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 ε^c when:

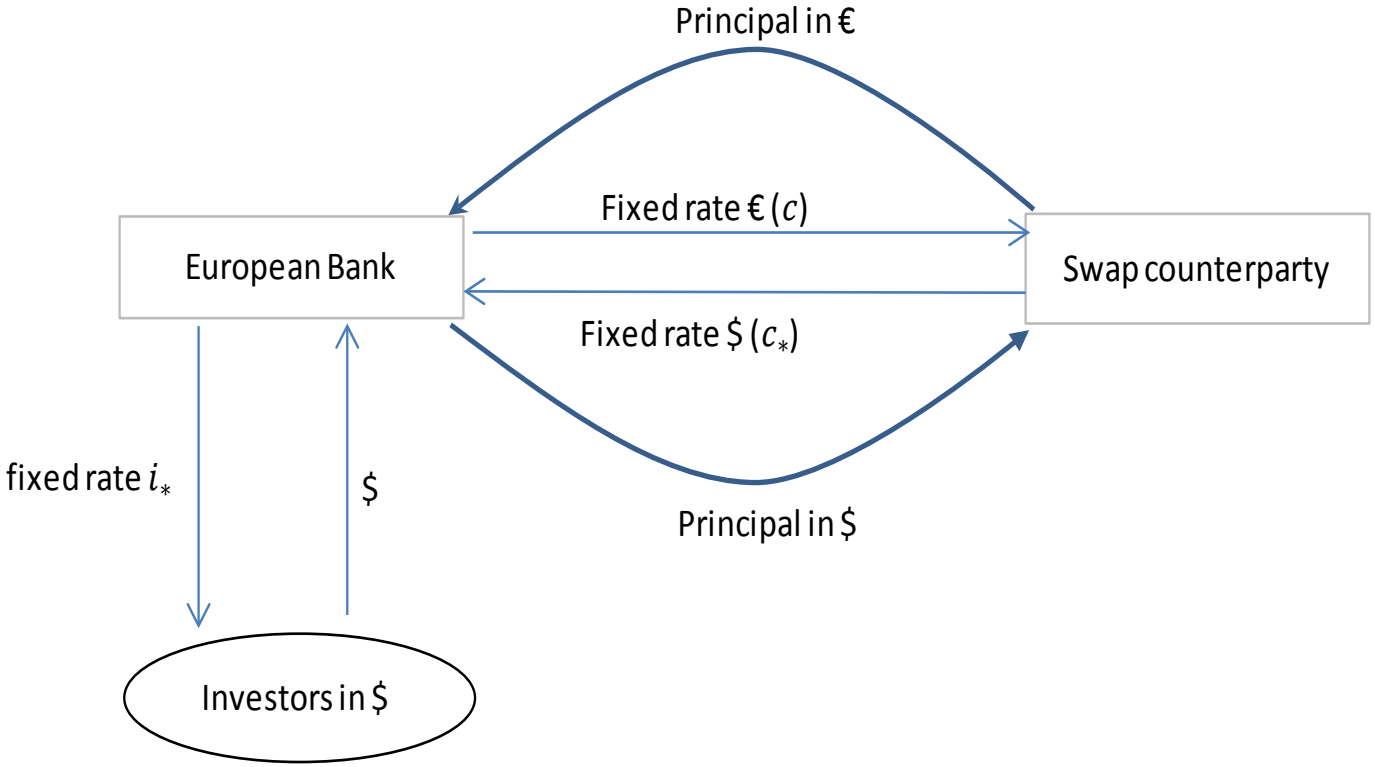
  $\varepsilon^c = (i - i_*) - (c - c_*) > 0$

- 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 ε^c => the bank would create *synthetic euro-denominated debt*.

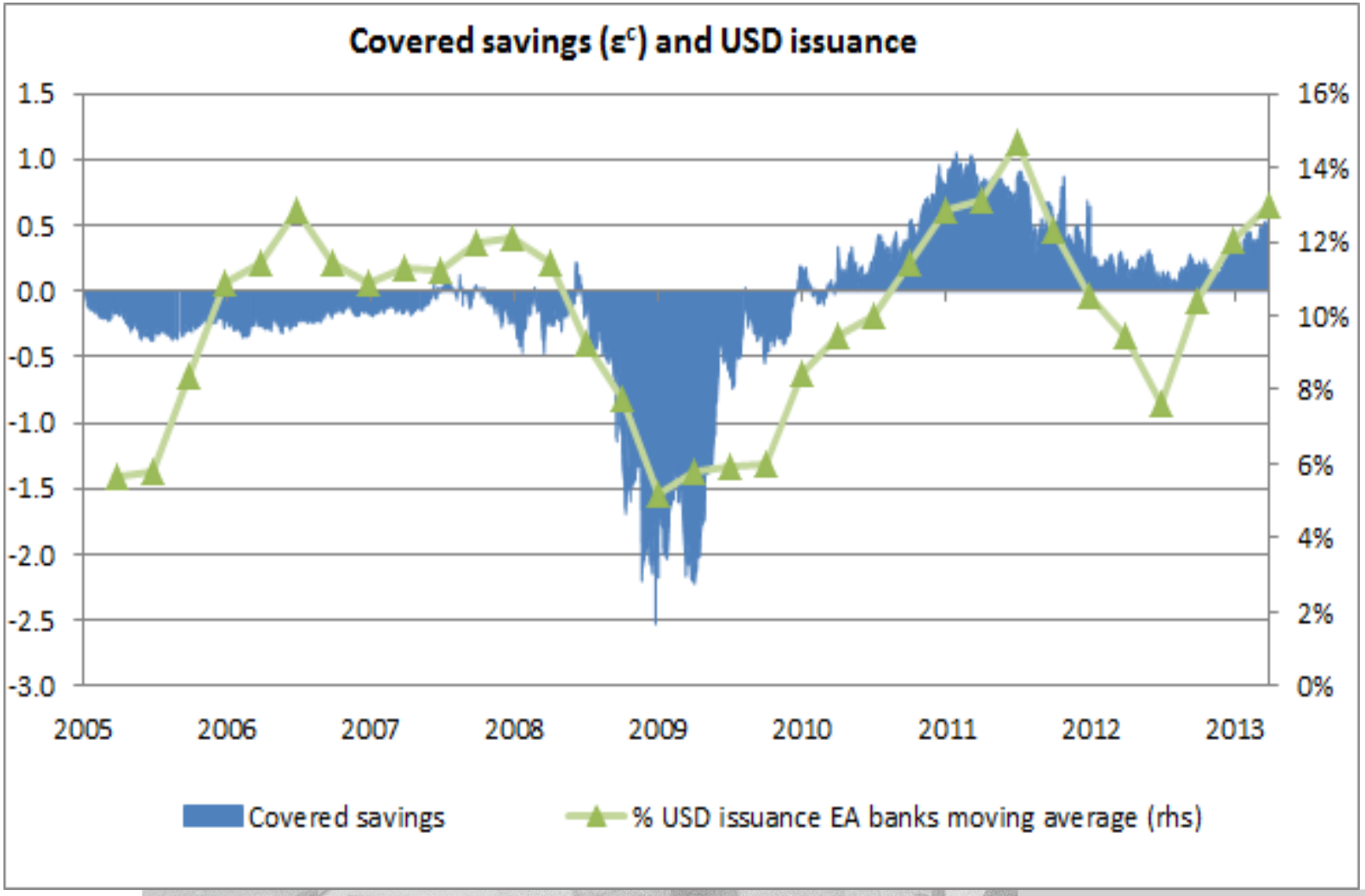
4. Empirical experiment: issue in USD and swap in euros.

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:

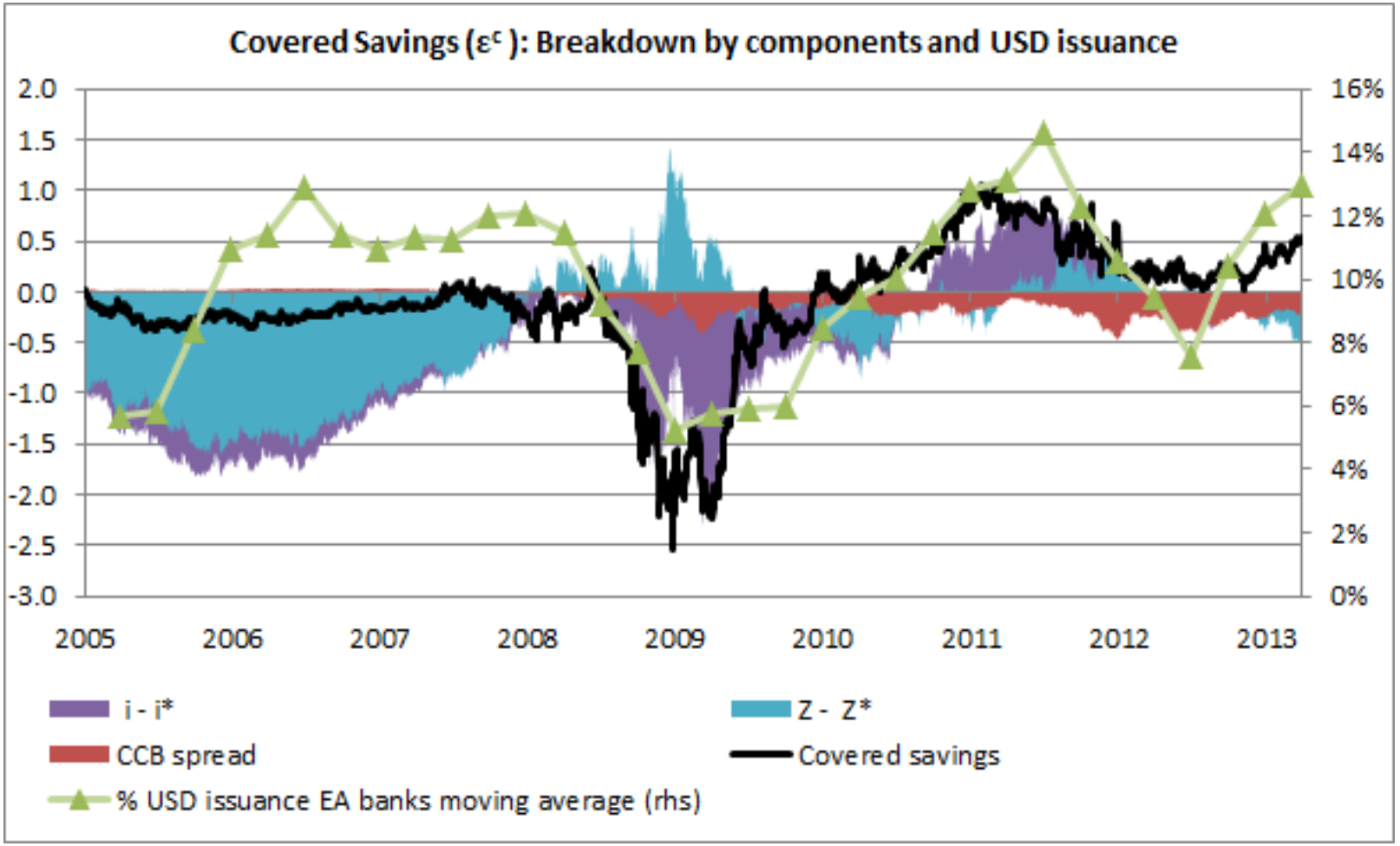
$i - i_\$$ = interest rate differential (difference between euro area and US interest rates)

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

α = cross currency basis swap spread (euro/USD) (CCB spread)

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

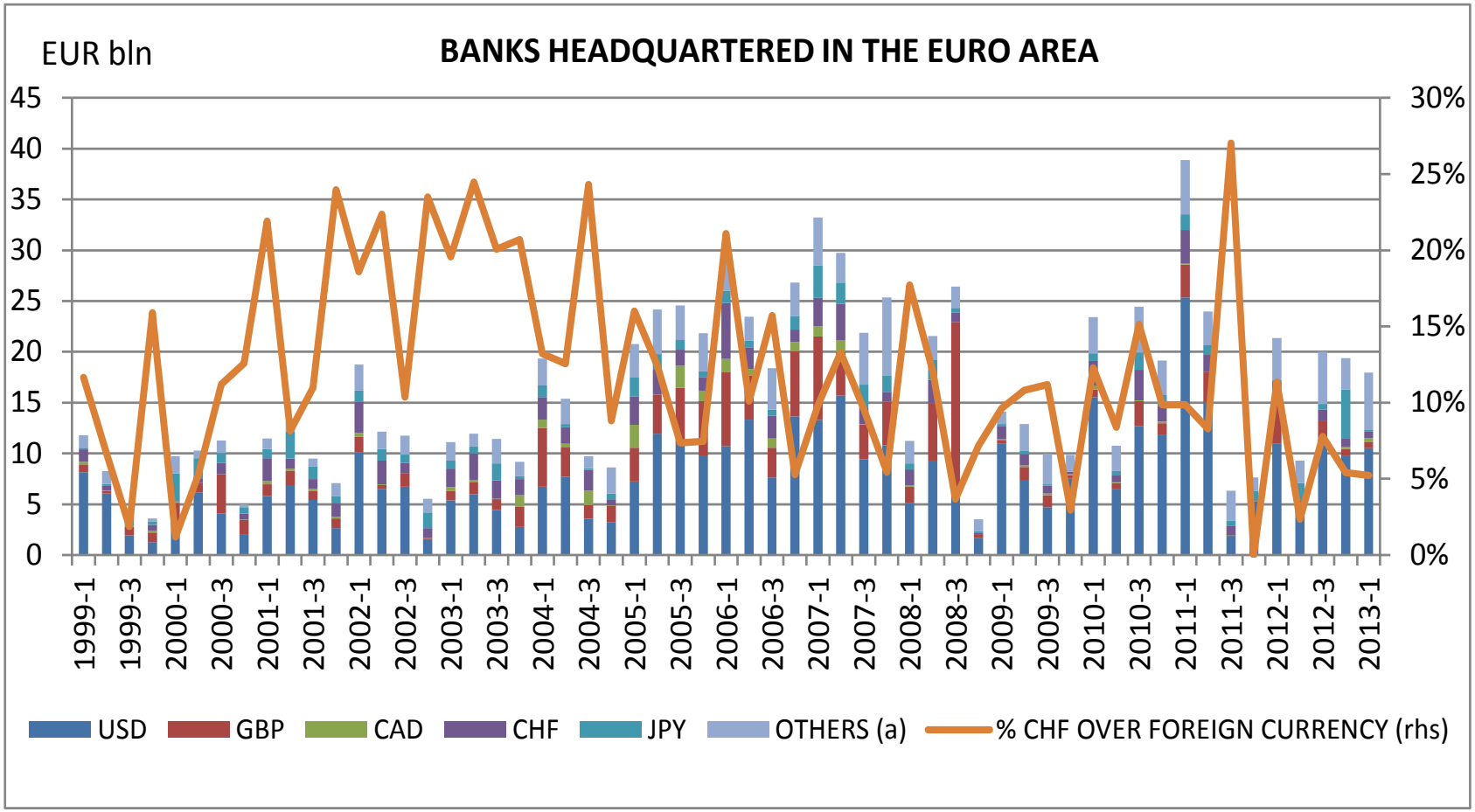
4. Empirical experiment



4. Empirical experiment: currency swap markets, CIP.

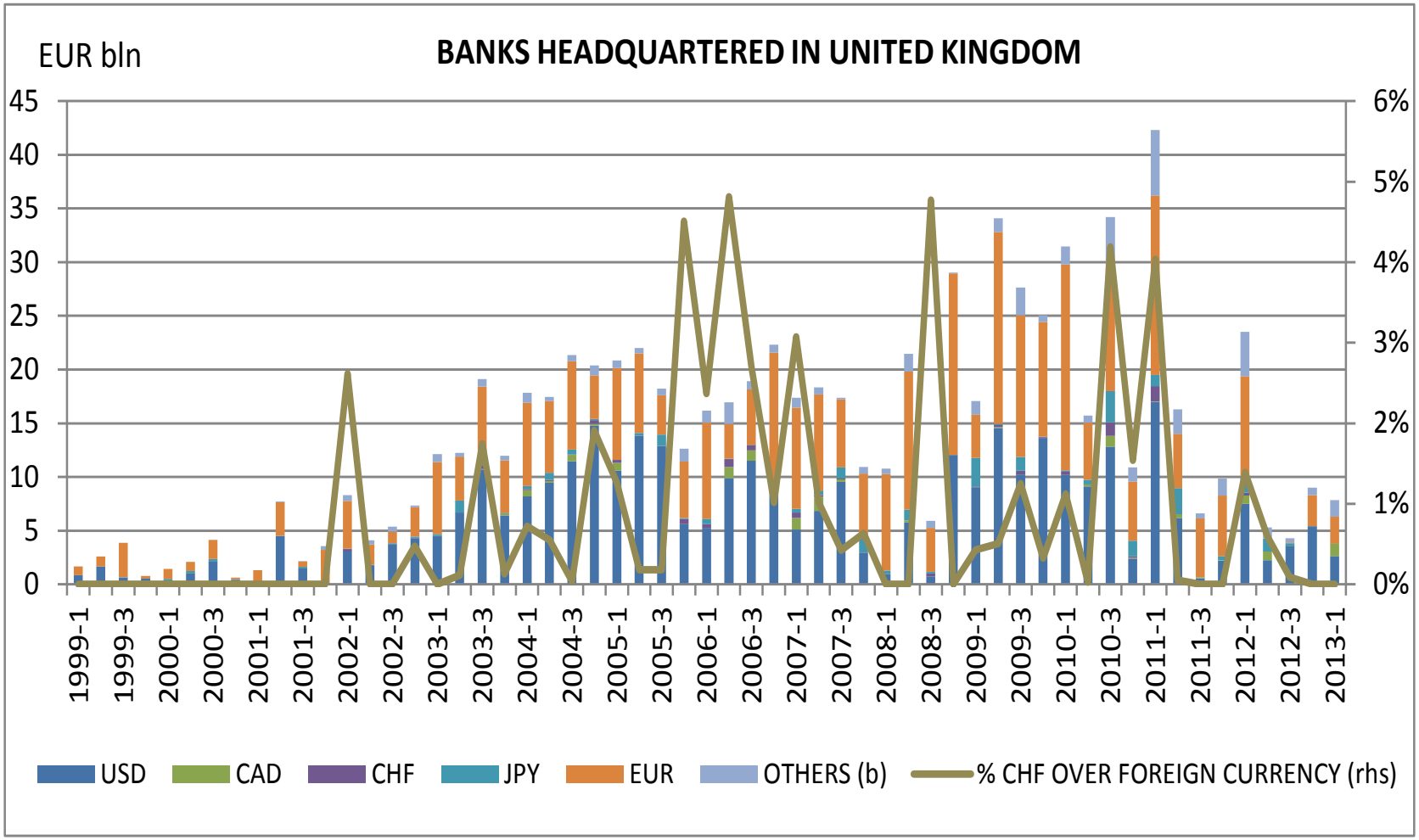
- Ivashina, Sharfstein and Stein (QJE, 2015):
  - Very nice paper that links USD lending and borrowing, frictions in currency swap markets and violations of CIP.
  - Fed swap lines to ECB reduced burden on currency swap markets for generating synthetic USD funding for euro area banks.
- Bacchetta and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



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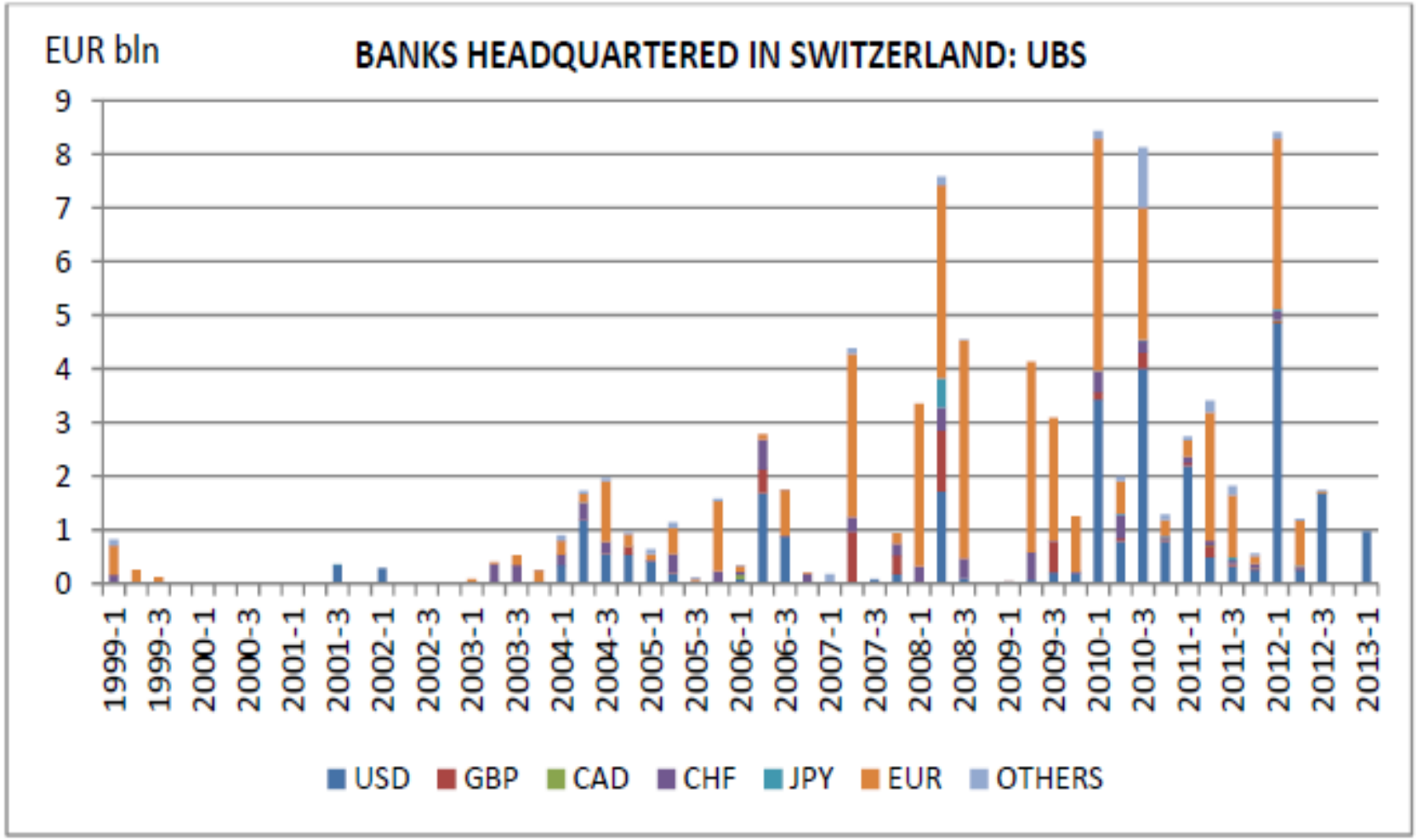

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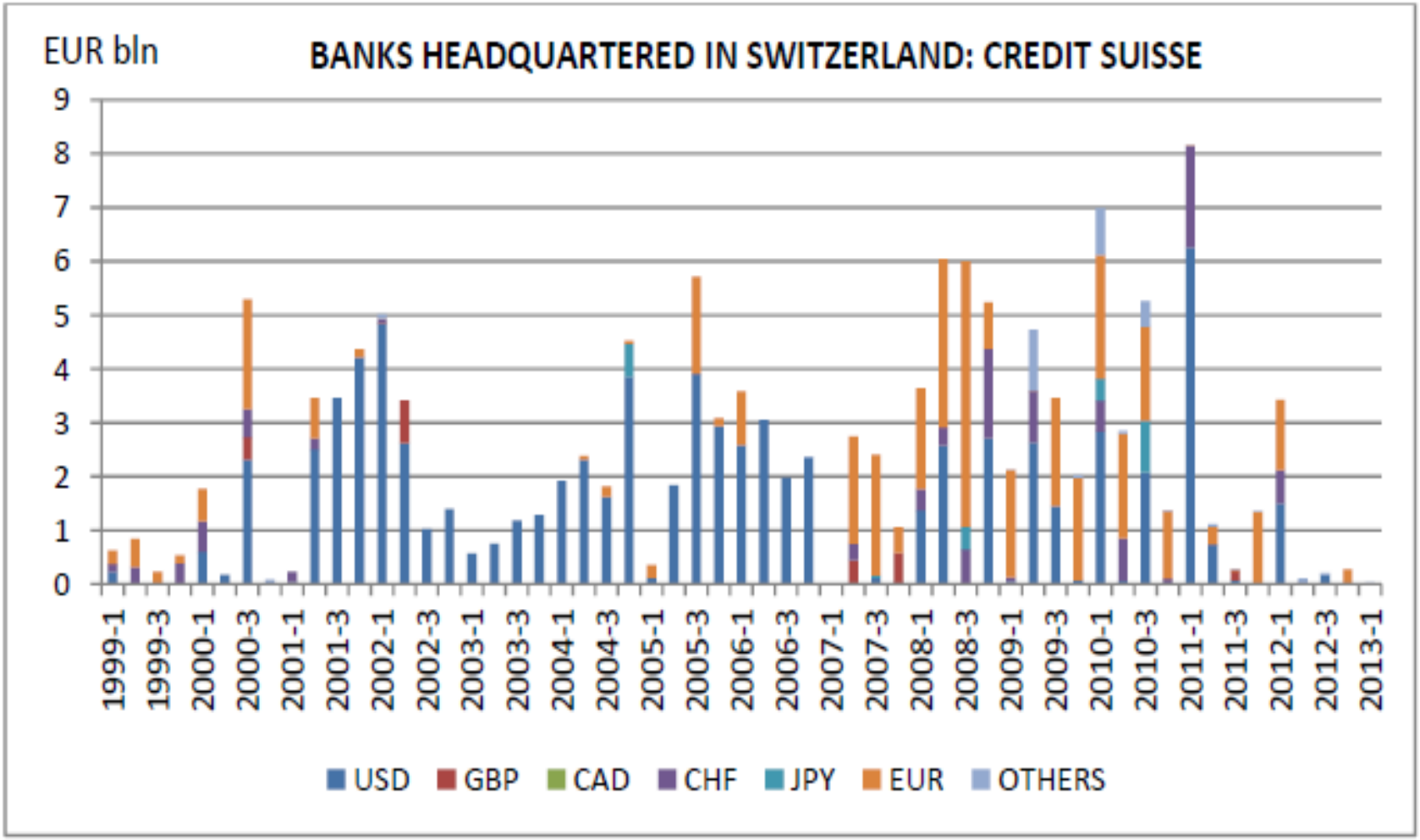


6. Conclusions

- 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

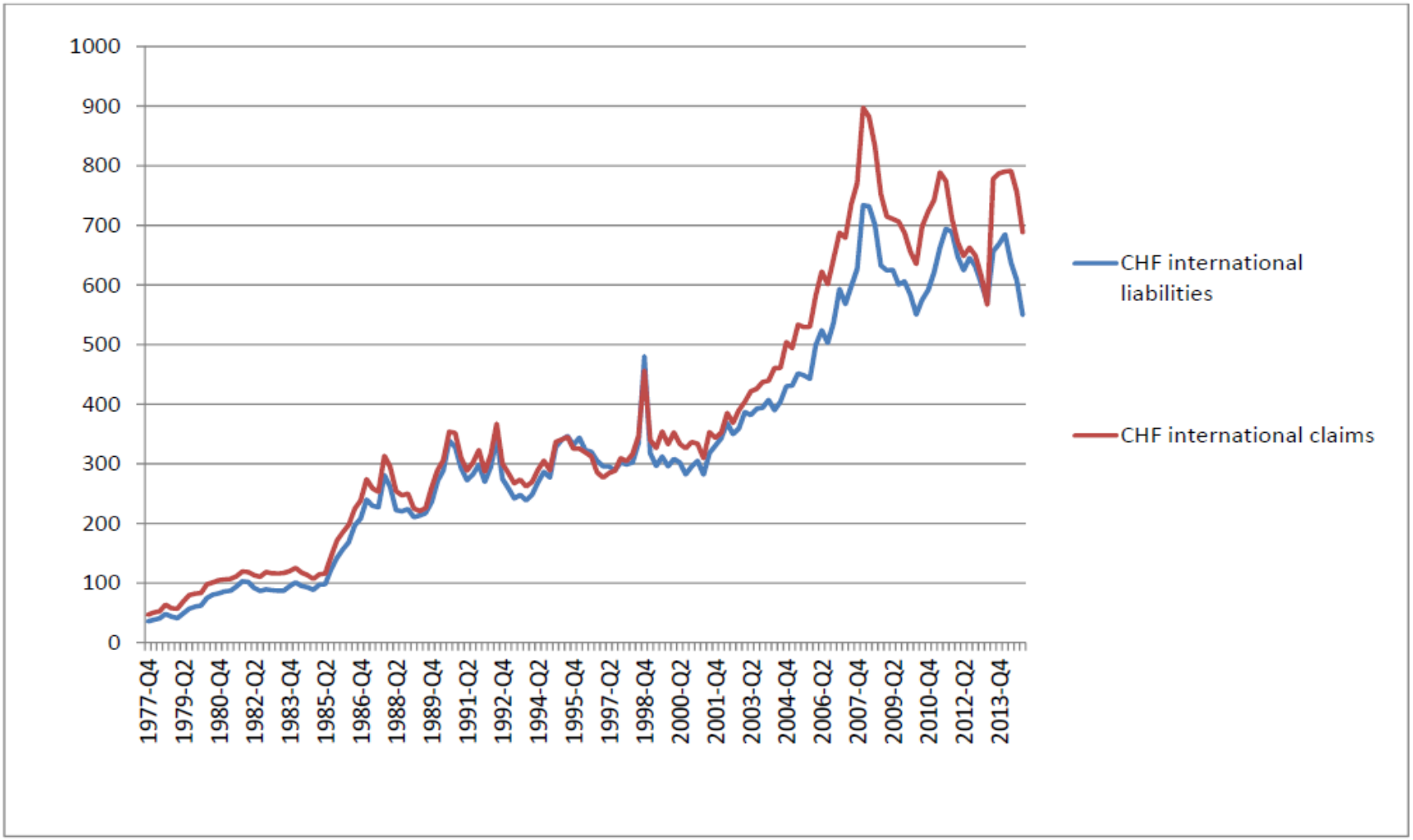
  ⇒ at a minimum use robustness tests incorporating covered cost savings

Annex

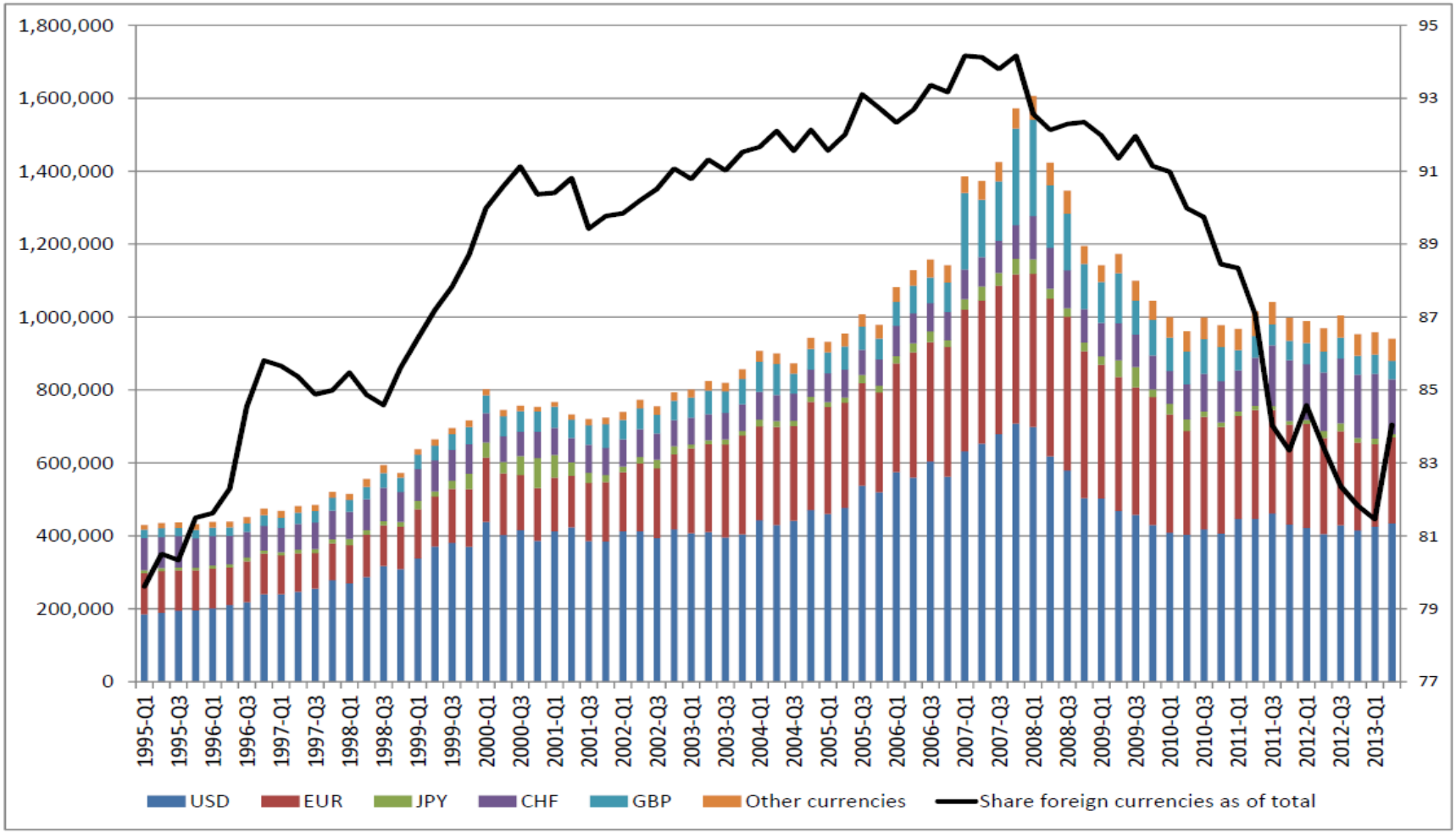
BIS international banking statistics

- 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

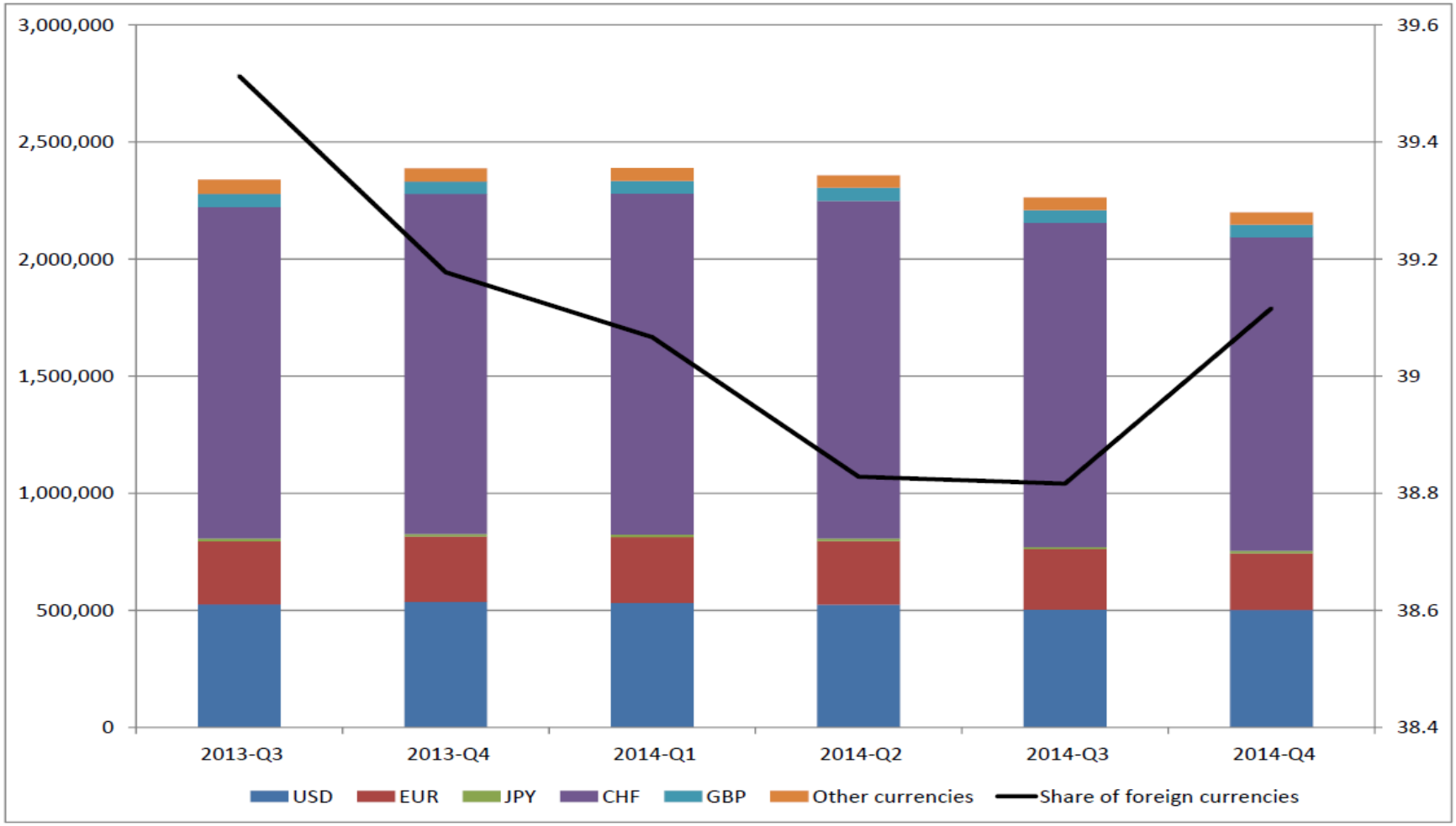
Total international claims and liabilities in CHF (amounts outstanding, all reporting banks)



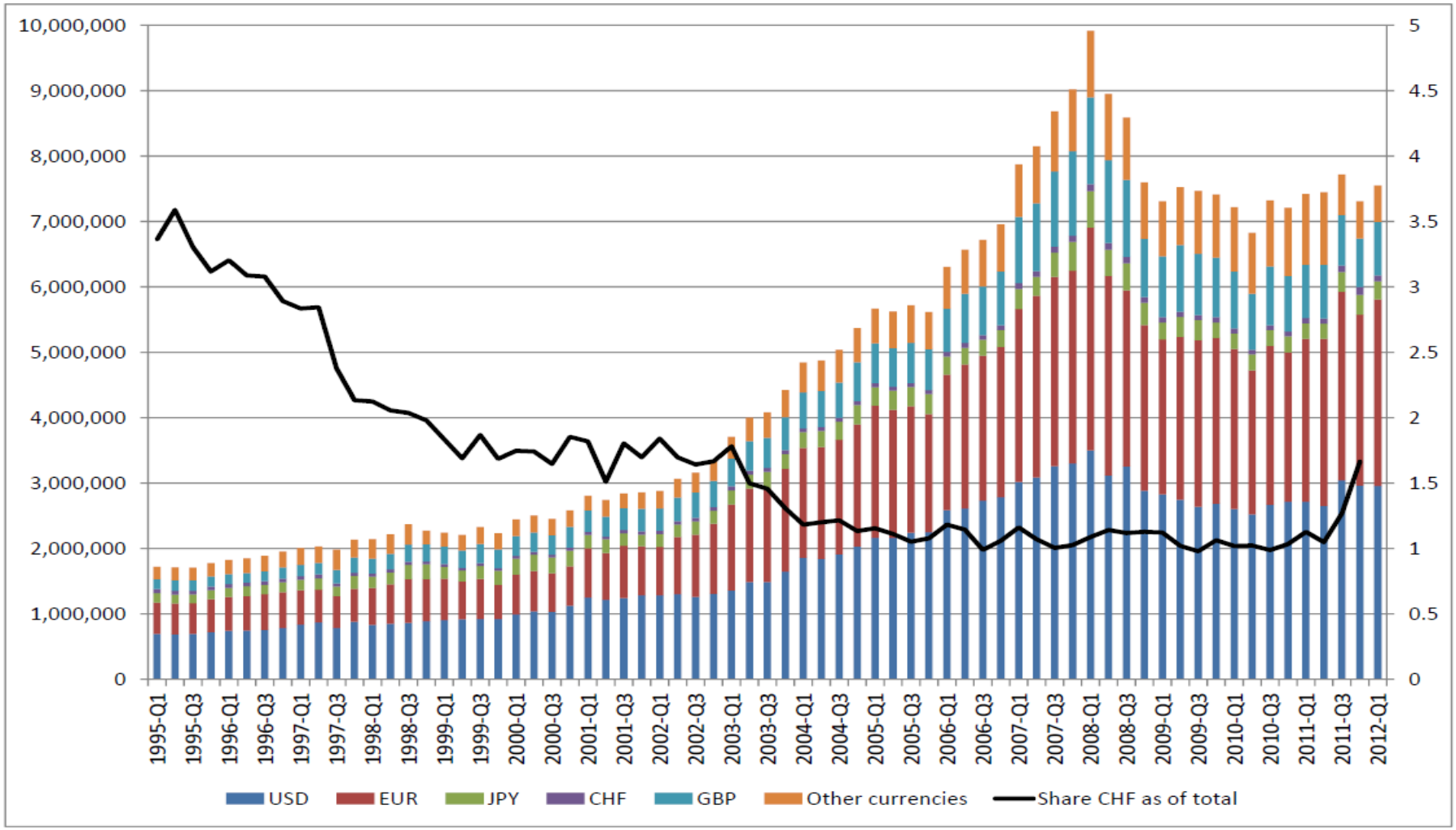
International liabilities banks in Switzerland (amounts outstanding, currency composition)



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)