



Financial corporations and interest rates

Sectors' interest rates sensitivity, FISIM

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Interest rates relate financial and non-financial accounts

- Interest rates flows (receipts and payments) are part of the production account and allocation of primary income account
- But they are derived from the debt instruments in the financial balance sheets
- We look in this presentation at two issues :
- Interest rates sensitivity of sectors as a channel of monetary transmission
- Interest rates services as a measure of financial corporation' output

I) Interest rates sensitivity of sectors

Bank interest rates as main vector of monetary transmission

- How sectors react to change in policy rates is one major channel of monetary policy transmission
- One aspect is the pass-through of policy rates to bank retail rates and market rates (short-term and long-term)
- The second aspect is the pass-through for changes in market /bank rates to interest payments/receipts of sectors
- This is the second aspect which is addressed here.

“For households, there is evidence that it will take longer for policy changes to pass through to interest burdens in this tightening cycle, as a higher share of households have fixed-rate mortgages than in the mid-2000s.” Speech Christine Lagarde, 27 June 2023

Impact of change in interest rates on interest payments/receipts

- The change in interest rates (say short-term or long-term term loans) will impact interest payments/receipts of sectors as follows:
 - * The stock of loans at short maturity (below 1 year)
 - * The new issuance of long-term loans at fixed interest rates
 - * The stock of long-term loans at variable rates (i.e. at floating rates or initial rate fixation below 1 year)

Impact of change in interest rates on interest payments/receipts

- New issuance of loans above 1 year represent gross flows, or new business*. Flows in financial account or monetary data are net flows or transactions (new issuance minus reimbursements)
- The gross flows of loans above 1 year at fixed rate can be extracted from series of new business on loans above 1 year in MFI interest rates statistics (MIR)
- These statistics are detailed in the four next slides

**New business is defined as any new agreement between a household or non-financial corporation and the bank. New agreements comprise all financial contracts the terms and conditions of which specify the interest rate on the deposit or loan for the first time, and all new negotiations of existing deposits and loans.*

Focus on MIR Statistics

- Regulation ECB/2013/34
- MIR statistics provide detailed information of bank lending and deposit rates on new business and outstanding amounts
- MIR statistics on new business on deposits/loans split by instrument/amount/initial rate fixation.
- MIR statistics on outstanding amounts of deposits/loans split by instrument/amount/initial maturity
- New business corresponds to total amount (stock) for overnight deposits, deposits redeemable at notice, overdraft, credit card and revolving loans

Focus on MIR Statistics

MIR on outstanding amounts

■ Deposits

Households (“HH”): overnight, with agreed maturity (up to 1, 1-2, over 2 years, redeemable at notice (up to 3 months, over 3 months)

Non-financial corporations (“NFC”): overnight, with agreed maturity (up to 1, 1-2, over 2 years)

■ Loans

HH : revolving loans and overdrafts ; extended credit card credit ; for house purchase (up to 1, 1-5, over 5 years) ; for consumption (up to 1, 1-5, over 5 years) ; total (over 1 ; over 2)

NFC (up to 1, 1-5, over 5, over 1, over 2, years)

Focus on MIR Statistics

MIR on new business

■ Deposits

HH: overnight, with agreed maturity (up to 1, 1-2, over 2 years), redeemable at notice (up to 3, over 3 months(notice)

NFC: overnight, with agreed maturity (up to 1, 1-2, over 2 years)

■ Loans

HH: revolving loans and overdrafts ; extended credit card credit ; for house purchase (floating and up to 1, 1-5, 5-10, over 10 years) ; for consumption, for other purposes (both : floating and up to 1, 1-5, over 5 years) ; total (over 1 ; over 2)

NFC: revolving loans and overdrafts ; extended credit card credit;

other loans (up to 0.25 mn/0.25 mn, over 1 mn)...

...with following initial rate fixation bands : floating and up to 3 m, 3 m-1 year, 1-3, 3-5, 5-10, over 10 years)

Focus on MIR Statistics

Additional new business tables:

- New business loans with collateral and/or guarantees : same split for loans on new business without collateral (previous slide) only applying to : consumer loans, loans for house purchase, loans to NFC)
- New business loans to NFC with initial rate of fixation below 1 year and original maturity over 1 year
- - New business renegotiated loans (for consumer, house purchase, and other loans to HH, for NFC)

Impact of change in interest rates on interest payments/receipts

- How to estimate the proportion of instruments above one year bearing variable rates ?
- Using MIR statistics on outstanding amounts does not provide this information (they provide average interest rates by maturity bands, irrespective if loans are at fixed or variable rates)
- One can use the MIR statistics on new business: gross flows of long-term loans at floating rates or initial rate of fixation below 1 year, with an initial maturity over 1 year (directly available for loans to NFC, they are to be partly estimated for HH).
- To estimate the stock of loans at variable rates from the information on the flows of such loans, one can take a long-term average of the latter (based on the average duration of the respective instruments)

Impact of change in interest rates on interest payments/receipts

- Outcome of the calculation for the euro area (2019).

Estimated share of instruments at variable rates:

Housing loans: 22%

Consumer and other loans: 20%

Loans to non-financial corporations: 80%

- To extend the analysis to the whole interest rate bearing balance sheet of the sectors:

Gross issuance, and share of issuance of debt securities floating rates can be extracted from Securities Holding Statistics data in the euro area

Results: impact on interest rates payments/receipts of households

Impact of one-percent rise in interest rates on the net interest payments of households

| Financial balance sheet (Bn) | | | 1 year | 2 years | 3 years | Long term |
|---|------------------|------------------|-----------|-----------|-----------|-----------|
| | Amount (2018 Q2) | Maturity (years) | | | | |
| Interest-bearing assets | | | 28 | 30 | 33 | 39 |
| Short-term deposits | 397 | | 4,0 | 4,0 | 4,0 | 4,0 |
| Long-term desposits | 858 | 4,5 | 1,9 | 3,8 | 5,7 | 8,6 |
| Saving deposits | 2095 | | 21,0 | 21,0 | 21,0 | 21,0 |
| Short-term debt securities | 26 | | 0,3 | 0,3 | 0,3 | 0,3 |
| Long-term debt securities (floating rates) | 114 | 4,0 | 0,3 | 0,3 | 0,3 | 0,3 |
| Long-term debt securities (fixed rates) | 455 | 7,7 | 0,6 | 1,2 | 1,8 | 4,6 |
| Interest-bearing liabilities | | | 22 | 29 | 35 | 57 |
| Short-term loans | 238 | 1,0 | 2,4 | 2,4 | 2,4 | 2,4 |
| Long-term consumer loans and other loans (floating) | 233 | | 2,3 | 2,3 | 2,3 | 2,3 |
| Long-term housing loans (floating) | 1065 | | 10,7 | 10,7 | 10,7 | 10,7 |
| Long-term consumer loans and other loans (fixed) | 933 | 4,5 | 2,1 | 4,1 | 6,2 | 9,3 |
| Housing loans (fixed) | 3195 | 7,0 | 4,6 | 9,1 | 13,7 | 32,0 |

Sources : MFI balance sheet, financial accounts, MIR statistics, securities issues statistics ("SIS"), ECB, Eurostat. The share of floating rates instruments is estimated based on gross flows (MIR statistics, SIS statistics). The maturity is estimated based on gross flows.

Results: impact on interest rates payments/receipts of non-financial corporations

| Impact of one-percent rise in interest rates on the net interest payments of non-financial corporations | | | | | | |
|---|------------------|------------------|-----------|-----------|-----------|-----------|
| Financial balance sheet (Bn) | | | 1 year | 2 years | 3 years | Long term |
| | Amount (2018 Q2) | Maturity (years) | 11 | 14 | 16 | 26 |
| Interest-bearing assets | | | | | | |
| Short-term deposits | 228 | | 2,3 | 2,3 | 2,3 | 2,3 |
| Long-term desposits | 171 | 2,5 | 0,7 | 1,4 | 2,1 | 1,7 |
| Saving deposits | 159 | | 1,6 | 1,6 | 1,6 | 1,6 |
| Short-term debt securities | 29 | | 0,3 | 0,3 | 0,3 | 0,3 |
| Long-term debt securities (floating rates) | 400 | 3,8 | 4,0 | 4,0 | 4,0 | 4,0 |
| Long-term debt securities (fixed rates) | 1598 | 7,9 | 2,0 | 4,0 | 6,1 | 16,0 |
| Interest-bearing liabilities | | | 42 | 47 | 48 | 56 |
| Short-term loans | 916 | | 9,2 | 9,2 | 9,2 | 9,2 |
| Long-term loans a floating rates | 2612 | | 26,1 | 26,1 | 26,1 | 26,1 |
| Long-term loans at fixed rates | 653 | 2,0 | 3,3 | 6,5 | 6,5 | 6,5 |
| Short-term debt securities | 82 | | 0,8 | 0,8 | 0,8 | 0,8 |
| Long-term debt securities at floating rates | 138 | 5,3 | 1,4 | 1,4 | 1,4 | 1,4 |
| Long-term debt securities at fixed rates | 1242 | 8,3 | 1,5 | 3,0 | 4,5 | 12,4 |

Sources : MFI balance sheet, financial accounts, MIR statistics, securities issues statistics ("SIS"), ECB, Eurostat. The share of floating rates instruments is estimated based on gross flows (MIR statistics, SIS statistics). The maturity is estimated based on gross flows.

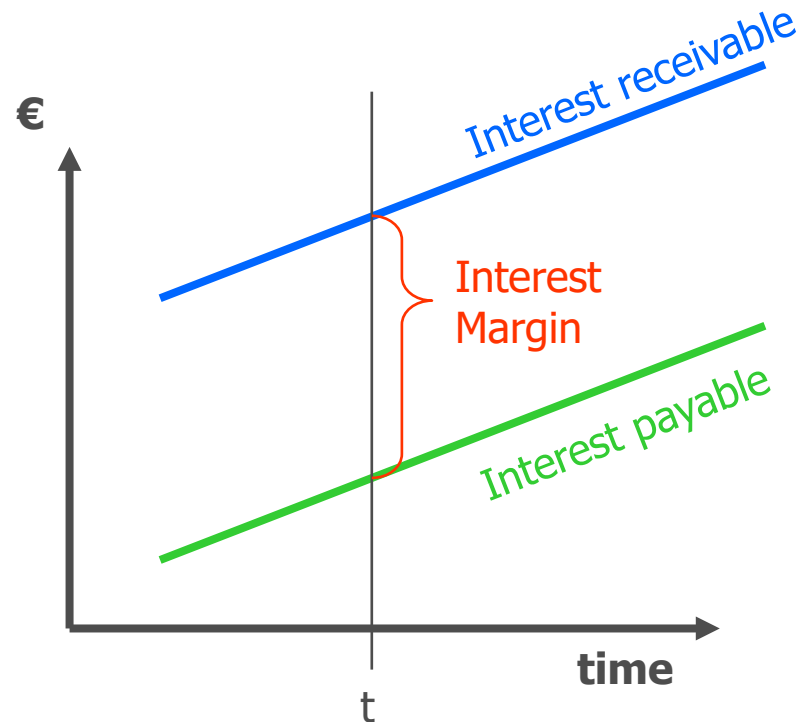
Synthesis

| Impact of a one-percent rise in interest rates on net interest receipts (2019) | | | | |
|---|---------------|----------------|----------------|--------------------------|
| Households (% disp. Income) | 1 year | 2 years | 3 years | Long term (total) |
| Interest income (+) | 0,4% | 0,4% | 0,5% | 0,6% |
| Interest payment (-) | -0,3% | -0,4% | -0,5% | -0,8% |
| Balance | 0,1% | 0,0% | 0,0% | -0,3% |
| Non-financial corporations (% gross operating surplus) | 1 an | 2 ans | 3 ans | Long-term (Total) |
| Interest income (+) | 0,4% | 0,5% | 0,7% | 1,0% |
| Interest payment (-) | -1,7% | -1,9% | -1,9% | -2,3% |
| Balance | -1,3% | -1,3% | -1,3% | -1,2% |

II) The financial intermediation services indirectly measured (FISIM)

What is FISIM and how is it measured

- The measurement of output of a market producer is based on price or fee for which its service is sold.
- Financial intermediaries (FIs) explicitly charge commissions and fees to their customers.



- But FIs also provide services which are charged implicitly via interest margin. They pay lower rates of interest (**interest payable**) to those that lend them money and charge higher rates of interest (**interest receivable**) to those who borrow from them. In this situation, the National Accounts must use an indirect measure of output, called FISIM.

Calculation of FISIM

- The measurement applies only to loans provided, or deposits taken by deposit taking corporations (S122) and other financial intermediaries (S125) from other sectors: S11, other S12, S13, S14, S15
- Financial institutions producing FISIM and sectors consuming FISIM may be non-residents: you may have import or export of FISIM
- No FISIM for loans/deposits between the above financial institutions (S122 and S125)
- FISIM on loans is calculated based on the difference between interest rates on loans minus a reference rate
- FISIM on deposits is calculated based on the difference between the reference rate and the interest rate on deposits

Calculation of the internal reference rate

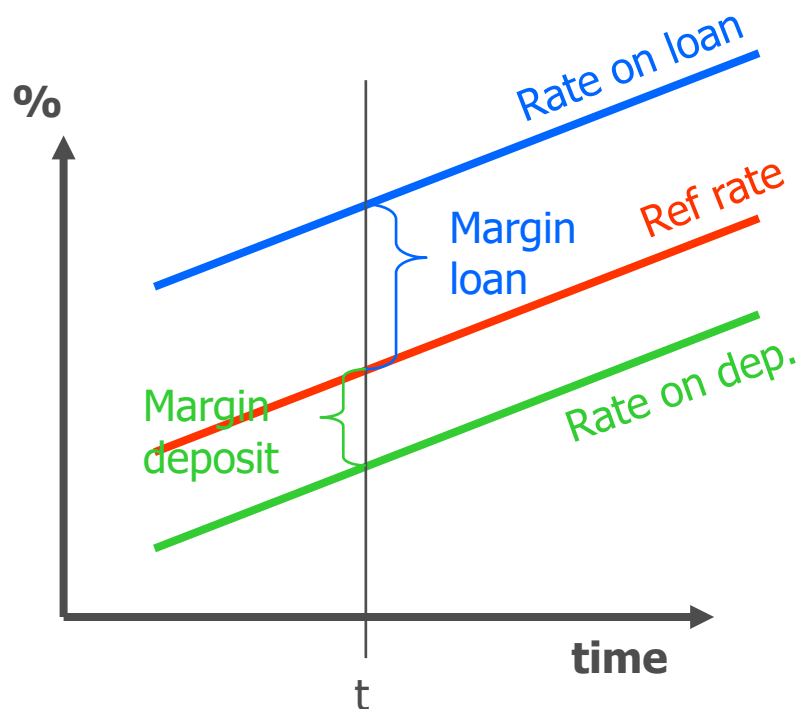
Internal reference rate =

- $$\frac{\text{Interest receivable on loans within and between S.122 and S.125}}{\text{Stock of loans within and between S.122 and S125}}$$
- With S 122: Banks; S 125: Other financial intermediaries except insurance and pension funds
- A similar calculation can be based on deposits within and between S122 and S125
- In principle the two should be the same. In practice they are not for data reasons
- NB. Short-term interbank loans in the SNA are normally not classified as « loans » but as deposits

Calculation of the external reference rate

- For the external reference rate, the stock and related interbank interest refer to the transactions between resident financial institutions («FI») and non-resident FI
- Several reference rates should be calculated for different currencies or groups of currencies

Calculation of FISIM



Reference rate = **2%**

Stock on Loan of **200 €**

Interest receivable by FI of **6.5 %**

So

FISIM on Loan = **200 € x (6.5% - 2%) = 9 €**

Stock of Deposit of **200 €**

Interest payable by FI of **1.5 %**

So

FISIM on Deposit = **200 € x (2% - 1.5%) = 1 €**

Total FISIM output = **10 €**

Treatment of FISIM output

ESA 2010 (chapter 14): FISIM output is allocated among the various users of the services, namely intermediate consumption of enterprises, final consumption of households, and exports.

The level of GDP is affected if FISIM is used for final consumption or export or intermediate consumption of non-market producers (GG and NPISH for which intermediate consumption enters output).

FISIM allocation: in the Sector Accounts, household sector (correction to the interest figures in the figures before FISIM)



Production Account

| | U | R |
|-----|----|---|
| P.1 | | |
| P.2 | 5 | |
| B.1 | -5 | |

FISIM for Intermediate Consumption

| | Actual Rate | Ref. rate | Stocks | FISIM |
|--------------------|-------------|-----------|--------|----------|
| FISIM L | 6% | 2% | 100 | 4 |
| FISIM D | 1.0% | 2% | 100 | 1 |
| Total FISIM | | | | 5 |

Generation of Income

| | U | R |
|---------|----|----|
| B.1 | | -5 |
| B.2+B.3 | -5 | |

FISIM for Final Consumption

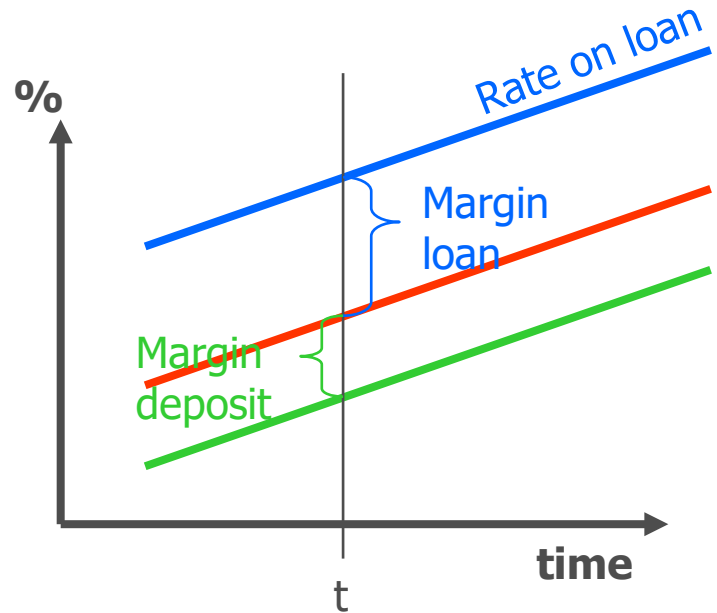
| | Actual Rate | Ref. rate | Stocks | FISIM |
|--------------------|-------------|-----------|--------|-----------|
| FISIM L | 6.5% | 2% | 200 | 9 |
| FISIM D | 1.5% | 2% | 200 | 1 |
| Total FISIM | | | | 10 |

Allocation of Income

| | U | R |
|-----------|-----|----|
| B.2+B.3 | | -5 |
| D.41 paid | -13 | 2 |
| B.5+B.6 | 10 | |

Use of Disp. Income

| | U | R |
|---------|----|----|
| B.5+B.6 | | 10 |
| P.3 | 10 | |
| B.8 | 0 | |



FISIM allocation: by sectors

S123-4
S126-9

S122
S125

| Description | Uses | | | | | | | Resources | | | | | | |
|-----------------------------------|----------------------------|------------------------|--------------------|------------|-------|------------------------|-------------------|-------------------|------------------------|----------------------------|------------------------|--------------------|------------|-------|
| | S11 | S12 | S13 | S14 | S15 | S1 | S2 | S2 | S1 | S11 | S12 | S13 | S14 | S15 |
| | Non Financial Corporations | Financial Corporations | General Government | Households | NPISH | Total Domestic Economy | Rest of the World | Rest of the World | Total Domestic Economy | Non Financial Corporations | Financial Corporations | General Government | Households | NPISH |
| Output | | | | | | | | | | | | | | |
| Production of FISIM | | | | | | | | | 57 | 0 | 48 | 6 | 0 | 3 |
| Intermediate Consumption | 18 | 4 | 6 | 5 | 3 | 36 | | 48 | | 48 | | | | |
| Intermediate Consumption of FISIM | 18 | 4 | 6 | 5 | 3 | 36 | | | | | | | | |
| Final Consumption Expenditure | | 6 | 10 | 3 | 19 | | | | | | | | | |
| Final Consumption of FISIM | | | 10 | 10 | | | | | | | | | | |
| Exports of Goods and Services | | | | | | | 4 | | | | | | | |
| Exported FISIM | | | | | | | 4 | | | | | | | |
| Imports of Goods and Services | | | | | | | | 2 | | | | | | |
| Imported FISIM | | | | | | | | 2 | | | | | | |

S13 and S15 consume their own output

SUM of costs

| | | | | |
|--------------------------------------|-------|----|----|-------|
| FISIM Uses/Res. balance | U | 50 | 50 | R |
| FISIM GDP E and GDP P balance | GDP E | 12 | 12 | GDP P |
| Uses/Res. balance | U | 59 | 59 | R |
| GDP E and GDP P balance | GDP E | 21 | 21 | GDP P |

Exercise: calculation and allocation of FISIM in practice

To calculate FISIM output and allocate it into user sectors, we need:

- Matrix of stocks of **deposits** / **loans** of FIs by sectors
- Matrix of interest **paid** / **received** by FIs to/from sectors

Exercise

INTEREST

Uses

| | | S11 | S12 | S14 |
|-----------|-----|-----|-----|-----|
| Resources | S11 | 0 | 12 | 0 |
| | S12 | 150 | 30 | 0 |
| | S14 | 0 | 48 | 0 |

STOCKS

Liabilities

| | | S11 | S12 | S14 |
|--------|-----|------|------|-----|
| Assets | S11 | 0 | 600 | 0 |
| | S12 | 3000 | 1000 | 0 |
| | S14 | 0 | 2400 | 0 |

Exercise

- Calculate the Reference Rate
- Calculate FISIM on loans
- Calculate FISIM on deposits

Negative FISIM on loans in 2022 in some countries

- Inversion of the yield curve in 2022
- Negative FISIM reported in some countries: FISIM on loans turning negative but usually compensated by positive FISIM on deposits
- Smoothing reference rate to avoid occurrence not allowed in ESA 2010
- Revisiting the calculation of the reference rate, taking account of the maturity of funding ?
- However, negative FISIM is a temporary anomaly



Thank you



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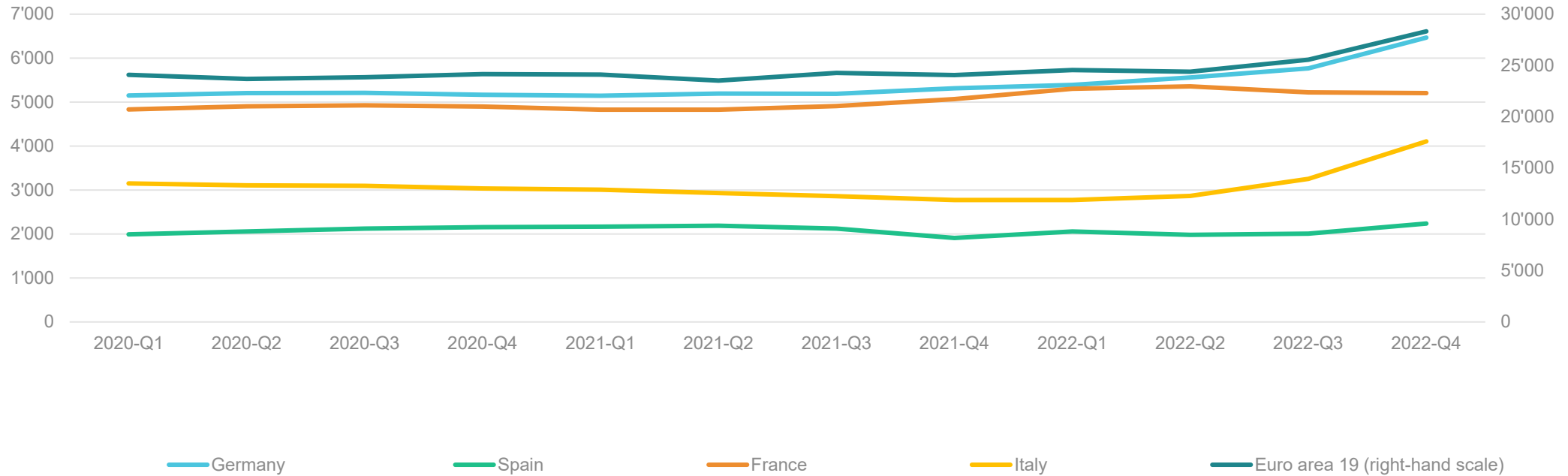
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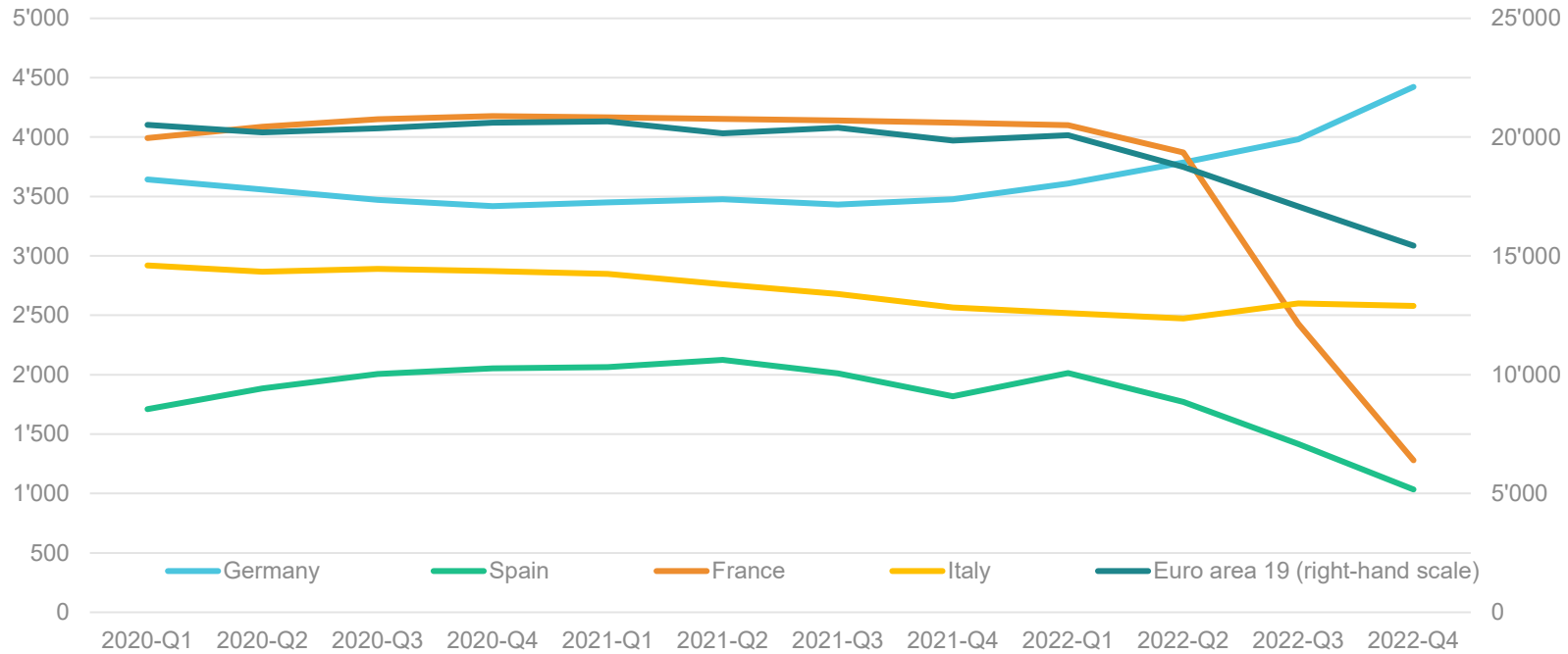
Annex

FISIM NFC Total

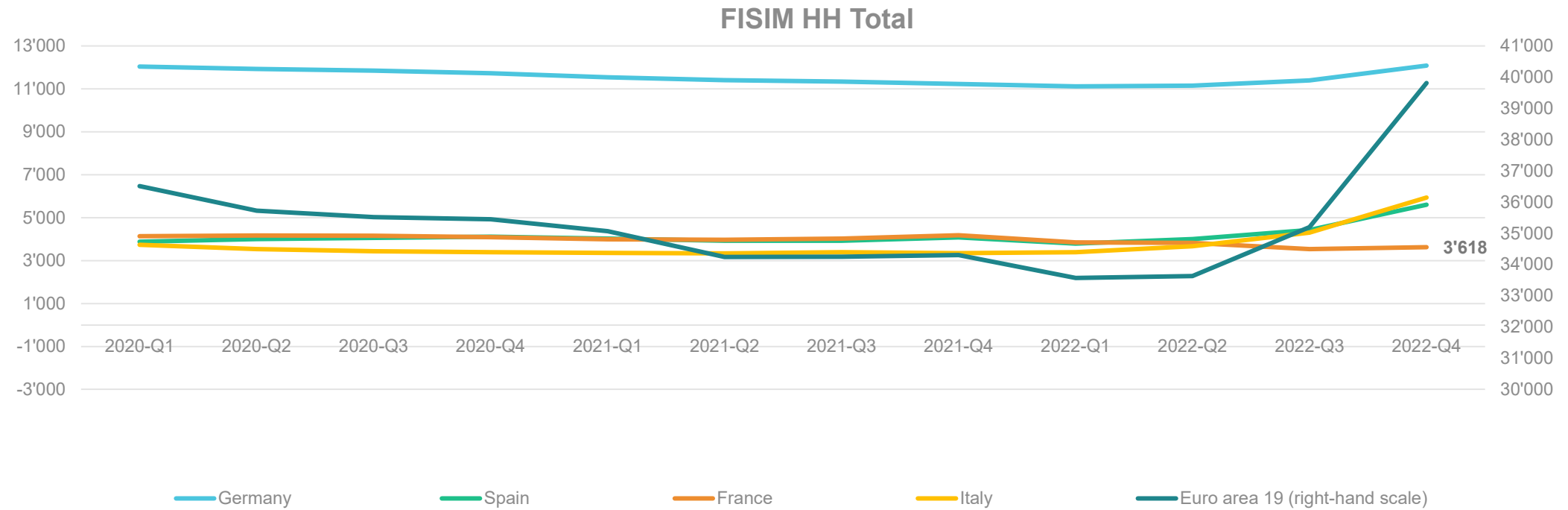


Annex

FISIM NFC loans



Annex



Annex

FISIM HH loans

