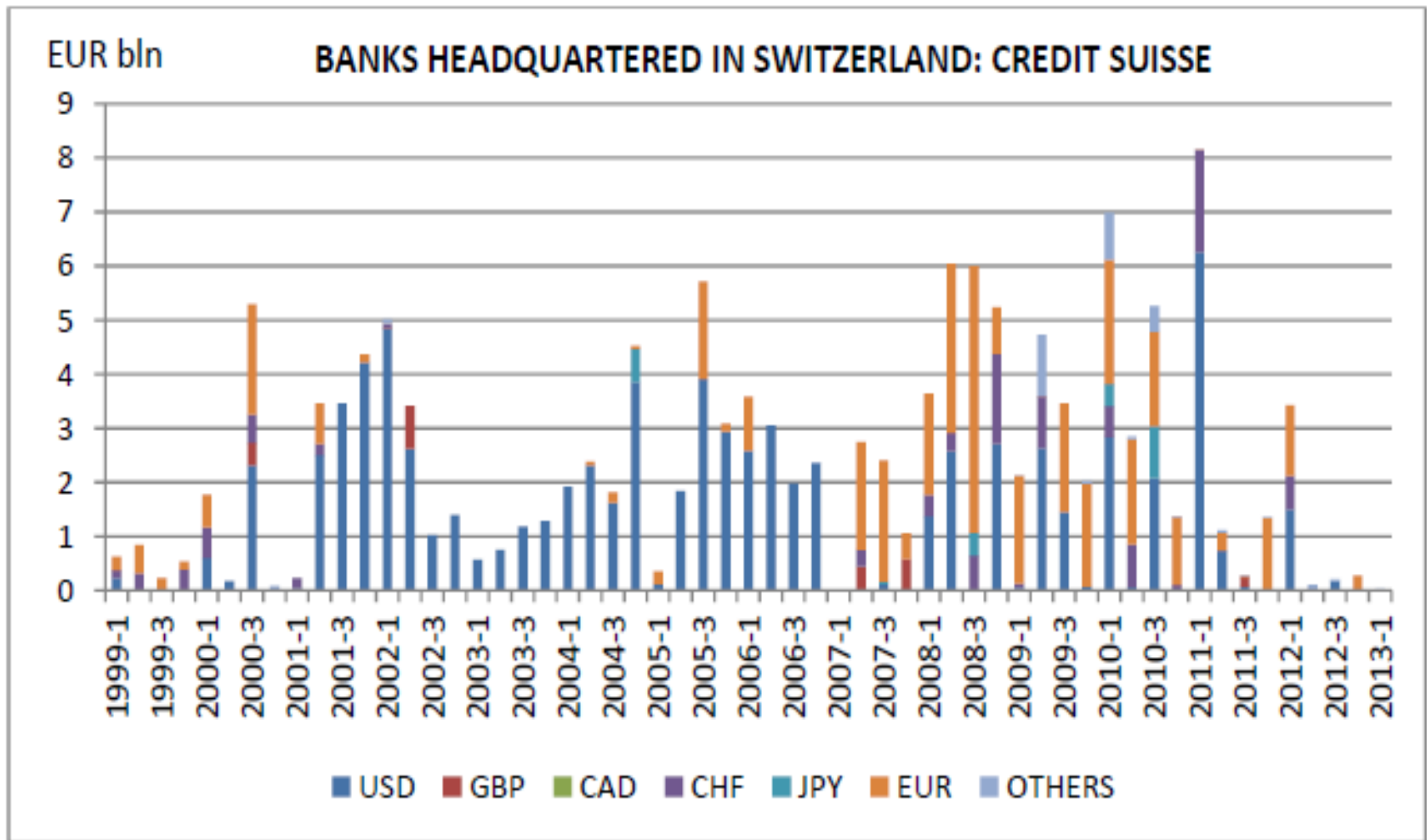
## 5. Comparison with alternative data (own database)



## 5. Comparison with alternative data (own database)



## 5. Comparison with alternative data (own database)



## 6. Conclusions

- Funding currency choice is (at least partly) driven by cost savings =>
  - => Currency denomination of wholesale funding instruments is intrinsically intertwined with currency swap markets.
  - => One can not analyze one without the other (see corporate finance literature; Ivashina et al., 2015; Bacchetta and Merrouche, 2015).
- Maybe authors want to consider carefully the objective of the paper: its setup may be suitable for explaining funding in CHF, but seems more limited in explaining funding in other currencies for banks from certain countries.
  - ⇒ reconsider either scope of paper or methodological setup
  - ⇒ at a minimum use robustness tests incorporating covered cost savings





# Annex

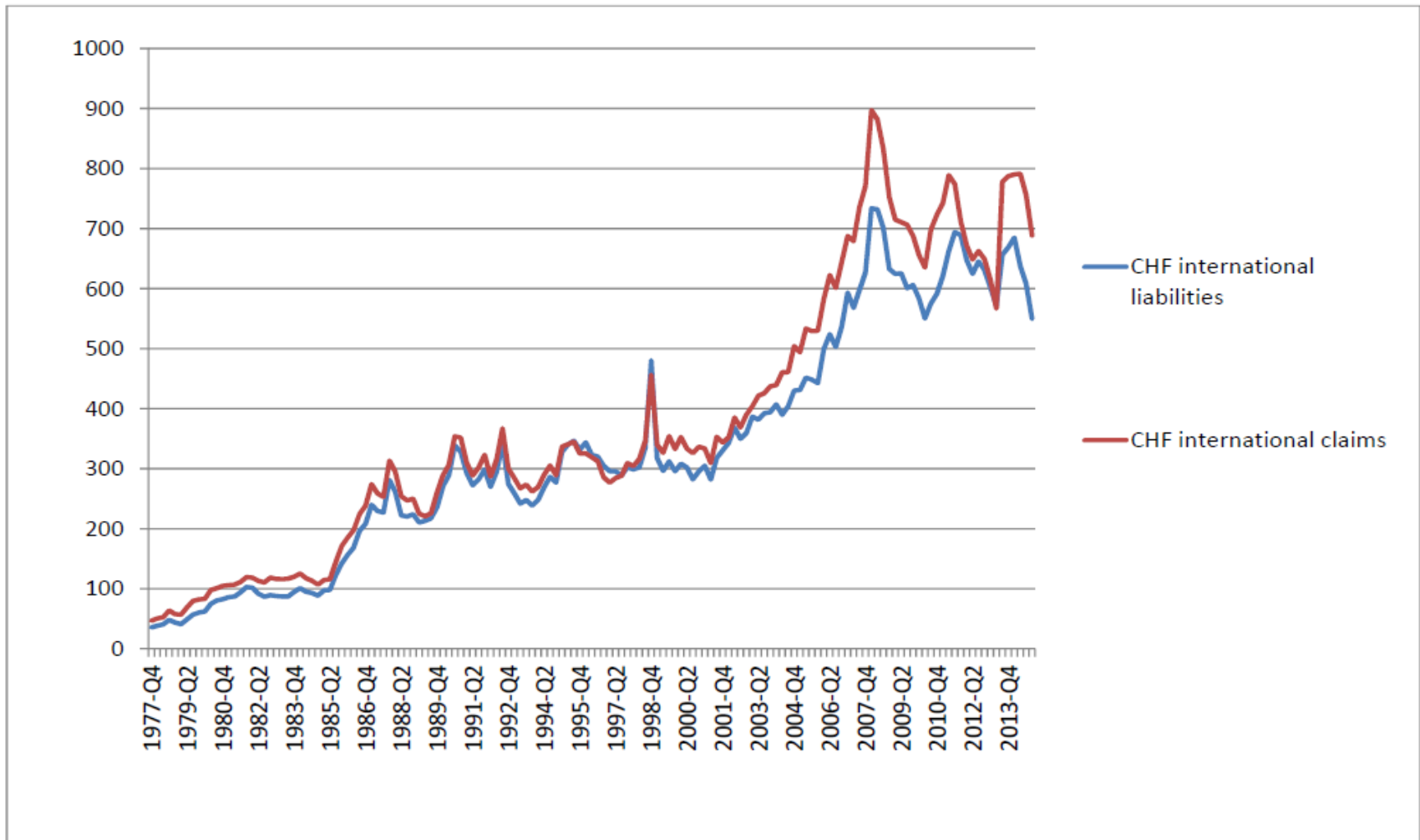


# BIS international banking statistics

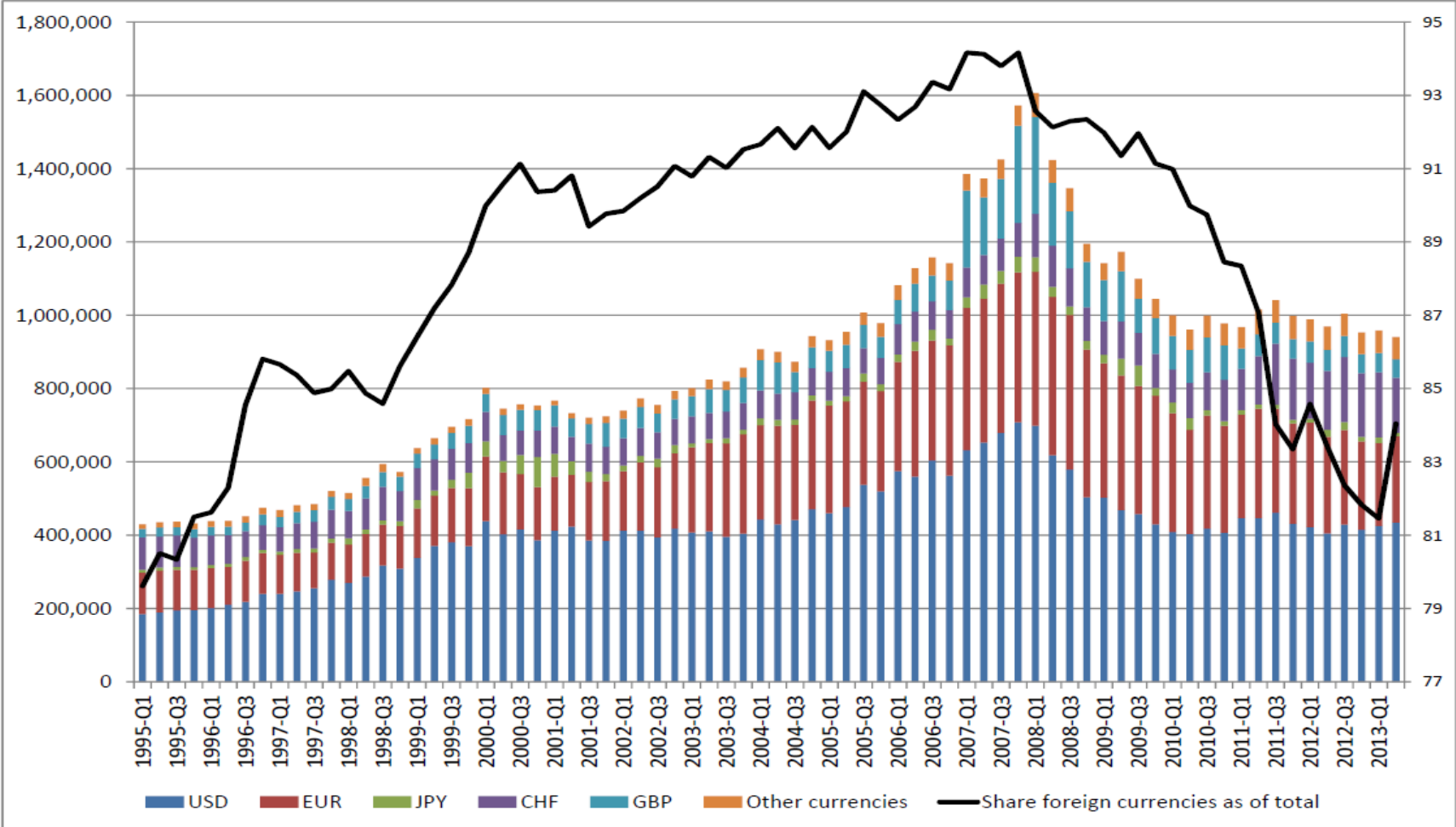
- Locational by residence statistics
- International liabilities:
  - All cross-border liabilities
  - Liabilities obtained by local offices abroad, denominated in foreign currencies
- Total liabilities (shorter time horizon):
  - All cross-border liabilities
  - Liabilities obtained by local offices abroad, denominated in local and foreign currencies
  - Domestic liabilities



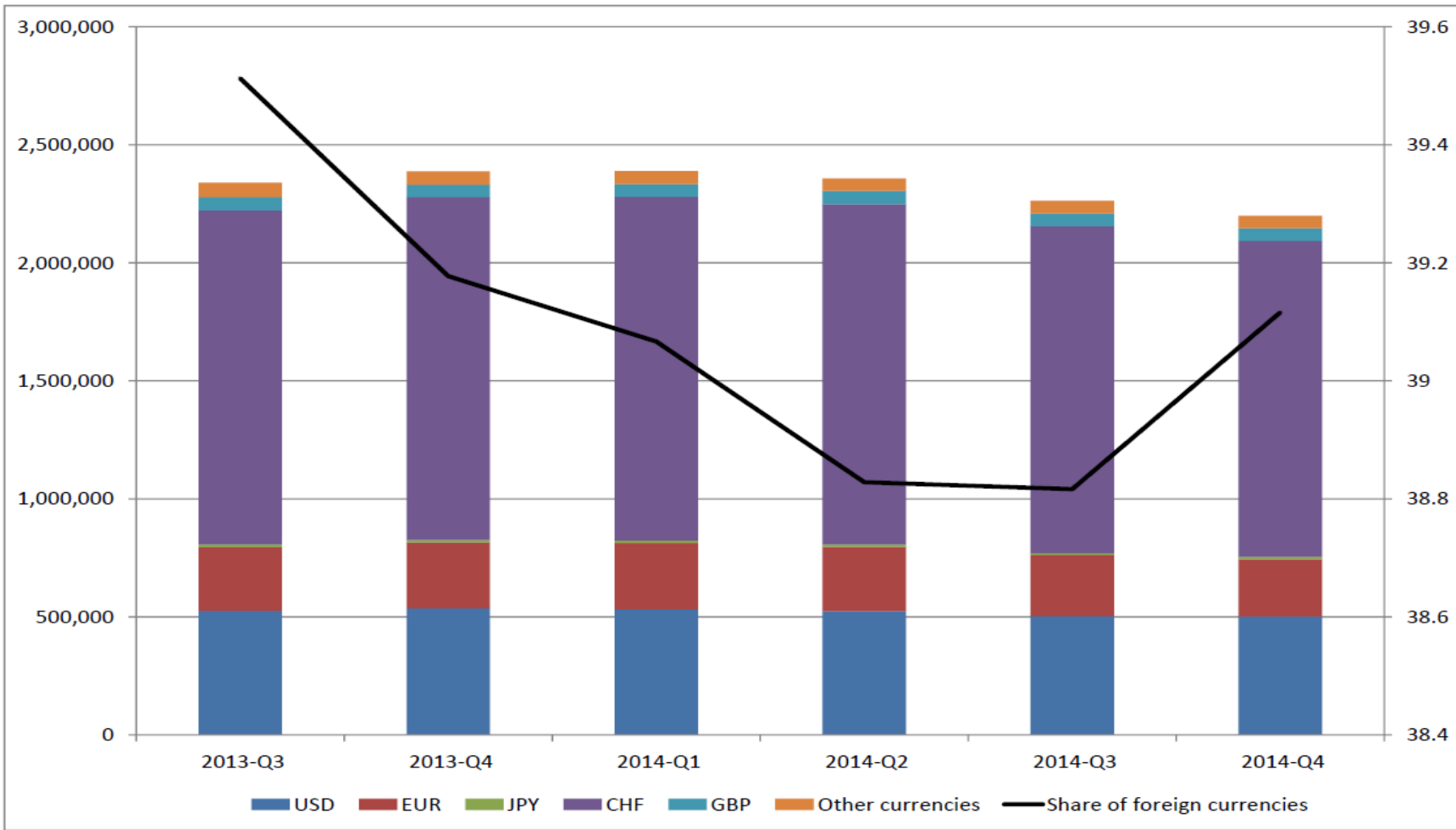
# Total international claims and liabilities in CHF (amounts outstanding, all reporting banks)



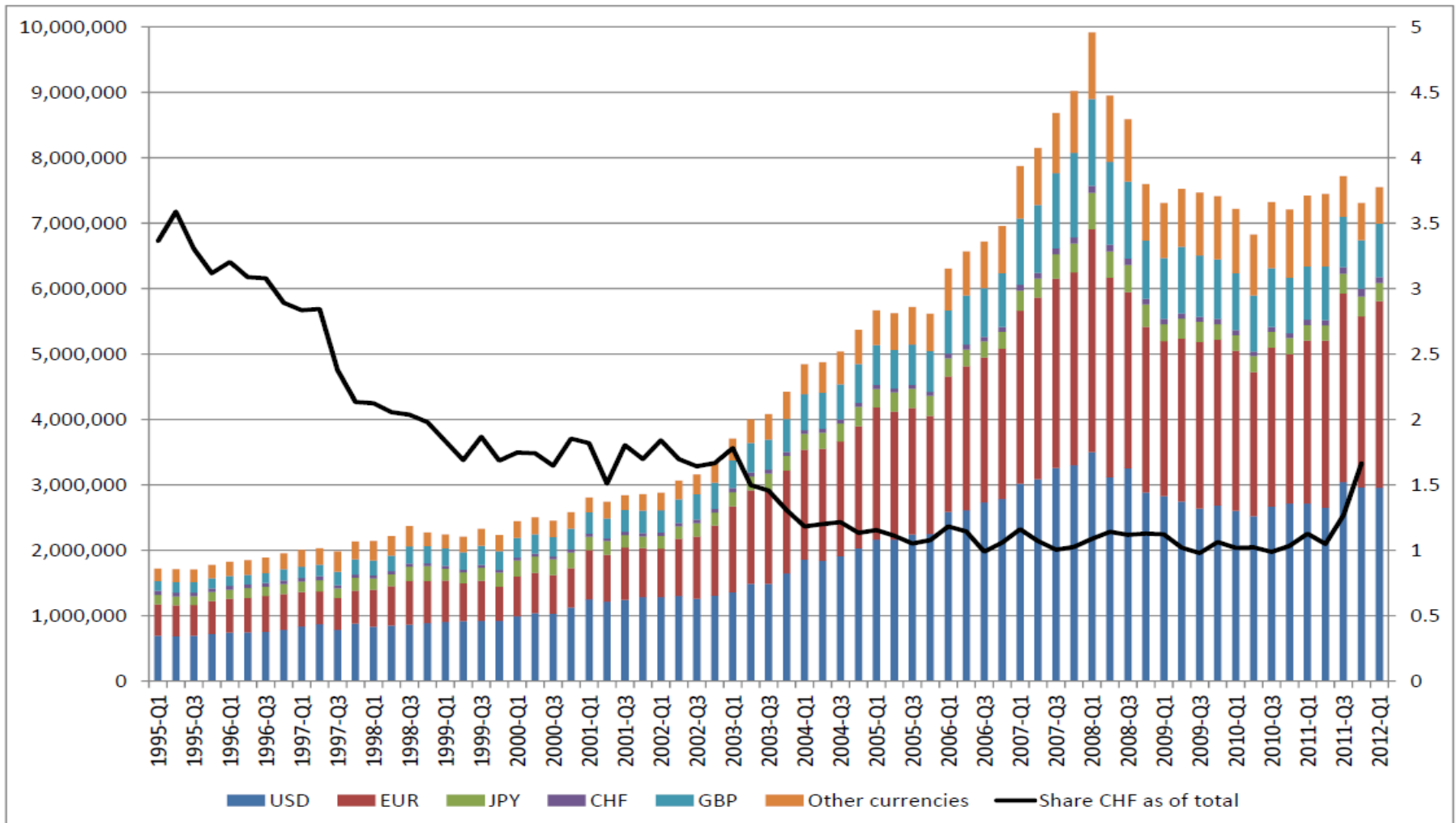
# International liabilities banks in Switzerland (amounts outstanding, currency composition)



# Total liabilities banks in Switzerland (amounts outstanding, currency composition)



# International liabilities banks in UK (amounts outstanding, currency composition)



# International liabilities banks in euro area (amounts outstanding, currency composition)

