

# International Monetary Policy Spillovers: Evidence from France and Italy

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# Motivation and research question

- French and Italian banks are highly connected to foreign banking systems
- *Research question:* To what extent do French and Italian banks adjust domestic lending in response to US, JP and UK monetary policy changes?
- Exploration of the existence of an international version of the bank lending and portfolio rebalancing channel
- Concentration on differential effects stemming from the currency denomination of loans

# Outline

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2. France
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  3. Evidence on the portfolio rebalancing channel
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  1. Stylized facts
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  3. Evidence on the portfolio rebalancing channel
  4. Next steps
4. Concluding remarks

# Methodology

- Basic regression:

$$\Delta Y_{b,t} = \alpha_0 + \sum_{k=0}^K \left( \sum_{ctry} \alpha_{1,k}^{ctry} \cdot \Delta MP_{t-k}^{ctry} \right) + \alpha_2 X_{b,t-1} + f_b + Z_t^{Italy/France} + \varepsilon_{b,t} \quad (1)$$

- Identification of a bank-specific supply shock:

$$\begin{aligned} \Delta Y_{b,t} = & \alpha_0 + \sum_{k=0}^K \left( \sum_{ctry} \alpha_{1,k}^{ctry} \cdot \Delta MP_{t-k}^{ctry} \cdot Channel_{b,t-k-1}^{ctry} \right) + \sum_{ctry} \alpha_2^{ctry} Channel_{b,t-k-1}^{ctry} \\ & + \alpha_3 X_{b,t-1} + f_b + \eta_t + \varepsilon_{b,t} \end{aligned} \quad (2)$$

# Bank-specific supply shocks

- Bank-lending channel (Bernanke and Blinder (1988), Kashyap and Stein, 1994) in its international version:
  - US monetary policy tightening
  - Reduction of cross-border loans to France/Italy
  - Banks resident in France/Italy decrease lending
  - Channel variable: Liabilities (deposits) from the US to capture dependence on funding from US
  - Measure of monetary policy: Shadow rate
  
- Portfolio rebalancing channel:
  - US engages in QE → French/Italian banks sell securities to Fed
  - Shortage of securities results in higher prices
  - French/Italian banks expand lending as relative price is lower
  - Channel variable: Assets vis-à-vis US / securities holdings
  - Measure of monetary policy: Central bank balance sheet size

# Data

- Bank-level data collected by the Banque de France and the Autorité de Contrôle Prudentiel et de Résolution and the Bank of Italy in its Supervisory and Statistical Reports
- Data on assets and liabilities disaggregated by residence of counterparty and currency denomination are collected for the construction of the Locational banking statistics (BIS)
- Monetary policy data: IBRN
- Country-level measures of economic and financial activity: BIS
- Time period: 2000Q1 – 2015Q4

# Stylized facts – France

- Highly concentrated banking system
  - 2015: six largest banking groups made up 83% of banks' assets and 91% of lending (ACPR, 2017)
  - All six major banking groups are
  - Four out of six major banking groups are categorized as G-SIBs
- Saturated domestic market and expansion into international markets since 2000s
- French retail banking market is dominated by universal banks
- GFC: French banks performed rather well due to the stability of the domestic market

# Sample – France

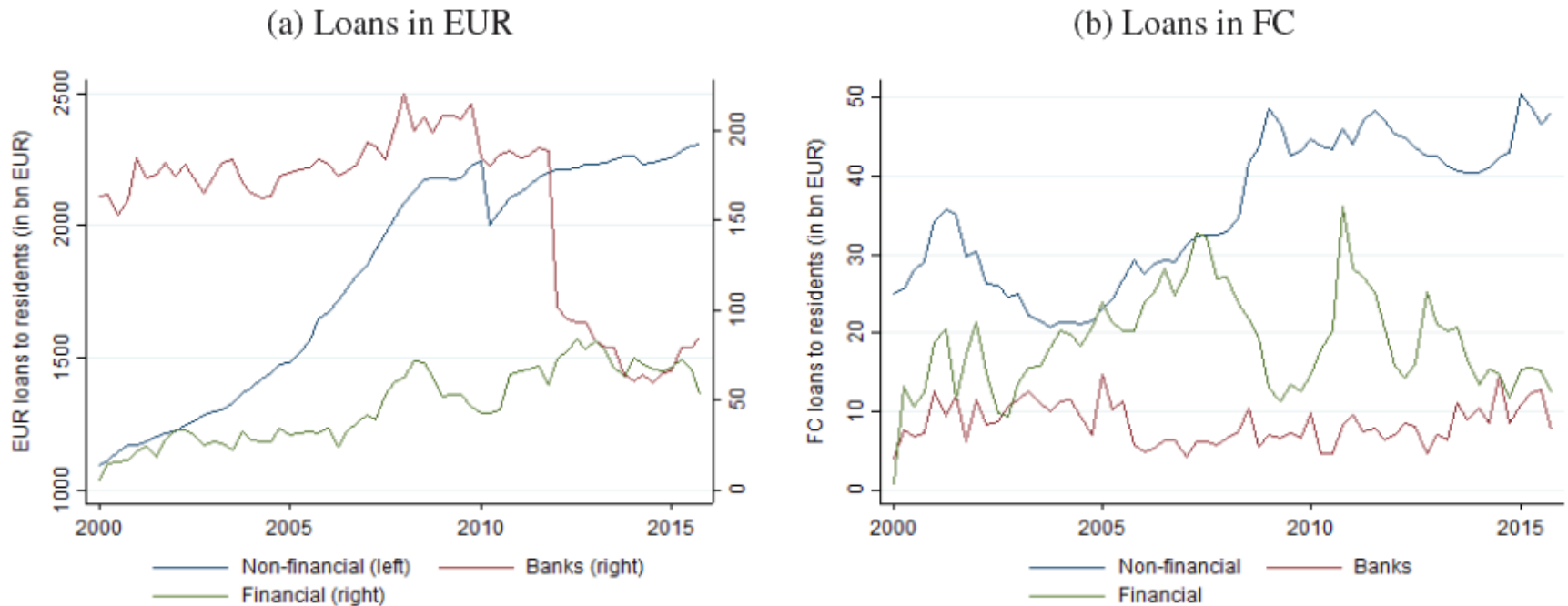
Table 1: France - Summary statistics

|  | Obs.   | Mean  | Sd    | Min  | Max     |
|--|--------|-------|-------|------|---------|
| Total assets (bn EUR)                                      | 53 990 | 8.58  | 53.01 | 0.00 | 1152.93 |
| Loans/assets   | 53 988 | 40.86 | 33.40 | 0.00 | 100.00  |
| Loans to non-fin. sector/total loans                       | 52 338 | 54.64 | 42.77 | 0.00 | 100.00  |
| Loans to resident non-fin. sector/loans to non-fin. sector | 39 069 | 88.39 | 25.13 | 0.00 | 100.00  |
| FC share of loans to resident non-fin. sector              | 38 797 | 3.14  | 11.78 | 0.00 | 100.00  |
| FC share of loans to non-resident non-fin. sector          | 23 855 | 21.60 | 32.33 | 0.00 | 100.00  |
| Securities/assets  | 53 988 | 10.48 | 20.62 | 0.00 | 99.85   |
| Securities holdings from non-residents/securities          | 28 366 | 12.11 | 25.45 | 0.00 | 100.00  |
| FC share of securities holdings from non-residents         | 13 326 | 16.42 | 30.06 | 0.00 | 100.00  |
| Asset exposure US/total assets                             | 53 987 | 0.48  | 2.81  | 0.00 | 88.46   |
| Asset exposure JP/total assets                             | 53 988 | 0.14  | 1.23  | 0.00 | 56.91   |
| Asset exposure UK/total assets                             | 53 987 | 1.67  | 7.44  | 0.00 | 99.13   |
| Liability exposure US/total assets                         | 53 988 | 0.66  | 3.93  | 0.00 | 81.26   |
| Liability exposure JP/total assets                         | 53 988 | 0.09  | 1.29  | 0.00 | 89.06   |
| Liability exposure UK/total assets                         | 53 977 | 1.98  | 8.53  | 0.00 | 98.05   |

- Restriction to banks with cross-border claims or liabilities  $\geq 1\%$  of total assets and loans of  $\geq 10\%$  to the non-financial sector
- Number of banks: 184
- Observations: about 5,600

# Stylized facts – France (1)

Figure 1: France – Loans to residents split by counterparty



# Stylized facts – France (2)

Figure 2: France – Loans to residents split by type of loan

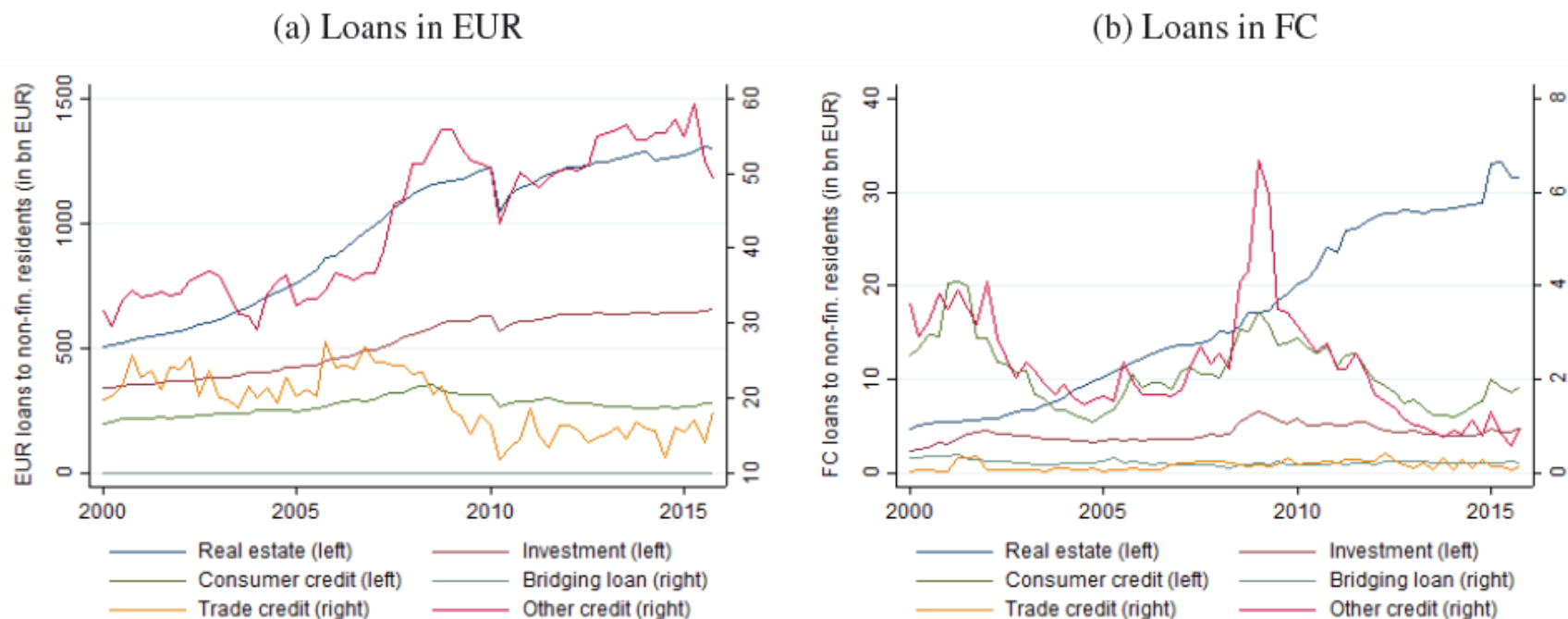
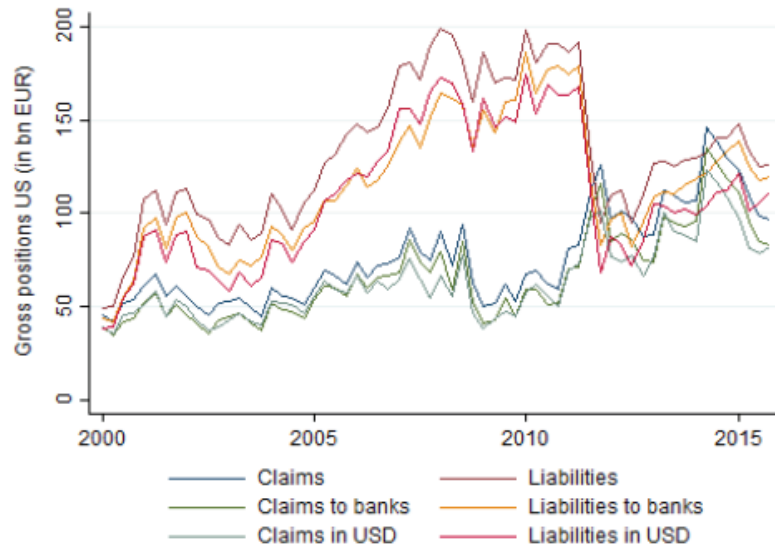
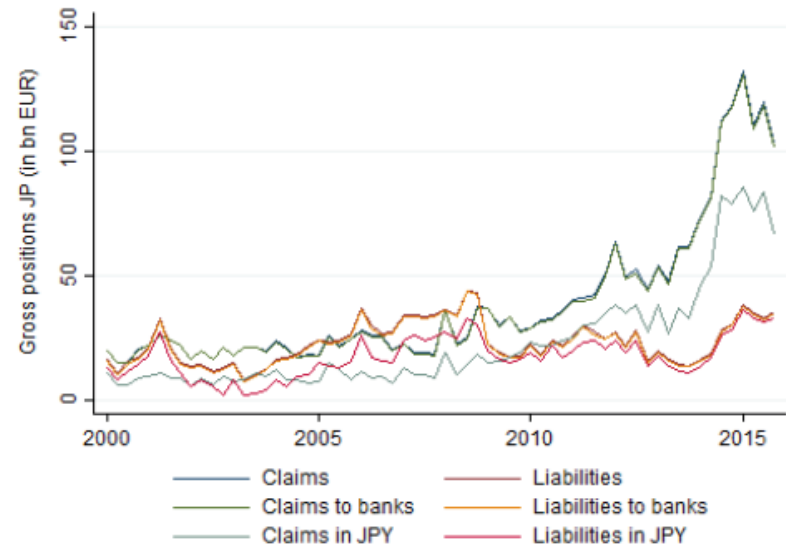


Figure 3: France – Cross-border exposures to US, JP and UK

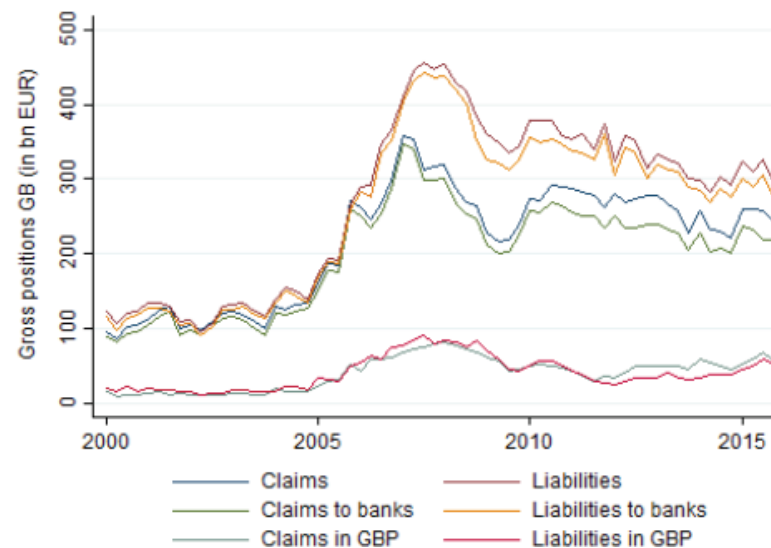
(a) US



(b) JP



(c) UK



# Results – France: Basic regression

- Bank lending channel (MP variable: shadow rate):
  - Positive and significant coefficient for US MP
  - Insignificant coefficients for JP and UK MP
- Portfolio rebalancing channel (MP variable: CB balance sheet size):
  - Insignificant coefficients for US, JP and UK MP

# Results – France: Bank lending channel

(MP: shadow rate)

## LHS: Loans to residents in non-financial sector, by EUR/FC

|                 | Loans to residents in EUR |                               |                                       | Loans to residents in FC |                               |                                       |
|-----------------|---------------------------|-------------------------------|---------------------------------------|--------------------------|-------------------------------|---------------------------------------|
|                 | (1)<br>Ctry liab.         | (2)<br>Ctry liab.<br>to banks | (3)<br>Ctry liab. in<br>ctry currency | (4)<br>Ctry liab.        | (5)<br>Ctry liab.<br>to banks | (6)<br>Ctry liab. in<br>ctry currency |
| Channel × MP US | 0.043<br>[ 0.477]         | 0.081<br>[ 0.765]             | 0.302<br>[ 0.267]                     | -0.645**<br>[ 0.037]     | -1.078***<br>[ 0.004]         | -0.866**<br>[ 0.015]                  |
| Channel × MP JP | -0.757<br>[ 0.113]        | -0.741*<br>[ 0.094]           | -5.938<br>[ 0.183]                    | 0.345<br>[ 0.555]        | 0.223<br>[ 0.709]             | 12.056**<br>[ 0.050]                  |
| Channel × MP UK | 0.018<br>[ 0.500]         | 0.018<br>[ 0.521]             | -0.232<br>[ 0.426]                    | 0.055<br>[ 0.327]        | 0.076<br>[ 0.181]             | 0.411<br>[ 0.434]                     |
| Channel US      | 0.160*<br>[ 0.093]        | 0.317**<br>[ 0.044]           | 0.207<br>[ 0.181]                     | -0.218<br>[ 0.219]       | -0.186<br>[ 0.367]            | -0.329<br>[ 0.119]                    |
| Channel JP      | -0.055<br>[ 0.726]        | -0.070<br>[ 0.655]            | -0.373<br>[ 0.803]                    | -0.326<br>[ 0.176]       | -0.260<br>[ 0.290]            | 3.217<br>[ 0.156]                     |
| Channel UK      | 0.028<br>[ 0.434]         | 0.021<br>[ 0.547]             | 0.348<br>[ 0.301]                     | -0.031<br>[ 0.642]       | 0.026<br>[ 0.655]             | 0.579<br>[ 0.206]                     |
| Observations    | 3685                      | 3685                          | 3685                                  | 2500                     | 2500                          | 2500                                  |
| $R^2$           | 0.13                      | 0.13                          | 0.13                                  | 0.12                     | 0.12                          | 0.12                                  |
| Adjusted $R^2$  | 0.06                      | 0.06                          | 0.06                                  | 0.04                     | 0.04                          | 0.04                                  |
| Number of banks | 185                       | 185                           | 185                                   | 120                      | 120                           | 120                                   |

# Results – France: Bank lending channel

(MP: shadow rate)

## LHS: Loans to resident non-bank sector, by currency

|                         | Loans to residents in USD |                               |                                       | Loans to residents in JPY |                               |                                       | Loans to residents in GBP |                               |                                       |
|-------------------------|---------------------------|-------------------------------|---------------------------------------|---------------------------|-------------------------------|---------------------------------------|---------------------------|-------------------------------|---------------------------------------|
|                         | (1)<br>Ctry liab.         | (2)<br>Ctry liab.<br>to banks | (3)<br>Ctry liab. in<br>ctry currency | (4)<br>Ctry liab.         | (5)<br>Ctry liab.<br>to banks | (6)<br>Ctry liab. in<br>ctry currency | (7)<br>Ctry liab.         | (8)<br>Ctry liab.<br>to banks | (9)<br>Ctry liab. in<br>ctry currency |
| Channel × MP US         | -0.749*                   | -0.970**                      | -1.387***                             | 0.904                     | 1.597                         | 1.891                                 | 0.214                     | 0.365                         | 0.643                                 |
|                         | [0.064]                   | [0.042]                       | [0.008]                               | [0.285]                   | [0.143]                       | [0.140]                               | [0.862]                   | [0.758]                       | [0.618]                               |
| Channel × MP JP         | 1.155                     | 0.904                         | 3.539                                 | 0.693                     | 0.478                         | -1.449                                | 8.962                     | 10.484                        | 7.732                                 |
|                         | [0.315]                   | [0.448]                       | [0.661]                               | [0.617]                   | [0.727]                       | [0.913]                               | [0.344]                   | [0.270]                       | [0.640]                               |
| Channel × MP UK         | -0.004                    | 0.023                         | -0.378                                | -0.051                    | -0.056                        | 0.254                                 | -0.069                    | -0.101                        | -0.023                                |
|                         | [0.962]                   | [0.777]                       | [0.485]                               | [0.537]                   | [0.499]                       | [0.947]                               | [0.503]                   | [0.325]                       | [0.981]                               |
| Channel US              | -0.285                    | 0.042                         | -0.245                                | 0.335                     | 0.679                         | 0.918                                 | 0.178                     | 0.863                         | 0.473                                 |
|                         | [0.288]                   | [0.872]                       | [0.417]                               | [0.573]                   | [0.366]                       | [0.301]                               | [0.820]                   | [0.357]                       | [0.572]                               |
| Channel JP              | -0.754**                  | -0.633**                      | -2.883                                | -0.313                    | -0.247                        | -3.018                                | 2.041                     | 2.605                         | 4.596                                 |
|                         | [0.014]                   | [0.035]                       | [0.341]                               | [0.402]                   | [0.508]                       | [0.528]                               | [0.267]                   | [0.183]                       | [0.342]                               |
| Channel UK              | -0.081                    | 0.009                         | -0.084                                | 0.028                     | 0.051                         | -1.467                                | 0.125                     | 0.220*                        | 0.490                                 |
|                         | [0.518]                   | [0.929]                       | [0.918]                               | [0.829]                   | [0.685]                       | [0.506]                               | [0.393]                   | [0.061]                       | [0.674]                               |
| Observations            | 1614                      | 1614                          | 1614                                  | 782                       | 782                           | 782                                   | 790                       | 790                           | 790                                   |
| R <sup>2</sup>          | 0.13                      | 0.13                          | 0.13                                  | 0.18                      | 0.18                          | 0.17                                  | 0.14                      | 0.15                          | 0.15                                  |
| Adjusted R <sup>2</sup> | 0.03                      | 0.03                          | 0.03                                  | 0.00                      | 0.01                          | -0.01                                 | -0.03                     | -0.03                         | -0.03                                 |
| Number of banks         | 97                        | 97                            | 97                                    | 57                        | 57                            | 57                                    | 66                        | 66                            | 66                                    |

# Results – France: Portfolio channel

(MP: central bank balance sheet assets)

## LHS: Loans to residents in non-financial sector, by EUR/FC

|                 | Loans to residents in EUR |                                    |  | Loans to residents in FC |                                    |  |
|-----------------|---------------------------|------------------------------------|--|--------------------------|------------------------------------|--|
|                 | (1)<br>Ctry assets        | (2)<br>Securities<br>non-residents | (3)<br>Securities in FC<br>non-residents | (4)<br>Ctry assets       | (5)<br>Securities<br>non-residents | (6)<br>Securities in FC<br>non-residents |
| Channel × MP US | 0.064<br>[ 0.726]         | 0.195*<br>[ 0.073]                 | 0.071<br>[ 0.590]                        | −0.180<br>[ 0.548]       | −0.180<br>[ 0.356]                 | −0.434<br>[ 0.249]                       |
| Channel × MP JP | 0.017<br>[ 0.883]         | −0.085<br>[ 0.138]                 | −0.045<br>[ 0.679]                       | 0.206<br>[ 0.344]        | 0.096<br>[ 0.336]                  | 0.335<br>[ 0.315]                        |
| Channel × MP UK | 0.082**<br>[ 0.017]       | −0.159*<br>[ 0.099]                | −0.071<br>[ 0.341]                       | 0.051<br>[ 0.393]        | 0.132<br>[ 0.442]                  | 0.296<br>[ 0.283]                        |
| Channel US      | 0.036<br>[ 0.658]         |                                    |  | 0.194<br>[ 0.310]        |                                    |  |
| Channel JP      | 0.015<br>[ 0.926]         |                                    |  | −0.036<br>[ 0.883]       |                                    |  |
| Channel UK      | −0.101*<br>[ 0.055]       |                                    |  | −0.084<br>[ 0.310]       |                                    |  |
| Channel         |                           | 0.102<br>[ 0.321]                  | 0.140<br>[ 0.368]                        |                          | −0.091<br>[ 0.634]                 | 0.083<br>[ 0.782]                        |
| Observations    | 3647                      | 3263                               | 3396                                     | 2475                     | 2172                               | 2257                                     |
| $R^2$           | 0.13                      | 0.13                               | 0.12                                     | 0.11                     | 0.12                               | 0.12                                     |
| Adjusted $R^2$  | 0.06                      | 0.06                               | 0.05                                     | 0.04                     | 0.04                               | 0.04                                     |
| Number of banks | 184                       | 178                                | 181                                      | 120                      | 113                                | 116                                      |

# Results – France: Portfolio channel

(MP: central bank balance sheet assets)

## LHS: Loans to resident non-bank sector, by currency

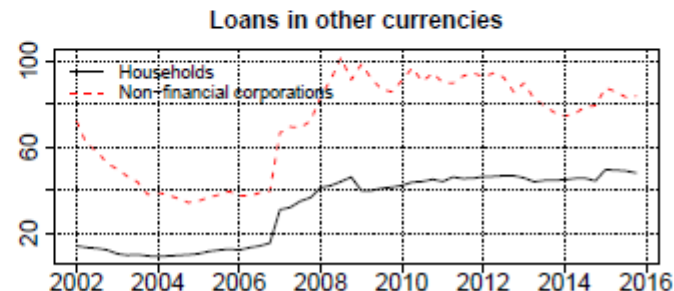
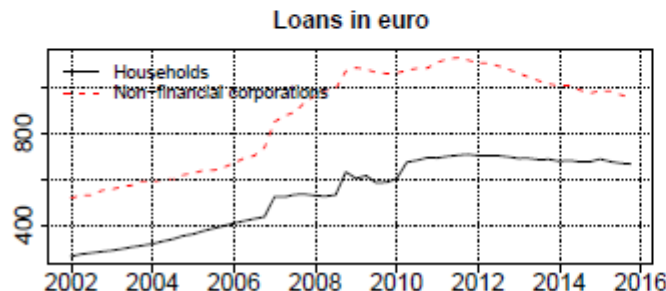
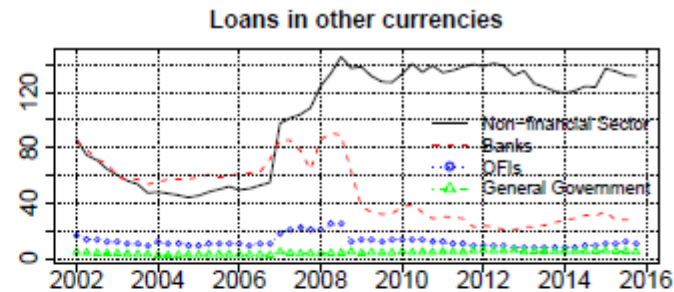
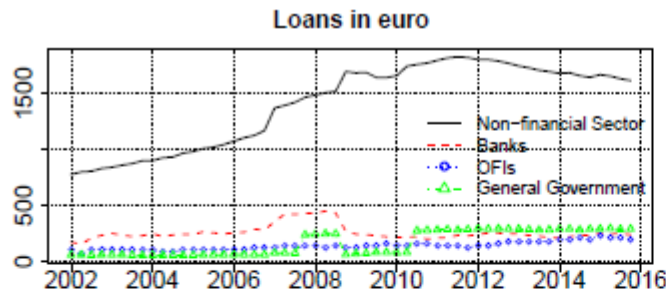
|                         | Loans to residents in USD |                                    |  | Loans to residents in JPY |                                    |  | Loans to residents in GBP |                                    |  |
|-------------------------|---------------------------|------------------------------------|--|---------------------------|------------------------------------|--|---------------------------|------------------------------------|--|
|                         | (1)<br>Ctry assets        | (2)<br>Securities<br>non-residents | (3)<br>Securities in FC<br>non-residents | (4)<br>Ctry assets        | (5)<br>Securities<br>non-residents | (6)<br>Securities in FC<br>non-residents | (7)<br>Ctry assets        | (8)<br>Securities<br>non-residents | (9)<br>Securities in FC<br>non-residents |
| Channel × MP US         | 0.507<br>[ 0.208]         | -0.246<br>[ 0.434]                 | -1.941<br>[ 0.140]                       | -1.043<br>[ 0.180]        | -0.070<br>[ 0.871]                 | -0.980<br>[ 0.261]                       | 0.505<br>[ 0.511]         | 0.659<br>[ 0.172]                  | 0.488<br>[ 0.618]                        |
| Channel × MP JP         | 0.086<br>[ 0.891]         | 0.015<br>[ 0.919]                  | 0.421<br>[ 0.413]                        | 0.965<br>[ 0.453]         | -0.134<br>[ 0.484]                 | -0.006<br>[ 0.992]                       | -0.109<br>[ 0.909]        | -0.299<br>[ 0.258]                 | -1.091<br>[ 0.177]                       |
| Channel × MP UK         | 0.018<br>[ 0.836]         | -0.198<br>[ 0.489]                 | 1.098<br>[ 0.339]                        | 0.211<br>[ 0.220]         | -0.428<br>[ 0.336]                 | -0.096<br>[ 0.866]                       | 0.216<br>[ 0.247]         | -0.734<br>[ 0.128]                 | 0.369<br>[ 0.519]                        |
| Channel US              | -0.006<br>[ 0.982]        |                                    |  | 0.157<br>[ 0.758]         |                                    |  | -1.265*<br>[ 0.061]       |                                    |  |
| Channel JP              | -0.607<br>[ 0.172]        |                                    |  | -1.355**<br>[ 0.040]      |                                    |  | 2.899<br>[ 0.172]         |                                    |  |
| Channel UK              | 0.002<br>[ 0.989]         |                                    |  | -0.208<br>[ 0.220]        |                                    |  | 0.363<br>[ 0.101]         |                                    |  |
| Channel                 |                           | 0.168<br>[ 0.576]                  | 0.853<br>[ 0.262]                        |                           | 0.337<br>[ 0.434]                  | 0.213<br>[ 0.780]                        |                           | 0.568<br>[ 0.337]                  | -0.103<br>[ 0.945]                       |
| Observations            | 1590                      | 1402                               | 1444                                     | 774                       | 681                                | 710                                      | 775                       | 611                                | 648                                      |
| R <sup>2</sup>          | 0.13                      | 0.16                               | 0.16                                     | 0.17                      | 0.19                               | 0.18                                     | 0.16                      | 0.20                               | 0.20                                     |
| Adjusted R <sup>2</sup> | 0.03                      | 0.04                               | 0.05                                     | -0.01                     | 0.00                               | 0.00                                     | -0.02                     | 0.00                               | 0.01                                     |
| Number of banks         | 96                        | 94                                 | 95                                       | 57                        | 53                                 | 55                                       | 66                        | 59                                 | 62                                       |

# France – Recap and next steps

- Results on bank lending channel (France) only for USD lending
  - Tensions in currency swap markets can lead to a contraction in foreign currency lending in response to foreign monetary policy shocks (Bräuning and Ivashina, 2017; Avdjiev et al., 2016)
  - Positions in JP are not very large
  - Positions in UK are large, but small when only taking GBP denominated funding
- Better identification of portfolio rebalancing channel:
  - Securities holdings vis-à-vis US, JP and UK
- Use of data on hedging to investigate results on currency disaggregation further
- Investigation of reaction of loans to non-residents
- Counterparty disaggregation of loans and types of loans

# Stylized facts – Italy (1)

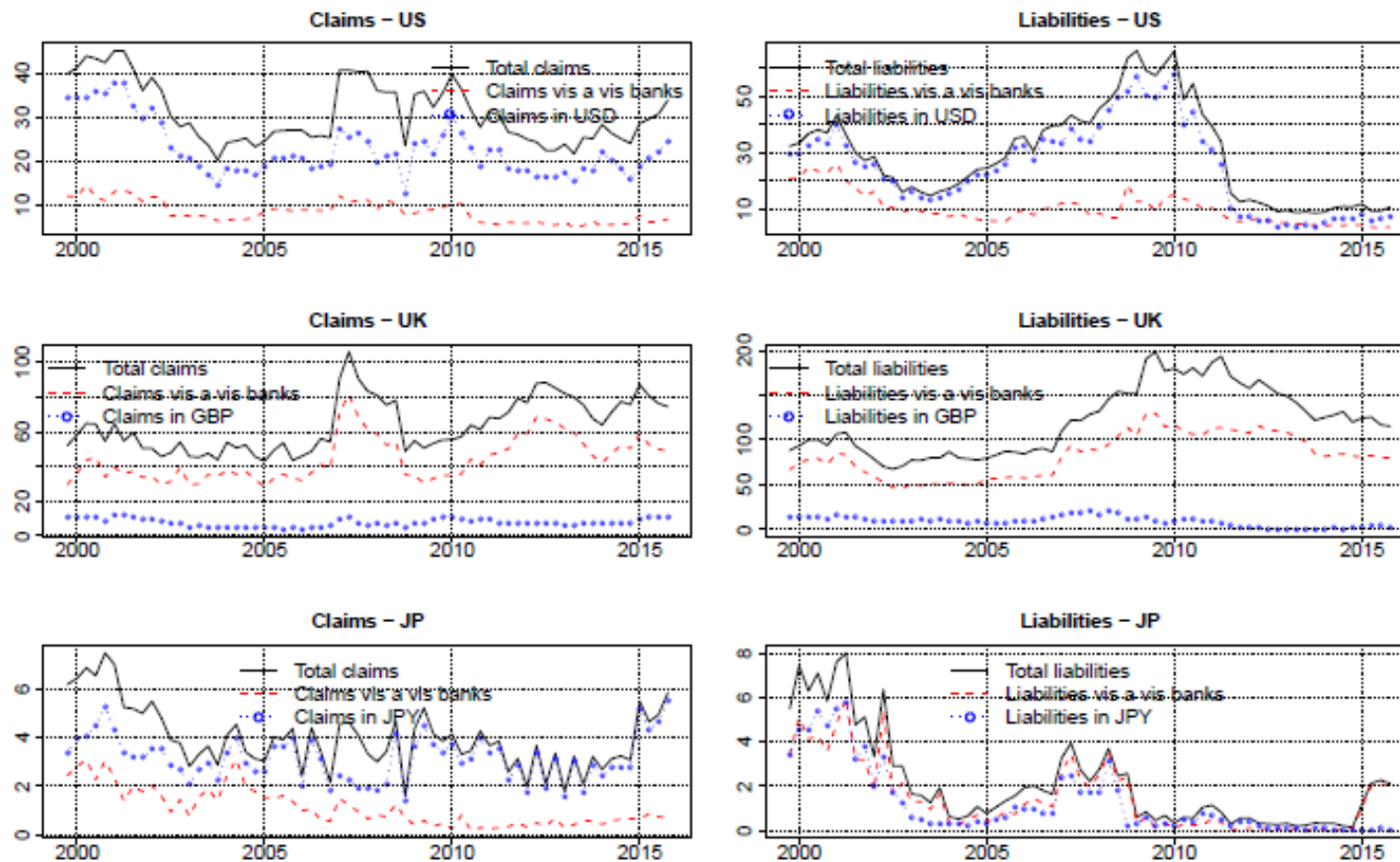
- The Italian banking system is less concentrated than the French one
  - 14 significant banks (3/4 of total assets) under SSM, 1 GSIB, 3 OSII
- Italian banks tend to have a traditional business model (loans = 64% total assets)
  - Mainly towards the private non-financial sector 70% of the total loans
- The share of loans to non-residents is less than 1/4
  - Main counterparties: EA, other Eastern European, UK and North America.



Notes: authors' calculations on Bank of Italy data. (1) Billions of euros

# Stylized facts – Italy (2)

- EUR-denominated loans most relevant component of lending
- Share of foreign currencies denominated loans 8% (US 4%)



Notes: authors' calculations on Bank of Italy data. (1) Billions of euros. Claims are obtained as the sum of loans, holdings of debt securities, equity and other shares.)

# Sample – Italy

|  | Obs   | Mean  | Sd    | Min  | Max      |
|--|-------|-------|-------|------|----------|
| (a) Full sample  |       |       |       |      |          |
| Assets   | 38052 | 4.96  | 43.60 | 0.00 | 1,340.13 |
| Loans / assets   | 37016 | 70.02 | 15.14 | 0.00 | 100.00   |
| Holdings of securities / assets                        | 37067 | 20.79 | 13.79 | 0.00 | 93.29    |
| Loans to non-financial sector / total loans            | 37012 | 78.69 | 23.66 | 0.00 | 100.00   |
| Loans to resident non-financial sector / total loans   | 37014 | 77.83 | 24.36 | 0.00 | 100.00   |
| FC share of loans to resident non-financial sector     | 37030 | 0.51  | 1.73  | 0.00 | 99.84    |
| FC share of loans to non-resident non-financial sector | 37030 | 0.31  | 2.74  | 0.00 | 77.19    |
| Claims vis á vis US / assets                           | 37076 | 0.18  | 1.30  | 0.00 | 61.85    |
| Claims vis á vis UK / assets                           | 37059 | 0.70  | 4.31  | 0.00 | 91.79    |
| Claims vis á vis JP / assets                           | 37079 | 0.01  | 0.17  | 0.00 | 11.89    |
| Liabilities vis á vis US / liabilities                 | 37072 | 0.13  | 1.92  | 0.00 | 84.45    |
| Liabilities vis á vis UK / liabilities                 | 37056 | 1.90  | 11.09 | 0.00 | 100.00   |
| Liabilities vis á vis JP / liabilities                 | 37079 | 0.01  | 0.49  | 0.00 | 92.28    |

- We restrict the analysis to: banks with foreign affiliates or with cross-border claims greater than 2% of total assets
- Number of banks: 177
- Observations: about 5.000
- Share of total assets: 90%

# Results – Italy: Basic regression

- A tightening in US monetary policy implies a reduction in the rate of growth of lending to domestic counterparties
- No effect for variation in monetary policies in Jap and UK
- Results hold across different specifications of the MP measures
- Results are driven by lending in Euro, for lending in other currencies (US dollar, Japanese Yen, Pound Sterling) foreign MP is not significant

|                           | (1)                  | (2)                  | (3)                 | (4)                 | (5)               |
|---------------------------|----------------------|----------------------|---------------------|---------------------|-------------------|
| monetary policy variable: | policy_ir            | ssr                  | tay_res_pol_ir      | tay_res_ssr         | cb_ssets_gdp      |
| Channel US                | -3.718***<br>[0.001] | -3.342***<br>[0.000] | -4.661**<br>[0.048] | -4.055**<br>[0.037] | 0.447<br>[0.390]  |
| Channel JP                | 15.626<br>[0.189]    | 2.983**<br>[0.020]   | 10.108<br>[0.466]   | 2.400<br>[0.190]    | -0.149<br>[0.707] |
| Channel UK                | 2.340<br>[0.149]     | 1.329**<br>[0.046]   | 0.145<br>[0.957]    | -0.657<br>[0.558]   | 0.546<br>[0.170]  |
| Observations              | 5.007                | 5.007                | 5.007               | 5.007               | 5.007             |
| R <sup>2</sup>            | [0.105]              | [0.102]              | [0.103]             | [0.101]             | [0.105]           |
| Adjusted R <sup>2</sup>   | 0.069                | 0.066                | 0.066               | 0.064               | 0.068             |
| Number of banks           | [177]                | [177]                | [177]               | [177]               | [177]             |

# Results – Italy: Portfolio channel

(MP: shadow rate)

- Variables of banks asset side exposure:
  1. total claims towards the country
  2. subset of claims towards the public sector in the country.
- The impact of monetary policy disappears (col 1-2)
- Break down by type of counterparty and by currency (col 3-10): a tightening in the foreign MP implies a stronger reduction in loans to NFC in FC supplied by banks more exposed towards that country

| monetary policy variable: ssr | (1)                  | (2)                     | (3)                  | (4)                     | (5)                  | (6)                     | (7)                 | (8)                        | (9)                | (10)                       |
|-------------------------------|----------------------|-------------------------|----------------------|-------------------------|----------------------|-------------------------|---------------------|----------------------------|--------------------|----------------------------|
| currency                      | ALL                  | ALL                     | EUR                  | EUR                     | Foreign Currencies   | Foreign Currencies      | EUR                 | EUR                        | Foreign Currencies | Foreign Currencies         |
| channel                       | Assets               | Claims to Public Sector | Assets               | Claims to Public Sector | Assets               | Claims to Public Sector | Assets              | Claims to Public Sector    | Assets             | Claims to Public Sector    |
| loans to                      | Non financial sector | Non financial sector    | Non financial sector | Non financial sector    | Non financial sector | Non financial sector    | Households          | Non financial corporations | Households         | Non financial corporations |
| Channel x MP US               | 0.047<br>[0.928]     | -1.589<br>[0.445]       | -1.085*<br>[0.060]   | -5.804<br>[0.111]       | -0.702<br>[0.473]    | -10.562<br>[0.113]      | -0.197<br>[0.629]   | -0.896<br>[0.282]          | 1.562<br>[0.127]   | -1.462*<br>[0.098]         |
| Channel x MP JP               | 0.092<br>[0.987]     | -5.041<br>[0.759]       | -2.231<br>[0.693]    | -60.012**<br>[0.034]    | 11.935<br>[0.248]    | -43.908<br>[0.170]      | 3.641<br>[0.398]    | -3.690<br>[0.540]          | 13.941<br>[0.367]  | 13.529<br>[0.218]          |
| Channel x MP UK               | 0.247<br>[0.283]     | 24.162<br>[0.104]       | 0.187<br>[0.453]     | 30.034*<br>[0.073]      | -0.654**<br>[0.045]  | 40.150<br>[0.349]       | -0.539**<br>[0.014] | 0.416*<br>[0.096]          | -0.306<br>[0.417]  | -1.021***<br>[0.006]       |
| Channel US                    | 0.125<br>[0.685]     | 0.181<br>[0.840]        | -0.212<br>[0.564]    | 2.027<br>[0.168]        | -0.541<br>[0.355]    | -1.452<br>[0.650]       | 0.461**<br>[0.044]  | -0.328<br>[0.473]          | 0.314<br>[0.570]   | -0.114<br>[0.852]          |
| Channel JP                    | -0.357<br>[0.829]    | 2.563<br>[0.707]        | 0.918<br>[0.570]     | 6.994<br>[0.436]        | 2.112<br>[0.490]     | -6.484<br>[0.566]       | 0.656<br>[0.409]    | 0.582<br>[0.732]           | 0.497<br>[0.926]   | 2.540<br>[0.458]           |
| Channel UK                    | 0.018<br>[0.847]     | 0.830<br>[0.796]        | 0.025<br>[0.808]     | 1.323<br>[0.756]        | -0.267**<br>[0.032]  | 11.745<br>[0.213]       | -0.136<br>[0.110]   | 0.055<br>[0.640]           | -0.147<br>[0.298]  | -0.357**<br>[0.020]        |
| Observations                  | (5330)               | (5330)                  | (5063)               | (5063)                  | (3693)               | (3693)                  | (4562)              | (4809)                     | (2908)             | (3486)                     |
| R <sup>2</sup>                | 0.13                 | 0.12                    | 0.22                 | 0.21                    | 0.16                 | 0.14                    | 0.19                | 0.22                       | 0.16               | 0.16                       |
| Adjusted R <sup>2</sup>       | 0.08                 | 0.08                    | 0.17                 | 0.17                    | 0.10                 | 0.09                    | 0.15                | 0.17                       | 0.10               | 0.11                       |
| Number of banks               | (184)                | (184)                   | (177)                | (177)                   | (140)                | (140)                   | (154)               | (169)                      | (122)              | (133)                      |

# Results – Italy: Portfolio channel

(MP: central bank balance sheet assets)

|  | (1)                  | (2)                     | (3)                  | (4)                     | (5)                  | (6)                     | (7)               | (8)                        | (9)                | (10)                       |
|--|----------------------|-------------------------|----------------------|-------------------------|----------------------|-------------------------|-------------------|----------------------------|--------------------|----------------------------|
| monetary policy variable:<br>cb_assets_gdp |                      |                         |                      |                         |                      |                         |                   |                            |                    |                            |
| currency                                   | ALL                  | ALL                     | EUR                  | EUR                     | Foreign Currencies   | Foreign Currencies      | EUR               | EUR                        | Foreign Currencies | Foreign Currencies         |
| channel                                    | Assets               | Claims to Public Sector | Assets               | Claims to Public Sector | Assets               | Claims to Public Sector | Assets            | Claims to Public Sector    | Assets             | Claims to Public Sector    |
| loans to                                   | Non financial sector | Non financial sector    | Non financial sector | Non financial sector    | Non financial sector | Non financial sector    | Households        | Non financial corporations | Households         | Non financial corporations |
| Channel x MP US                            | 0.725<br>[0.116]     | 8.021<br>[0.363]        | 0.643<br>[0.194]     | 5.351<br>[0.566]        | 2.922***<br>[0.007]  | 8.548<br>[0.486]        | 0.529<br>[0.104]  | 0.385<br>[0.505]           | 0.937<br>[0.489]   | 1.658<br>[0.135]           |
| Channel x MP JP                            | -1.323<br>[0.179]    | 2.992<br>[0.551]        | -1.055<br>[0.293]    | 19.023**<br>[0.019]     | -0.170<br>[0.946]    | 6.553<br>[0.514]        | 0.808<br>[0.450]  | -0.896<br>[0.420]          | 6.847<br>[0.205]   | -2.501<br>[0.382]          |
| Channel x MP UK                            | 0.185**<br>[0.035]   | 11.863<br>[0.109]       | 0.220**<br>[0.028]   | 11.684<br>[0.446]       | 0.224*<br>[0.073]    | -19.583<br>[0.250]      | -0.136<br>[0.568] | 0.237**<br>[0.020]         | 0.139<br>[0.337]   | 0.023<br>[0.891]           |
| Channel US                                 | -0.065<br>[0.842]    | 1.461*<br>[0.063]       | -0.181<br>[0.657]    | 1.566**<br>[0.012]      | -0.473<br>[0.412]    | -1.711<br>[0.530]       | 0.293<br>[0.272]  | -0.331<br>[0.467]          | 0.190<br>[0.750]   | 0.003<br>[0.996]           |
| Channel JP                                 | -1.356<br>[0.378]    | 2.694<br>[0.665]        | -0.394<br>[0.804]    | 11.563<br>[0.162]       | 0.159<br>[0.960]     | -4.026<br>[0.694]       | 0.150<br>[0.867]  | -0.660<br>[0.710]          | 0.091<br>[0.983]   | 1.057<br>[0.801]           |
| Channel UK                                 | -0.017<br>[0.830]    | -4.181**<br>[0.025]     | -0.012<br>[0.898]    | -3.618<br>[0.277]       | -0.059<br>[0.657]    | 4.539<br>[0.201]        | -0.124<br>[0.174] | 0.001<br>[0.992]           | -0.008<br>[0.960]  | -0.224<br>[0.152]          |
| Observations                               | (5273)               | (5273)                  | (5006)               | (5006)                  | (3655)               | (3655)                  | (4505)            | (4754)                     | (2875)             | (3450)                     |
| R <sup>2</sup>                             | 0.13                 | 0.12                    | 0.23                 | 0.21                    | 0.15                 | 0.15                    | 0.19              | 0.23                       | 0.16               | 0.16                       |
| Adjusted R <sup>2</sup>                    | 0.09                 | 0.08                    | 0.18                 | 0.17                    | 0.10                 | 0.09                    | 0.14              | 0.18                       | 0.10               | 0.11                       |
| Number of banks                            | (184)                | (184)                   | (177)                | (177)                   | (140)                | (140)                   | (154)             | (169)                      | (121)              | (133)                      |

# Italy – Next steps

- Better identification of bank lending channel
- Robustness
  - Weighted regression (particular relevant in Italy due to the presence of only 1 GSIB and very few banks with a significant share of international exposures)
- Split the sample between domestic banks and affiliates of foreign banks operating in Italy
  - Break down the foreign lenders by head quarters countries
  - Break down the domestic banks across different degree of international exposure → Are the ITA banks with more international exposure acting like the FR banks?
- Lessons from different behaviors of FR and ITA banks