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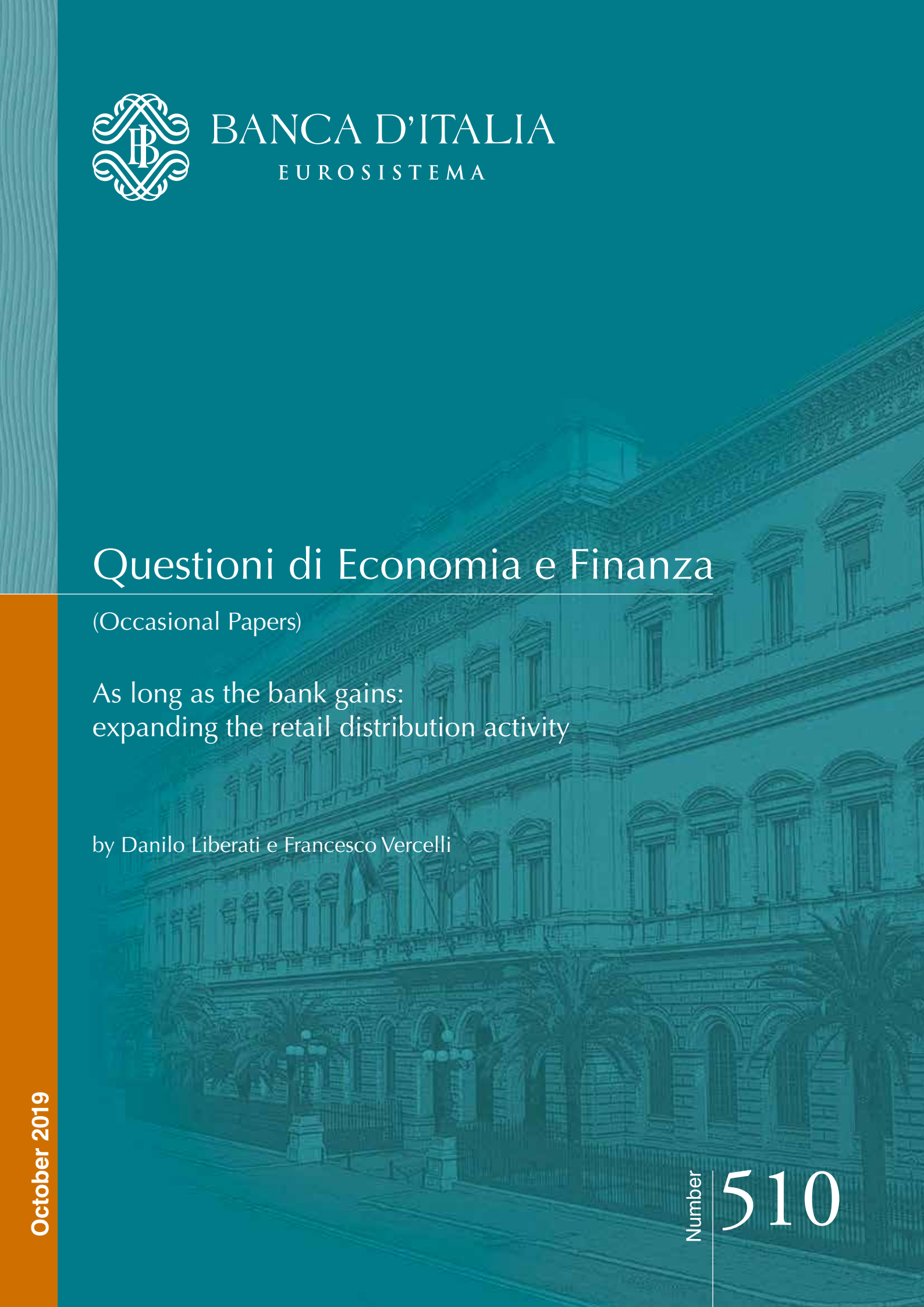

October 2019

Number 510

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The series is available online at www.bancaditalia.it .

ISSN 1972-6627 (print)
ISSN 1972-6643 (online)

Printed by the Printing and Publishing Division of the Bank of Italy

AS LONG AS THE BANK GAINS: EXPANDING THE RETAIL DISTRIBUTION ACTIVITY

by Danilo Liberati* and Francesco Vercelli*

Abstract

We investigate the retail distribution of financial products by the Italian banking system between 2010 and 2017. We focus on mutual fund shares, insurance contracts and individually managed portfolios, analysing the characteristics of the banks that distribute these instruments the most and the contribution of each product to bank profitability. We find that banks with larger amounts of bad loans relative to equity distribute more asset management instruments, an activity that does not absorb equity. When liquidity constraints are less binding, banks that are financed more through deposits increase their distribution activity. Moreover, banks with stronger lending specialization are less involved in distributing financial products. Finally, fees from the distribution of individually managed portfolios contribute to bank profitability more than those from the distribution of mutual fund shares.

JEL Classification: D14, G21.
Keywords: banks, distribution fees, non-interest income.

Contents

* Bank of Italy, Economic Research and International Relations.

1 Introduction[1]

The global financial crisis and the persisting low interest rate setting have renewed the debate on the drivers through which non-interest income as opposed to interest margin may influence bank profitability. This is relevant for European banks, which have faced weak performances (Kok et al., 2016), and especially for Italian ones, whose interest margins have never been so low in the last 50 years. Hence, to obtain a positive impact on their income statement, banks have increased fee revenues, especially from the distribution activity. The preference of banks for distribution revenues also stems from banking regulation: the strengthening of capital and liquidity requirements – due to the implementation of Basel III regulation and the introduction of the Single Supervisory Mechanism (SSM) – has increased the costs of bank lending, providing an implicit incentive to expand non-interest income activities (Köhler, 2014a). Nevertheless, in order to sustain lending and reach inflation targets, the non-standard expansive monetary policies implemented by the European Central Bank (ECB) – especially Targeted Long-Term Refinancing Operations (TLTRO) and Asset Purchase Program (APP) – have provided banks with large amounts of liquidity, lowering banks' needs of funding through retail deposits and bonds. This has created an incentive for banks to channel clients' financial wealth towards instruments other than deposits and bonds. In an economic environment where both deposit and bond returns were low, clients were willing to modify their portfolio composition towards other financial products.

Distribution policies may be driven by different factors. First, regulatory constraints, like higher capital ratios or stricter requirements on non-performing loans, should create incentives for expanding off-balance activities. Second, low funding needs should favour the distribution of financial products different from bank bonds. Third, low interest rates on loans should induce banks to strengthen the distribution activity. These factors have not been explored extensively, notwithstanding the key role played by the distribution of financial products among fee-based activities (see Spaventa, 2008; Barbagallo, 2018).

The literature generally focuses on bank diversification, distinguishing between interest and non-interest incomes. This literature – which does not disentangle the contribution of the different components of non-interest income – documents mixed findings across countries, depending on sample periods and methodologies. According to the analyses conducted before the global financial crisis, diversification can be interpreted as a response to competition, especially in the U.S. and U.K. (Allen and Santomero, 2001). DeYoung and Rice (2004b) show that non-interest income is coexisting with, rather than replacing, the interest one. DeYoung and Roland (2001), Stiroh (2004a,b) and Stiroh and Rumble (2006) find that a higher share of non-interest income positively affects profitability but it is associated to a

[1]We wish to thank Giorgio Albareto, Giovanni D'Alessio, Giovanni Guazzarotti, Gaetano Parisi and the participants who attended the 4th Banking Research Network Workshop held at the Bank of Italy.

more volatile bank risk profile; Chiorazzo et al. (2008) find similar results for Italian banks. Among the analyses conducted after the financial crisis, Apergis (2014) finds that non-traditional bank activities exert a positive effect on both profitability and insolvency risk in the U.S. (at least in "good times"; see Gandhi et al., 2016); for European countries Borroni and Rossi (2017) highlight that revenue diversification may improve the level of bank profits and reduce their volatility (see also Köhler, 2014b, 2015).

Analysing non-interest income as a whole, without considering its components, may be inaccurate. Working on the insights by DeYoung and Rice (2004a),[2] DeYoung and Torna (2013) show that U.S. commercial banks' performances depend on the nature of fee incomes: the probability of bank failures declines with the so-called pure fee-based non-traditional activities (e.g. securities brokerage and insurance sales), but increases with the fee-for-service banking activities (e.g. investment banking, insurance underwriting and asset securitization). Using data on German saving banks, Köhler (2018) investigates the impact of non-interest income on both profitability and stability, looking closely at the different components of non-interest income (e.g. income from payment services, income from securities business, commission income from insurance sales). Moreover, Kok et al. (2019) suggest that fee income is relevant for the SSM evaluation of Euro area banking system stability through stress testing analysis.

Revenues from distribution have become an increasingly important component of non-interest income. However, the evidence on the distribution activity is still scarce, also because of data availability. As pointed out by Moisson and Pistre (2007), *"the true scope and impact of annual distribution fees for European investors is hard to gauge because these are generally not disclosed in funds' reports and accounts"* and *"as distribution fee data is not in the public domain, the industry's knowledge of this issue is limited and far more reliant on anecdotal evidence"*. Thanks to a unique database at the client level provided by a large Swiss retail bank, Hoechle et al. (2018) study the relationship between financial advice and bank profits and estimate the impact of distributing different financial products (excluding managed accounts) on profitability.[3]

This paper studies the distribution policies by Italian banks from 2010 to 2017. We focus on the distribution of three asset management instruments (AMI): mutual fund shares, insurance products and individually managed portfolios. Our choice is driven by the increasing contribution of AMI distribution to Italian bank revenues: in our period of interest, the share of net fees obtained through their distribution has increased from 33% to 50%. We do not include bank bonds, which mostly reflect funding needs and have kept decreasing in bank clients' portfolios since 2013. We contribute to the existing literature analysing the characteristics of the banks that

[2]See also Saunders and Walter (1994) and Kwan and Laderman (1999).

[3]For more details on the literature on asymmetric information arising from the bank-client relationship see, e.g., Howcroft et al. (2007), Bhattacharya et al. (2012), Bardey et al. (2016) and Fetch et al. (2018).

distribute AMI the most and the contribution of each product to bank profitability. With respect to the former issue, we perform first difference regressions of the share of clients' financial wealth invested in asset management instruments on several bank characteristics, such as texas ratio (bad debts over equity), performing loans, deposits and interest margin. Since the dependent variable may be affected both by supply and demand factors, we add to our model several control variables which should capture demand side effects. To analyse the second issue, we regress return on equity (ROE) on the fees obtained by the distribution of each single product, using different set of control variables to assess the robustness of our estimates.

We find a positive and statistically significant relationship between the texas ratio and the presence of asset management instruments in bank clients' portfolios. This suggests that banks with binding capital constraints – because of the presence of bad loans – expanded the distribution of such products, which is a typically no capital absorption activity. After 2014 this relation becomes more intense alongside the stronger capital and liquidity requirements introduced through Basel III and SSM regulation. In the same period we obtain a positive and significant coefficient for clients' deposits; it could indicate that, thanks to the liquidity injected by the ECB that lowered banks' funding needs, banks might have suggested clients to move resources from deposits to alternative financial investments. Moreover, banks specialized in lending are less likely to expand the distribution of financial instruments, suggesting a low degree of complementarity between lending and distribution. Finally, fees from the distribution of individually managed portfolios have supported bank profitability more than those from the distribution of mutual fund shares.

The paper is structured as follows. Section 2 shows a descriptive analysis of the data. Section 3 presents the empirical model. Section 4 reports the results of the regressions and Section 5 concludes.

2 Data and stylized facts

The analysis is conducted by using the Supervisory Reports by banks to the Bank of Italy. We consider individual unbalanced data about 600 banks (on average) from 2010 to 2017 at annual frequency. Then, for those banks belonging to a group, we consolidate balance sheet information at the group level and we obtain a sample of nearly 465 banks (on average).[4] For each bank we collect data on:

- total assets, performing loans, bad loans, deposits and equity from the balance sheets;
- bank profitability (ROE) and its components (e.g. interest income, income from the distribution of financial products) from the income statements;

[4]Notice that we are not using consolidated balance sheets, which would also include Italian non-banking companies belonging to banking groups as well as foreign companies belonging to Italian banking groups.

- asset management instruments and the number of clients by size of their financial assets from the investment service section in the Supervisory Reports;
- other banks' characteristics, such as the geographical area of administrative headquarters and the legal form from Supervisory Registers.

In our analysis we exclude Italian branches of foreign banks; we also discard banks with unusual balance sheet structures (ratio of loans or deposits over total assets less than 5% or equity ratio below 3%). All the variables are subject to winsorization at the 95% level to deal with outliers. Moreover, our sample includes mutual cooperative banks notwithstanding their specific features;[5] in the econometric models we include interactions with a dummy for mutual cooperative banks in order to control for these peculiarities.

We focus on three types of AMI: insurance contracts (INS onwards), mutual fund shares (MF onwards) and individually managed portfolios (PM onwards). Our study focuses on the distribution of AMI, where "distribution" concerns both instruments issued by third parties and by the banks themselves. With regard to MF and INS, Italian banks are not allowed to issue them;[6] with respect to PM, instead, banks can either manage portfolios by themselves (Own PM) or just distribute portfolios managed by other intermediaries (Other PM). Italian banks that distribute at least one type of AMI represent, on average, about 94% of the Italian banking system. Table 1 reports the percentage of banks that distribute each type of AMI. Over 90% of banks distribute MF and INS, whereas only half distribute Other PM and less one third Own PM; ignoring the distinction between Own and Other PM, almost 60% of the banks distribute all three types of AMI. The shares of banks distributing MF and Other PM have remained quite stable between 2010 and 2017, whereas the share of banks that distribute INS has risen, especially since 2015. In our sample the percentage of banks distributing Own PM decreased between 2010 and 2012, then it returned to the initial value in 2017 (31%). Table 1 also distinguishes between mutual cooperative banks (MCB, onwards) and other banks (OB, onwards).[7] While the percentage of MCB distributing MF is similar to that of OB, a larger fraction of MCB distribute INS and Other PM. Instead, OB are more specialized in providing Own PM (55%) than MCB (21%). Since 2015 there has been a relevant increase of the percentage of OB distributing INS and PM.

Among fees, we are able to separately identify those related to the distribution of each category of AMI. Distribution commissions include both placement and maintenance fees, where the former are paid to the distributor at the selling time whereas the latter refer to post-selling services, like wealth management; we cannot

[5] In particular, they have stricter requirements on the composition of their assets, which should be composed mainly by less risky investments like loans to shareholders or sovereign bonds.

[6] Banking groups may include asset management companies and insurance companies, which respectively issue MF and INS. However, our database only contains information on individual banks and does not contain information on other financial intermediaries.

[7] *Other banks* include limited companies and cooperative banks.

Table 1: Banks that distribute AMI (1)

Year	All banks					
	MF (%)	INS (%)	Own PM (%)	Oth PM (%)	All prod. (%)	Obs.
2010	92,9	87,2	31,1	52,2	61,8	508
2011	92,8	90,2	28,1	52,4	61,2	502
2012	95,7	90,1	23,8	52,4	58,9	487
2013	95,6	88,3	23,8	52,1	58,2	478
2014	95,8	86,9	27,5	50,3	58,1	473
2015	96,3	90,7	27,7	52,6	61,9	462
2016	94,2	92,6	30,0	51,6	60,6	434
2017	94,4	93,9	30,8	53,1	62,1	377
Year	**Mutual cooperative banks**					
	MF (%)	INS (%)	Own PM (%)	Oth PM (%)	All prod. (%)	Obs.
2010	92,6	90,1	25,4	55,7	64,4	393
2011	92,3	92,9	22,2	55,9	63,3	392
2012	96,1	91,9	16,5	55,6	59,8	381
2013	96,2	90,6	17,2	54,4	59,2	373
2014	96,5	90,2	20,7	53,1	59,1	367
2015	97,2	92,2	21,2	55,3	62,6	358
2016	95,8	94,0	22,1	54,4	60,4	331
2017	95,8	96,1	22,1	55,8	62,5	285
Year	**Other banks**					
	MF (%)	INS (%)	Own PM (%)	Oth PM (%)	All prod. (%)	Obs.
2010	93,9	77,4	50,4	40,0	53,0	115
2011	94,5	80,9	49,1	40,0	53,6	110
2012	94,3	84,0	50,0	40,6	55,7	106
2013	93,3	80,0	47,6	43,8	54,3	105
2014	93,4	75,5	50,9	40,6	54,7	106
2015	93,3	85,6	50,0	43,3	59,6	104
2016	89,3	88,3	55,3	42,7	61,2	103
2017	90,2	87,0	57,6	44,6	60,9	92

(1) Data refer to Italian banks that distribute at least one type of AMI (i.e., MF, INS and Own or Oth PM) which represent, on average, about 94% of the Italian banking system. Columns "All prod. (%)" show the percentage of banks that distribute all three types of AMI. Columns "Obs." show the number of observations. A bank is classified as a distributor of a specific type of AMI if its income statement reports positive fees from the distribution of that type of AMI except for banks distribuiting MF that are identified by using positive placement flows or maintenance fees.

disentangle between the two types of fees.[8] In terms of outstanding amounts, we obtain those of MF and Own PM held by bank clients from the investment service section in the Supervisory Reports and those on INS from custodian bank statistics; we do not have information on the outstanding amounts of Other PM.

By observing the aggregate income statements obtained from our sample, the net interest margin diminished from €35.1 to €26.4 billion in the period of analysis. Instead, net fees increased from €21.4 to €23.6 billion. Among this source of revenues, distribution fees increased from €7.1 to €11.8 billion: placement of financial instruments other than AMI and the custody services did not produce any relevant gain (Table 2). In particular, from 2010 to 2017 the share of distribution fees to the total ones grew from 33 to 50% (Figure 1, left panel) without any substantial recomposition effect among AMI in aggregate terms (Figure 1, right panel).

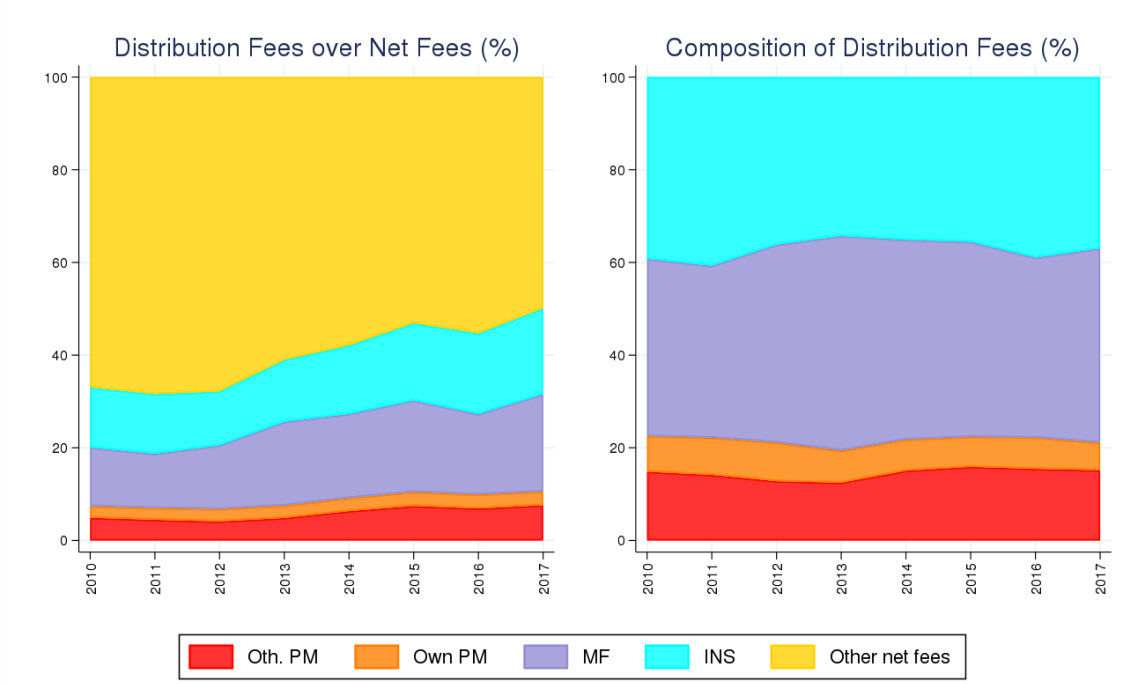
Table 2: Aggregate Income Statement (1)
(*Billions of euros*)

Year	**Net interest rate margin**	**Net fees**				**Intermed. margin**	**ROE (%)**
		Total	***of which:***				
			distribution of AMI	*placement of other prod.*	*custody*		
2010	35,1	21,4	*7,1*	*0,8*	*0,1*	68,5	2,8
2011	35,2	20,8	*6,6*	*0,6*	*0,1*	67,6	-6,4
2012	34,2	20,4	*6,6*	*0,5*	*0,1*	69,2	-0,8
2013	29,7	20,7	*8,1*	*0,3*	*0,0*	69,6	-6,5
2014	30,2	21,8	*9,2*	*0,5*	*0,0*	69,7	-2,6
2015	29,8	23,3	*10,9*	*0,4*	*0,0*	73,2	0,8
2016	28,2	23,1	*10,3*	*0,6*	*0,0*	60,4	-5,3
2017	26,4	23,6	*11,8*	*0,6*	*0,0*	66,7	2,9

(1) Distribution fees refer only to AMI (placement plus maintenance fees) whereas placement fees consider all products except AMI. The return on equity (ROE) includes adjustments for provisions. We only consider individual reports data (including costs and revenues generated by intra-group transactions). We exclude costs and revenues of the foreign (banking, financial and instrumental) companies belonging to the Italian banking groups as well as the Italian non-banking (financial and instrumental) companies belonging to the Italian banking groups; these data are instead considered by the consolidated reports. For more details see the statistical appendix in Bank of Italy (2018).

[8] We are able to disentangle maintenance and placement fees only for Other PM. With respect to MF, instead, we have information only on maintenance fees: we estimate MF placement fees by multiplying total placement fees by the share of MF on financial instruments sold to bank clients. Anyway, MF maintenance commissions represent the largest fraction of distributors' compensation: in 2016 asset management companies gave back to distributors about 70 percent of the commissions received for distributing MF (see Barbagallo, 2018). The relevance of retrocession agreements was already stressed by Linciano and Marocco (2002).

Figure 1: Aggregate distribution fees (1)
(*Percentage values*)



(1) Data source: Supervisory Reports.

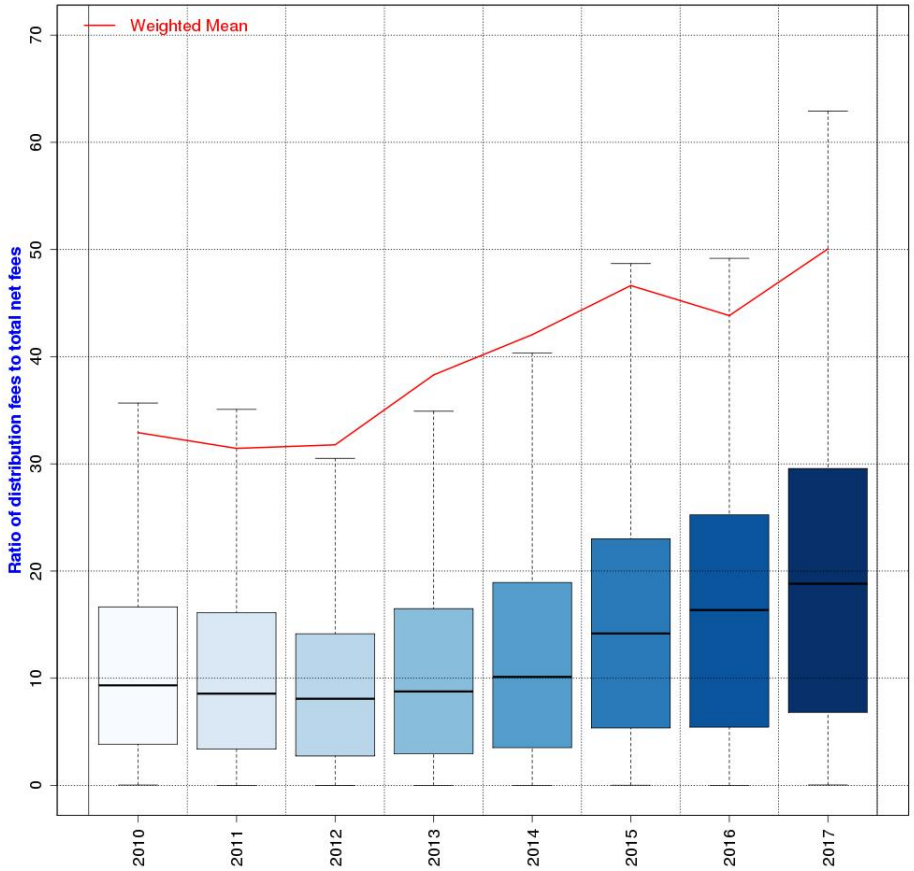
Interest margins have never been so low in the last 50 years and have kept decreasing after the European sovereign debt crisis: this process has affected most of Italian banks (Figure A.1.1).[9] Banks faced the reduction of earnings from traditional activities both cutting costs (e.g., closing branches) and increasing the share of other sources of revenues, as commission income: the ratio of net fees over total revenues[10] has strongly increased since 2015 (Figure A.1.2). The share of fees obtained from the distribution of AMI on total net fees has grown largely: the median share has more than doubled from 9% to 19% between 2010 and 2017, involving the entire banking system (Figure 2). The third quartile, which was around 16% in 2010, rose to 29% in 2017, and the weighted average is even larger, suggesting that large banks obtain a high share of non-interest income from distribution fees. Such high values are even more impressive given the observed increase of overall net fees, implying that distribution of AMI has become a key source of revenues. The dynamics of

[9]Claessens et al. (2018) find that very low rates negatively affect net interest rate margin and bank profitability, especially if interest rates are low for long time: this happened to many advanced economies because of conventional and unconventional ECB monetary policies which kept interest rates low for long.

[10]Total revenues are composed by: total interest income, total fees, other ordinary income and net gains or losses (from trading, fair value valuation, hedge accounts and disposal and repurchase). We consider net revenues to avoid breaks due to the introduction of FINREP reporting in 2016.

the median ratio of distribution fees to total net ones shows a structural break: the ratio was stable until 2014 and then has rapidly risen.

Figure 2: Ratio of distribution fees to total net fees (1)
(*Percentage values*)

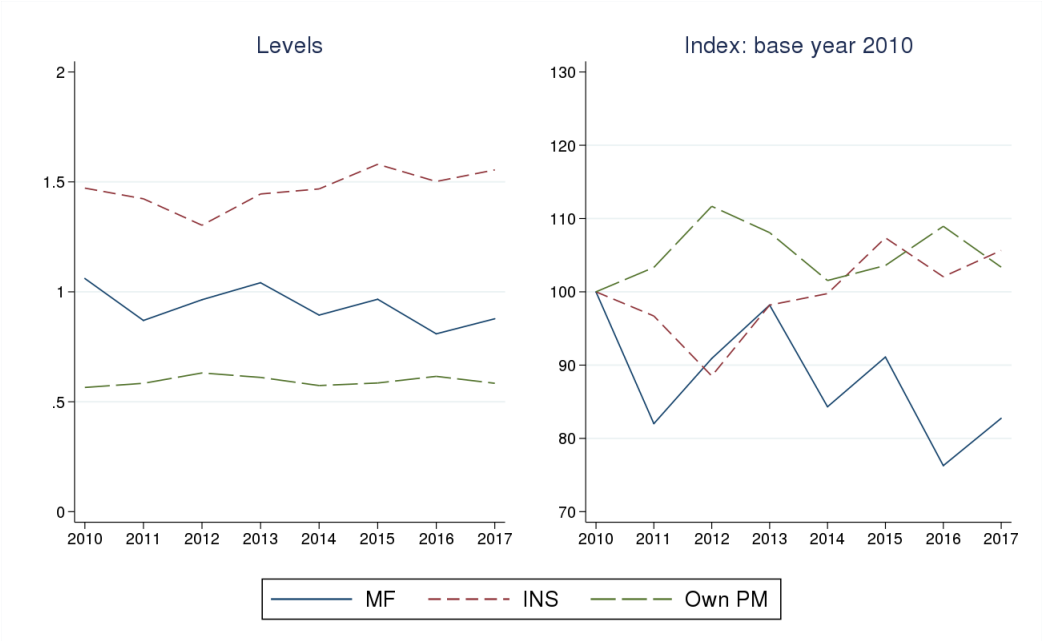


(1) The line in the middle of each box is the median; the lower and the upper side of the box represent the first and the third quartile respectively; the notches extend to $\pm 1.58 \cdot IQR/\sqrt{n}$ so as to give roughly a 95% confidence interval. Including maintenance fees paid by mutual funds to banks. Considering only banks with positive distribution fees. The red line is the weighted average in terms of total net fees.

Unit returns from the distribution of AMI can be approximated by the ratio between fees and stocks. We use stocks instead of flows as denominator because of the presence of post-selling services, which are related to the outstanding amounts of AMI distributed in the past and still maintained in clients' portfolios. On the one hand, insurance products display the largest unit returns' level among AMI, whereas Own PM the lowest (Figure 3; left panel); on the other hand, we observe that since 2010 profitability from the distribution of PM and INS has increased whereas the

one from the distribution of MF has decreased (Figure 3; right panel).

Figure 3: Weighted unit returns (fees/stocks) (1)



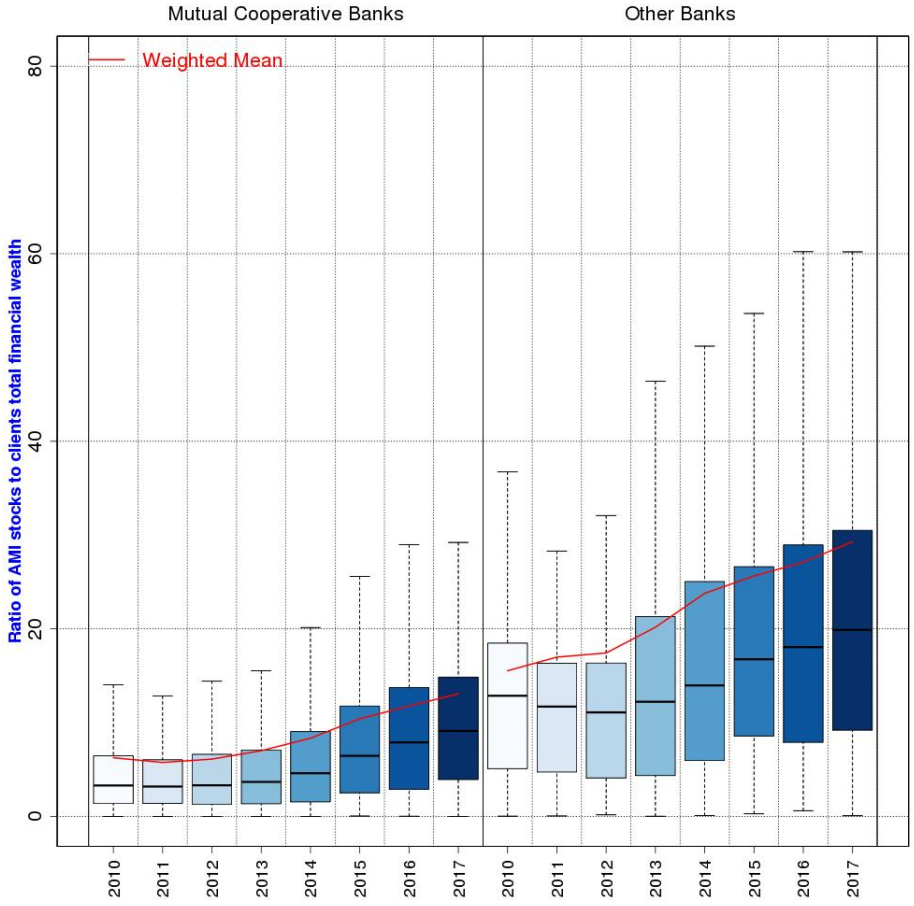
(1) Data source: Supervisory Reports.

Figure A.1.3 reports the share of distribution fees over total net fees for three groups of banks according to their size: the top five banking groups, the other medium and large banks and finally the small and minor banks. Large banks display a higher fraction of distribution fees than small ones; however, the fastest increase is registered among small and minor banks, especially after 2014. The distribution of financial instruments is not homogeneous across the entire country (Figure A.1.4). Banks with administrative headquarters in Northern Italy (where most banks are concentrated) show a larger share of fees obtained from the distribution activity: both for North-Western and North-Eastern banks, the median share has roughly raised from 10% to 20% between 2010 and 2017; the percentage remains particularly low in Southern Italy, where most banks earn less than 5% of the total net fees from distributing AMI. When distinguishing by bank legal category, the ratio of distribution fees over total net fees is lower for mutual cooperative banks than for commercial banks, but it has kept increasing since 2015 (Figure A.1.5). The distribution activity is a primary source of non-interest income for commercial banks: despite the high variability, in 2017 one fourth of these banks obtained more than 40% of the total net fees from the distribution of AMI.

The difference between legal categories can be observed also in Figure 4 where we plot the share of AMI over total financial wealth held by banks' clients, which include – together with AMI – deposits, sovereign bonds, bank bonds, other bonds

and shares.[11] Mutual cooperative banks' clients invest less in AMI than other banks' clients, but their ratio between AMI and total financial instruments has increased over time since 2015 (especially due to INS).

Figure 4: AMI stocks over retail clients' total financial instruments (1)
(*Percentage values*)



(1) The line in the middle of each box is the median; the lower and the upper side of the box represent the first and the third quartile respectively; the notches extend to $\pm 1.58 \cdot IQR/\sqrt{n}$ so as to give roughly a 95% confidence interval. The red line is the weighted average in terms of clients' total financial instruments. Clients' total financial wealth is the sum of: deposits, securities, shares, mutual funds shares, insurance products, portfolio management.

[11] Banks are required to report all the financial instruments held by their clients: we define this variable *clients' total financial wealth*. However, we cannot observe the amount of wealth held by the same clients at different financial institutions.

3 The empirical strategy

In this section we present the empirical specifications set up to answer our research questions:

1) Which are the main drivers of AMI distribution?

2) Which types of AMI mostly contribute to bank profitability?

With respect to the first research question, we run the following regression:

$$y_{i,t} = \beta_0 + \sum_{k=1}^{K} \gamma_k x_{i,t-1}^k + \sum_{j=1}^{J} \delta_j w_{i,t}^j + c_i + \tau_t + \varepsilon_{i,t} \quad (1)$$

where $y_{i,t}$ is the share of financial instruments owned by clients of bank i at time t invested in AMI, $x_{i,t-1}$ is a vector of k lagged balance sheet variables, $w_{i,t}$ is a vector of j demand side controls, c_i are bank fixed effects and τ_t time fixed effects. As explained in Section 2, the overall amount of financial instruments held by bank clients includes – beyond AMI – deposits, sovereign bonds, bank bonds, other bonds and shares. We are mostly interested in the impact of balance sheet explanatory variables, which represent supply factors:[12]

- Texas ratio, i.e. the ratio between bad debts and capital: because of capital requirements, banks with large amounts of bad debts with respect to available equity have lower possibility of expanding loans and may point at raising fees from the distribution of financial products.

- Performing loans (scaled by total assets): a priori, the sign of this coefficient is uncertain. On one side, it could be negative because banks largely involved into the traditional activity of lending may have limited experience in distributing AMI and so would face higher costs for developing it. On the other side, these banks may be more interested in expanding non-interest income activities to diversify their sources of revenues.

- Deposits (scaled by total assets): in presence of expansive monetary policies, when central bank liquidity lowers funding needs, banks with larger amounts of retail deposits may increase their fee income by suggesting clients to invest their liquidity in AMI. At the same time, banks' clients may be interested in obtaining higher returns from investing in AMI than keeping their savings in bank deposits.

[12] As we will explain below, we perform the estimates through a first-difference approach. Therefore, bank fixed effects control for time-invariant characteristics, like, for example, the presence of an asset management company within the banking group which varies very rarely.

- Interest margin (scaled by total revenues): banks suffering a negative shock on the interest margin may be attracted by fee-based activities, such as the distribution of AMI.[13]

In the regressions we control for bank size, which is measured through the log of total assets. Since the observed share of financial instruments invested in AMI may be affected both by supply and demand factors, we add several control variables to our model which should capture demand side effects. We consider:

- Share of clients' financial wealth invested in bank bonds: after 2012, when the fiscal treatment of bank bonds became less favorable and the issued amounts decreased (Coletta and Santioni, 2016), retail investors changed their portfolio composition, reducing the share of bank bonds and widening the share of other financial instruments, like AMI. Since bank bonds represented an important fraction of households' portfolios,[14] we expect that the larger the share of bank bonds the higher the probability of increasing the share of AMI.

- Clients' wealth: clients' interest in investing in AMI may depend on their wealth. We proxy clients' wealth through the percentage of bank clients having financial assets within a specific class size. In Supervisory Reports banks provide the number of clients divided into 4 classes, defined by the market value of their financial instruments held at the bank: below €50 thousand, between €50 and €250 thousand, between €250 and €500 thousand, over €500 thousand.

- Clients' income: it is another potential driver of the demand of AMI. Our proxy is calculated by multiplying the number of current accounts held by banks' clients in a particular province by the provincial per capita value added (provided within National Accounts statistics).[15]

- Bank demand shock: it is built in the spirit of the methodology proposed by Greenstone et al. (2014). See the details on the construction of this proxy in the Appendix A.3.

The time fixed effects control for the overall trend in AMI distribution that we observed in Section 2. They capture unobserved macroeconomic variables that may affect the distribution of AMI; for example, slower growth of GDP may negatively impact profitability and so it may induce banks to modify their business models as well as distribution policies.[16]

[13] We prefer interest margin with respect to ROE because we want to exclude earnings from AMI distribution.

[14] In 2012 bank bonds represented 10% of total financial assets: the percentage dropped to 2% in 2017.

[15] This variable is one-year lagged because of the availability of data until 2016.

[16] Albertazzi et al. (2016) suggest that the weak growth of the Italian economy and the Italian banks traditional business model explain a large share of profitability gap of Italian banks with

Regressors related to balance sheet variables appear with one year lag to lessen the risk of endogeneity. Bank fixed effects control for the presence of omitted individual characteristics that do not change over time. We estimate the model through a first difference approach (fixed effects estimation does not pass the autocorrelation test of the residuals). Therefore, even if our dataset starts in 2010, the estimates concern the 2012-2017 period.

With respect to the second issue, i.e. the relationship between bank profitability and distributed AMI, we run the following regression:

$$y_{i,t} = \beta_0 + \sum_{p=1}^{P} \gamma_p x_{i,t-1}^p + \sum_{k=1}^{K} \delta_k z_{i,t-1}^k + \sum_{j=1}^{J} \vartheta_j w_{i,t}^j + c_i + \tau_t + \varepsilon_{i,t} \tag{2}$$

where $y_{i,t}$ is ROE of bank i at time t, $z_{i,t-1}$ is a vector of lagged balance sheet control variables, $w_{i,t}$ is a vector of demand variables. We are interested in the coefficients related to the vector $x_{i,t-1}$, which capture the relative importance of each type of AMI with respect to banks' distribution activity. Each variable of this vector represents the share of specific-AMI distribution fees to the total distribution ones. We consider all 4 types of AMI individually, distinguishing Own PM and Other PM, to test which are the most profitable product among AMI. Since the 4 variable are collinear, we exclude the one referring to MF: the coefficients of $x_{i,t-1}$ are interpreted with respect to the distribution of MF. The control variables – both the balance sheet ones and the demand side ones – have already been described above: texas ratio, performing loans, deposits, bank bonds, clients' wealth, clients' income. There is only one additional regressor, the risk-adjusted loans return, which controls for the profitability coming from the traditional activity of lending: write-downs are used to adjust returns of loans to their riskiness.

4 Econometric results

4.1 Distribution of AMI

In this subsection we present the results related to our first research question: which are the main drivers of AMI distribution?

Table 3 presents several specifications of equation (1): columns [1] to [7] concern the base model, whereas in columns [8] and [9] we include some interaction terms for our main explanatory variables. In particular, in column [8] we test the existence of differentiated effects between two subperiods, 2012-2014 and 2015-2017. The two periods have been chosen in order to identify a possible structural break due to the implementation of Basel III regulation and to the introduction of SSM,

respect to the European ones. This result is confirmed by Bonaccorsi di Patti and Palazzo (2018) which categorize the Italian banks according to their business model.

which strengthened capital and liquidity requirements.[17] Since MCB have specific characteristics, in column [9] we compare the effects of MCB and OB.

All models computed in columns [1] to [7] highlight a positive, stable and significant effect of the texas ratio (i.e. bad loans over equity), which is consistent with our expectations. Banks with large amounts of bad debts with respect to their equity have lower possibility of expanding lending because of capital constraints. Consistently with the insights by Anderson et al. (2018), our estimations provide evidence that the larger the shortage of capital with respect to bad debts, the larger the propensity to distribute AMI, an activity that does not absorb capital. Column [8] reveals that this behavior is preeminent in recent years: the coefficient of texas ratio interacted with a dummy indicating the post 2014 period is positive and statistically significant. Since the global financial crisis, Italian banks have suffered the presence of a large share of bad loans in their balance sheets; after the introduction of the SSM in 2014 this problem has become more critical.[18] According to our estimates, capital absorption due to bad loans became a binding constraint after 2014, inducing banks to increase the distribution of AMI to their clients. According to column [9], there is no statistical difference between MCB and OB.

The coefficient related to the ratio of performing loans over total assets is negative and statistically significant in columns [1] to [7]. This result supports the thesis that banks which devote more resources to the traditional activity of lending may be less interested or less equipped in expanding off-balance activities like the distribution of AMI. According to column [9] the described mechanism mainly holds for OB: overall, this outcome suggests a limited degree of complementarity between the two activities according to the findings by Anderson et al. (2018) based on Euro area significant institutions; instead, for MCB, which are all strongly specialized in the traditional activity of lending, an even larger share of performing loans does not imply a different strategy about AMI distribution.[19] There are no differences between the first and the second period.

There is no significant evidence of a relationship between distribution of AMI and clients' deposits in models without interactions. Interestingly, in column [8] we find that the coefficient on banks' deposits increases in the second subperiod according to our a priori expectation. Since 2015, thanks to the strengthening of the expansive non-standard ECB's monetary policies (mainly TLTRO and APP), it became easier for banks to finance loans by substituting retail deposits with central bank liquidity.

[17] Implementation of SSM took place at the end of 2014. We are aware that announcement (before 2014) effects may affect our differentiated estimates.

[18] After 2014 banks increased their efforts in reducing bad debts: the outstanding amount of securitized bad debts increased by nearly €20 billion between 2012 and 2014 (from €35.1 to €54.6 billion), whereas it rose by more than €50 billion between 2015 and 2017 (from €59.3 to €113.1 billion).

[19] The overall effect for OB corresponds to the coefficient on performing loans in column [9], which is negative and statistically significant. The overall effect for MCB – obtained as the sum of the coefficients on performing loans and the interaction term – is smaller in absolute value and is not statistically different from zero.

Table 3: Distribution of AMI

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Texas Ratio (lag)	0.02***	0.02***	0.02***	0.02***	0.02***	0.02***	0.01***	0.00	0.03**
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.01)	(0.01)
Texas Ratio (lag) post 2014								0.02**	
								(0.01)	
Texas Ratio (lag) · MCB									-0.02
									(0.01)
Performing Loans/Assets (lag)	-0.03***	-0.02**	-0.03***	-0.03***	-0.03***	-0.03***	-0.03***	-0.03***	-0.05**
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)
Performing Loans/Assets (lag) post 2014								-0.01	
								(0.02)	
Performing Loans/Assets (lag) · MCB									0.02
									(0.02)
Deposits/Assets (lag)	-0.00	-0.00	0.00	0.00	-0.00	0.00	0.00	-0.01	0.03
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)
Deposits/Assets (lag) post 2014								0.04**	
								(0.02)	
Deposits/Assets (lag) · MCB									-0.04**
									(0.02)
Interest Margin/Total Revenues (lag)		0.00	0.01	0.00	0.00	0.01	0.00	0.01	0.01
		(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)
Interest Margin/Total Revenues (lag) post 2014								-0.00	
								(0.01)	
Interest Margin/Total Revenues (lag) · MCB									-0.01
									(0.02)
Log Tot. Assets (lag)	-0.92***	-0.85***	-0.83***	-0.79***	-1.58***	-0.83***	-1.45***	-1.49***	-1.42***
	(0.30)	(0.29)	(0.29)	(0.30)	(0.41)	(0.30)	(0.41)	(0.41)	(0.41)
% Bank Bonds/Households Wealth (lag)			0.01	0.02*	0.01	0.01	0.02*	0.02*	0.01
			(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
% Clients €50-250k				0.00			0.00	0.01	0.00
				(0.01)			(0.01)	(0.01)	(0.01)
% Clients €250-500k				-0.25***			-0.24***	-0.24***	-0.24***
				(0.05)			(0.05)	(0.05)	(0.05)
% Clients +€500k				-0.12			-0.09	-0.09	-0.07
				(0.11)			(0.11)	(0.11)	(0.11)
Log Clients Income					1.67***		1.51**	1.52**	1.43**
					(0.62)		(0.65)	(0.65)	(0.64)
Demand Shock (Std.; Greenstone)						0.00	0.00	0.00	0.00
						(0.02)	(0.02)	(0.02)	(0.02)
Time F.E.	YES	YES	YES	YES	YES	YES	YES	YES	YES
Bank F.E.	YES	YES	YES	YES	YES	YES	YES	YES	YES
N clusters	501	501	501	497	500	497	497	497	497
P-value Time F.E.	0	0	0	0	0	0	0	0	0
R^2	0.37	0.37	0.37	0.38	0.37	0.37	0.38	0.38	0.38
Observations	2630	2589	2589	2578	2588	2583	2578	2578	2578

First Difference Estimations. Outstanding amounts of AMI owned by clients (over financial instruments). Standard errors clustered at the bank level in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

In this context, financial intermediaries with a larger share of deposits may have suggested clients to use their liquidity to increase investment in AMI. This was a win-win strategy: banks raised revenues from distributing AMI without increasing the cost of funding, whereas clients obtained higher returns than keeping their savings as deposits. This mechanism, induced by the expansive monetary policy, is also suggested by Assogestioni (2018). The effect is weaker for MCBs (column [9]).

In contrast with our expectations, we do not find a negative relation between interest margin (over total revenues) and AMI distribution; the coefficient is not statistically different from zero. Therefore we cannot confirm the hypothesis that banks increase the distribution of financial products in order to face negative shocks on the interest margin.

Total assets, which are included as a control variable for bank size, generally present a negative and significant coefficient. As we stressed in Section 3, the observed share of clients' financial instruments invested in AMI may be affected both by supply and demand factors, so that the interpretation of our coefficients of interest may be biased. Therefore, in columns [3] to [9] of Table 3 we add several demand control variables. In column [3] we include the share of bank bonds within households' portfolio: we find a positive relationship as expected, which is slightly statistically significant in columns [4], [6] and [7]. Indeed, after 2012 bank bonds became less attractive (see Section 3) and they had to be substituted with alternative assets: the larger the share of bank bonds, the higher the possibility of substituting them with AMI. The inclusion of this control does not affect our coefficients of interest. In column [4], we control for clients' wealth by including the number of banks' clients according to the size of their financial assets. Among these control variables, the only significant one is related to category €250-500 thousand, with a negative sign: the coefficients of our supply-side variables are not affected. A proxy of clients' income is included in column [5]: the coefficient is positive and highly statistically significant and does not substantially impact on our regressors of interest. Similar results are highlighted in column [6], where we consider another proxy for capturing demand factors obtained by following a procedure in spirit with Greenstone et al. (2014) (see Appendix A.3). Finally, in column [7] we insert all the control variables: again, our main results remain stable.

Table A.2.1 in Appendix A.2 reports the same models of Table 3 except for substituting the texas ratio with a regulatory measure, the Tier 1 capital ratio; we add bad loans as a separate variable. The coefficient of capital ratio is negative and statistically significant at the 10 percent level in columns [1] to [7]: banks with lower levels of capital have higher incentives to increase non capital-absorbing activities like the distribution of AMI. Bad loans, instead, have a positive and statistically significant impact on the distribution of AMI: ceteris paribus, the higher the level of bad loans the higher the expansion of the distribution activity. According to the results in column [8], this relationship is stronger after 2014, when the pressure on reducing bad loans became more intense. All the other results are consistent with estimations reported in Table 3.

Finally, in Table A.2.2, we include the funding gap, defined as the difference between loans and retail funding, scaled by loans. The funding gap may be positively related with the distribution of bank bonds, and negatively correlated with the distribution of AMI because banks with low funding needs might be interested in channelling clients' resources towards AMI.[20] According to the estimates, the coefficient is generally not statistically different from zero. It is negative and statistically significant only for OB in column [9].

4.2 AMI and profitability

In this subsection we show the results related to our second research question: which AMI mostly contributed to bank profitability? Figure 3 has already shown that unit returns of Own PM were the lowest among AMI but increased the most; however, the impact on profitability also depends on banks' ability to sell the different products. Moreover, Figure 3 does not include Other PM, for which unit returns are not available.

Table 4 presents several specifications of the equation (2) of Section 3 where we regress ROE on the shares of specific-AMI distribution fees to the total distribution ones, which we interpret as proxies of the relative importance of each type of AMI in banks' distributive activity. Since the shares of the four AMI (Own PM, Other PM, INS and MF) sum up to one, we omit the variable related to MF: all the other coefficients have to be interpreted in terms of MF.

Columns [1] to [3] concern the base model, whereas in columns [4] and [5] we include interaction terms for our main explanatory variables.

From the specification in column [1] a main result emerges: the distribution of Other PM is more profitable than MF and INS. Indeed, the coefficient is positive and statistically larger than the coefficient related to insurance products. The coefficient on Own PM is also positive and slightly significant, but – by testing the differences among coefficients – its impact on ROE is not statistically different than that of INS. Overall, managed portfolios management contribute to bank profitability more than MF.

In column [2] we add the risk adjusted loans return, which is an important driver of profitability and might affect distributive policies: the coefficient is positive and significant; the impact of Other PM does not change, but the coefficient of Own PM becomes non significant. By adding demand controls (column [3]) the results obtained in column [2] do not change. Interestingly, the coefficient on the share of rich clients (with financial assets over €500k) is positive and strongly significant, suggesting that banks increase their profitability by attracting richer clients. In

[20] The funding gap is defined as the difference of loans and retail funding (deposits and bank bonds owned by retail investors) over loans. Clients' holdings of bank bonds do not coincide with the amount of bonds issued by the bank and owned by retail investors, but the two variables are highly correlated. Therefore, in the regressions we drop the controls clients' holdings of bank bonds, beyond of those on deposits and loans.

Table 4: AMI and profitability

	(1) b/se	(2) b/se	(3) b/se	(4) b/se	(5) b/se
% Own PM Fees (lag)	0.04*	0.04	0.04	0.04	0.06
	(0.02)	(0.02)	(0.02)	(0.03)	(0.10)
% Own PM Fees (lag) post 2014				-0.03	
				(0.06)	
% Own PM Fees (lag) · MCB					-0.03
					(0.10)
% Oth PM Fees (lag)	0.06*	0.06**	0.06**	0.08	0.14**
	(0.03)	(0.03)	(0.03)	(0.05)	(0.06)
% Oth PM Fees (lag) post 2014				-0.04	
				(0.07)	
% Oth PM Fees (lag) · MCB					-0.10
					(0.07)
% INS Fees (lag)	0.01	0.01	0.01	0.01	0.03
	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)
% INS Fees (lag) post 2014				-0.00	
				(0.02)	
% INS Fees (lag) · MCB					-0.03
					(0.03)
Texas Ratio (lag)	0.02	-0.01	-0.01	-0.01	-0.01
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Performing Loans/Assets (lag)	-0.04	-0.02	-0.01	-0.01	-0.01
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Deposits/Assets (lag)	-0.00	-0.00	-0.03	-0.03	-0.03
	(0.02)	(0.02)	(0.03)	(0.03)	(0.03)
Interest Margin/Total Revenues (lag)					
Log Tot. Assets (lag)	0.75	0.47	-0.04	-0.09	0.07
	(0.81)	(0.77)	(1.08)	(1.08)	(1.08)
Risk-adjusted Loans Returns (lag)		1.20***	1.20***	1.20***	1.20***
		(0.15)	(0.15)	(0.15)	(0.15)
% Bank Bonds/Households Wealth (lag)			-0.04	-0.04	-0.04
			(0.04)	(0.04)	(0.04)
% Clients €50-250k			-0.02	-0.02	-0.02
			(0.04)	(0.04)	(0.04)
% Clients €250-500k			-0.14	-0.14	-0.14
			(0.16)	(0.16)	(0.16)
% Clients +€500k			0.66**	0.65**	0.68**
			(0.29)	(0.29)	(0.29)
Log Clients Income			1.41	1.43	1.35
			(1.74)	(1.74)	(1.76)
Demand Shock (Std.; Greenstone)			0.07	0.07	0.07
			(0.07)	(0.07)	(0.07)
Time F.E.	YES	YES	YES	YES	YES
Bank F.E.	YES	YES	YES	YES	YES
N clusters	469	467	463	463	463
P-value Time F.E.	0	0	0	0	0
R2	0.05	0.11	0.12	0.12	0.12
Observations	2219	2209	2201	2201	2201

First Difference Estimations. Return on Equity (ROE). Standard errors clustered at the bank level in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

columns [4] and [5] we do not find differentiated effects between the two subperiods, 2012-1014 and 2015-2017, whereas the distribution of Oth PM is more profitable for OB than for MCB.

As a robustness check, we include the lagged value of our dependent variable in the model in order to purge the estimates from the possibility of time-varying omitted variables. The first difference approach does not properly work in a dynamic setting, so we apply System-GMM estimates (Blundell and Bond, 1998), instrumenting the lagged dependent variable through its second and third lags. Results, which are shown in the Appendix A.2, confirm positive coefficients for Other PM and Own PM; however, they are both statistically significant only in column [2]. The coefficient of the lagged dependent variable is always positive and statistically significant.[21]

5 Conclusions

In this paper we provide empirical evidence about the Italian banks' distribution activity from 2010 to 2017. We analyze three different financial products (AMI): mutual fund shares, insurance contracts and managed portfolios. In our period of analysis, characterised by the lowest level of interest rate margins in Italy in the last 50 years, distribution fees have become a relevant source of revenues for the entire banking sector, rising from €7.1 to €11.8 billion; more than 40% of these fees are obtained by distributing mutual funds, 37% from insurance contracts and the rest from individually managed portfolios. Since 2012 the profitability stemming from the distribution of mutual funds has diminished more than for the other instruments. Most of the banks have increased the distribution activity, however the intensity of this process has been heterogeneous. Between 2012 and 2017 the share of AMI over retail clients' total financial wealth is lower among mutual cooperative banks clients, but it has increased faster among these banks' clients than among other banks clients. In terms of fees, distribution has been more relevant for commercial banks in Northern Italy.

Our econometric analysis sheds light on the main drivers of AMI distribution and on the impact of the distribution of these products on bank profitability. According to the results of our estimates, banks with larger amounts of bad loans relative to capital have distributed more asset management instruments, an activity that does not absorb equity; the relationship is stronger after 2014, when the introduction of the SSM strengthened the dismissal of non-performing loans. Moreover banks which devote more resources to lending are less interested in expanding other banking activities, such as the distribution of AMI, or they are less equipped to do it. After 2014, thanks to the expansive non-standard ECB's monetary policies that reduced

[21] All the estimates pass both the autocorrelation test and the Hansen test. However, the p-value of the Hansen test is too high in columns [1] and [2], suggesting that the estimates of these two specifications are less reliable.

banks' liquidity needs, financial intermediaries with a larger share of deposits might have suggested clients to increase investments in AMI. Finally, fees from individually managed portfolios distribution have contributed to bank profitability more than those from mutual funds.

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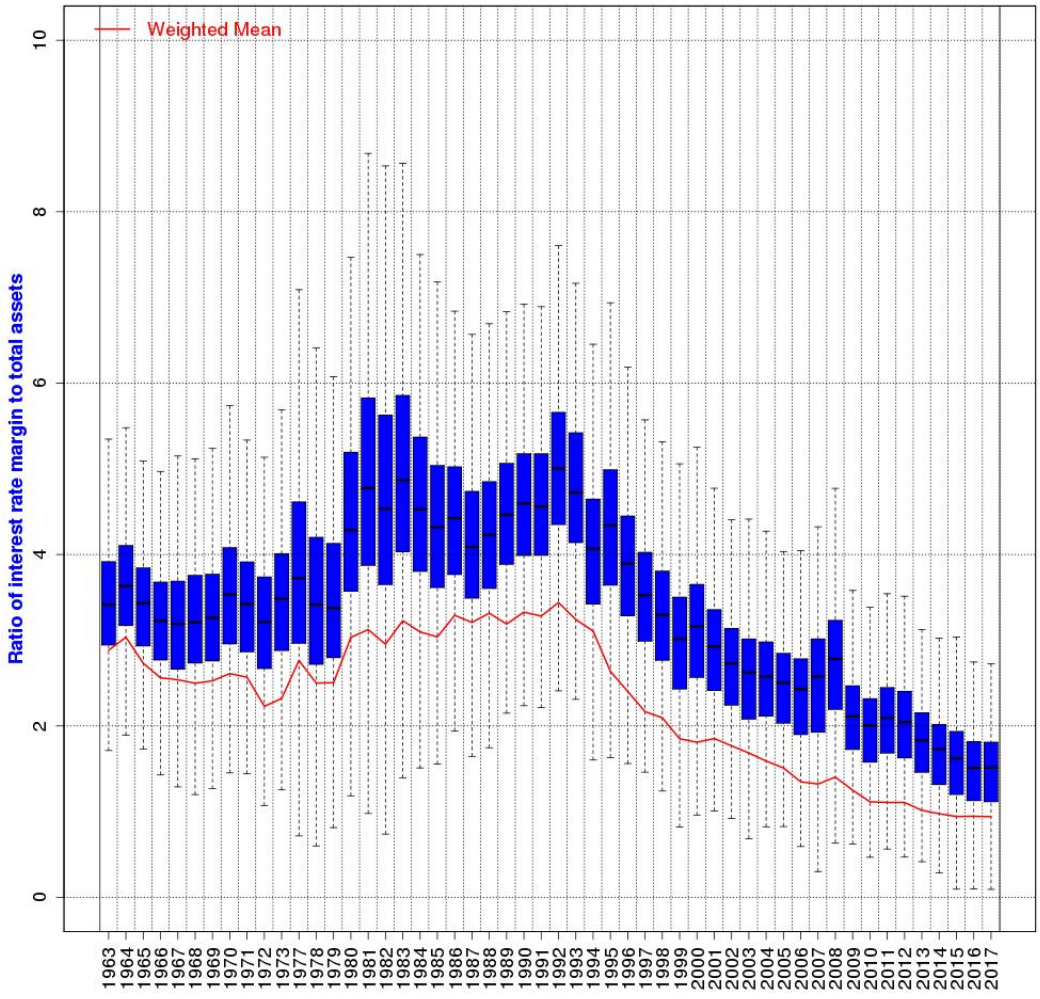
Appendix

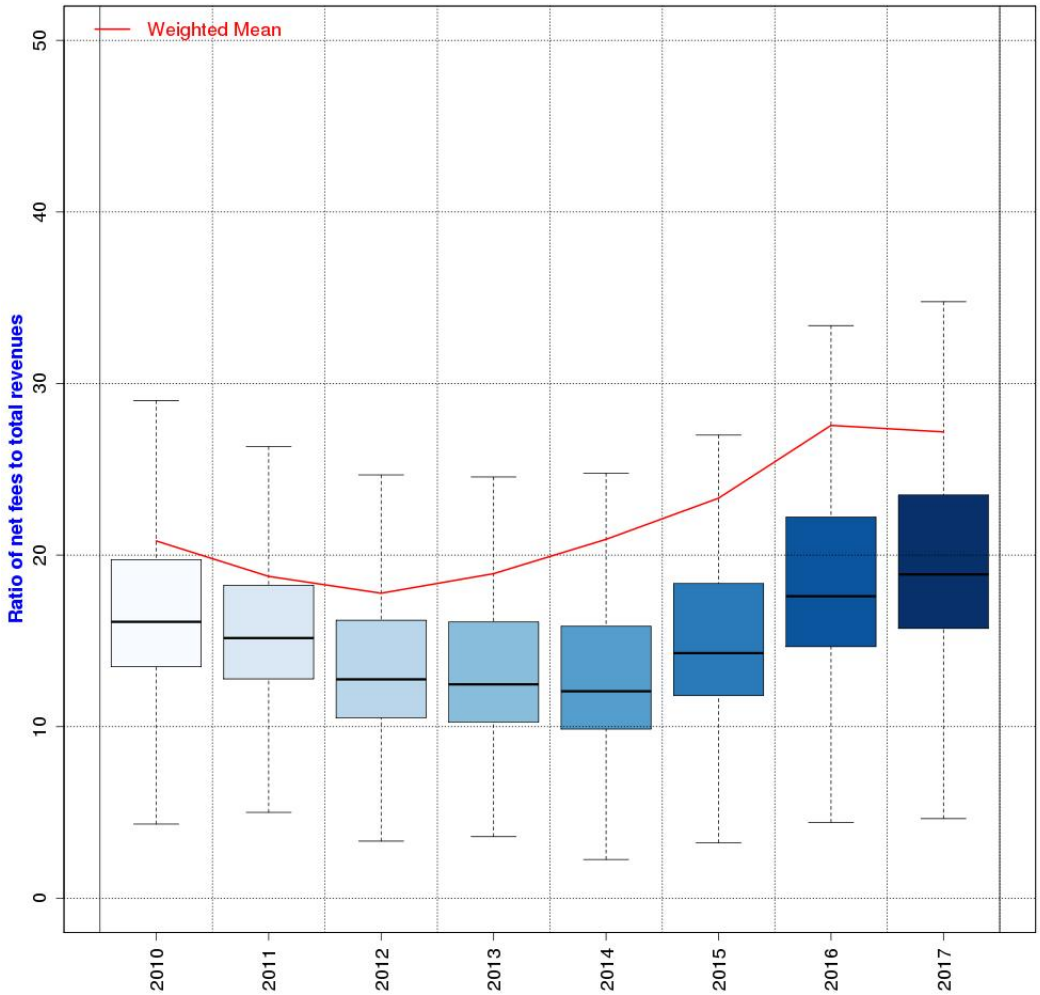
A.1 List of Figures

Figure A.1.1: Ratio of interest rate margin to total assets (1963-2017) (1)
(*Percentage values*)



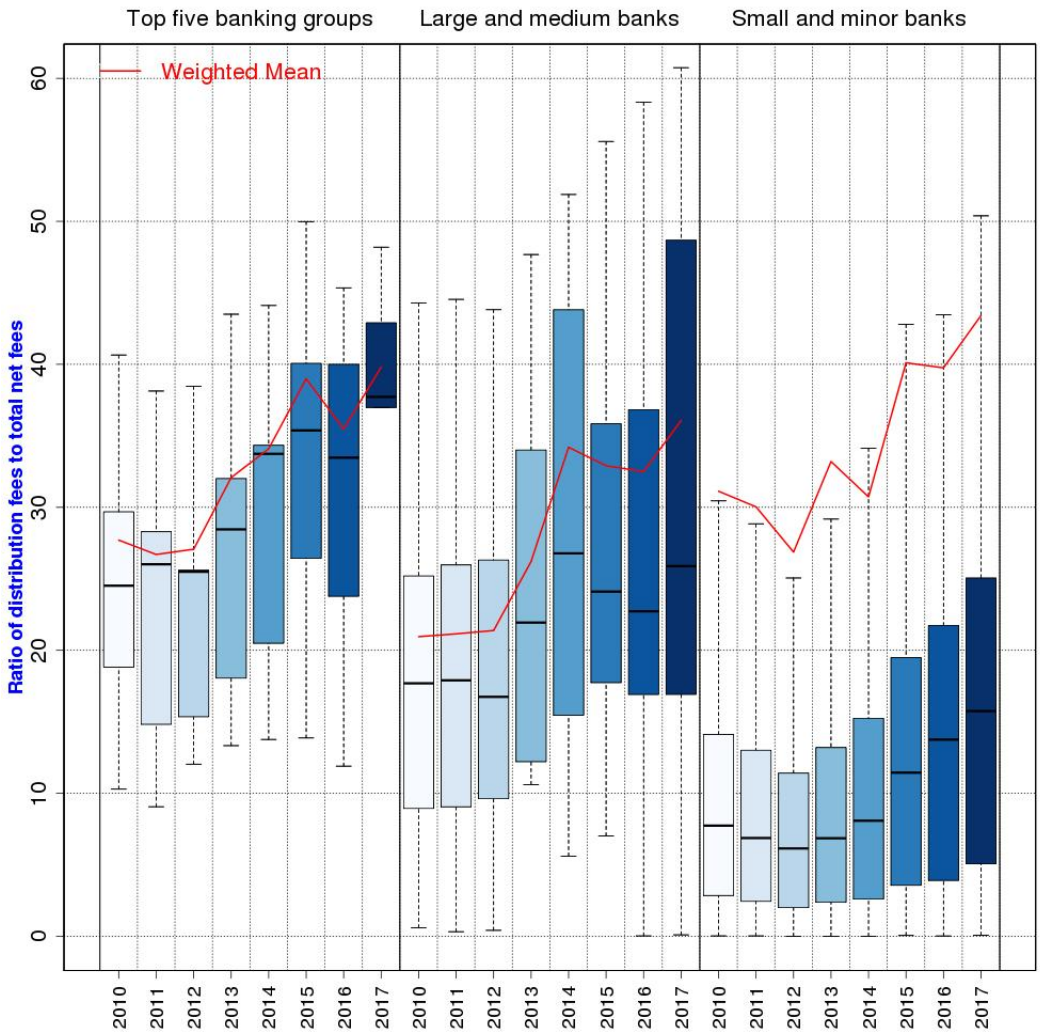
(1) The line in the middle of each box is the median; the lower and the upper side of the box represent the first and the third quartile respectively; the notches extend to $\pm 1.58 \cdot IQR/\sqrt{n}$ so as to give roughly a 95% confidence interval. The red line is the weighted average in terms of total assets. Mutual cooperative banks are included since 1977. No data between 1974 and 1976.

Figure A.1.2: Ratio of total net fees to total revenues (1)
(*Percentage values*)



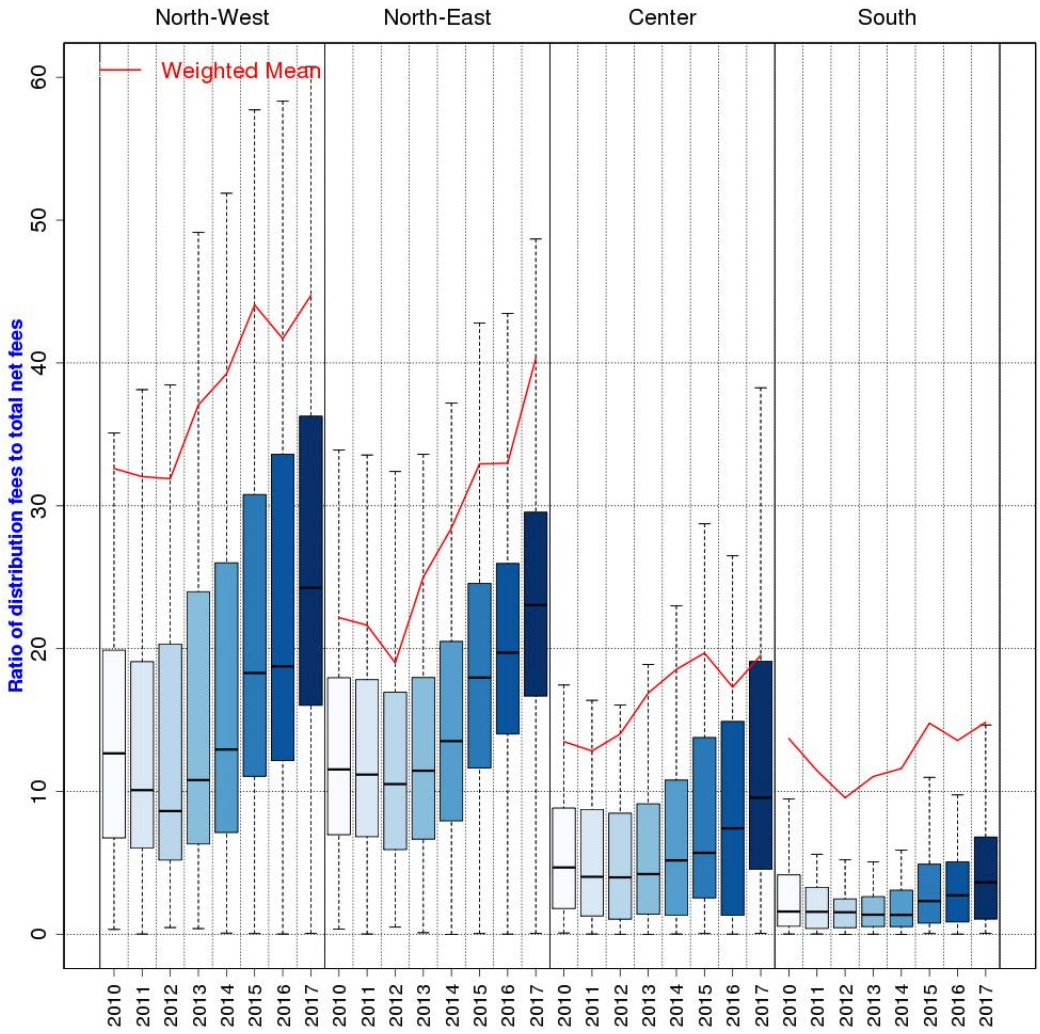
(1) The line in the middle of each box is the median; the lower and the upper side of the box represent the first and the third quartile respectively; the notches extend to $\pm 1.58 \cdot IQR/\sqrt{n}$ so as to give roughly a 95% confidence interval. The red line is the weighted average in terms of total revenues.

Figure A.1.3: Ratio of distribution fees to total net fees by bank dimension (1)
(*Percentage values*)



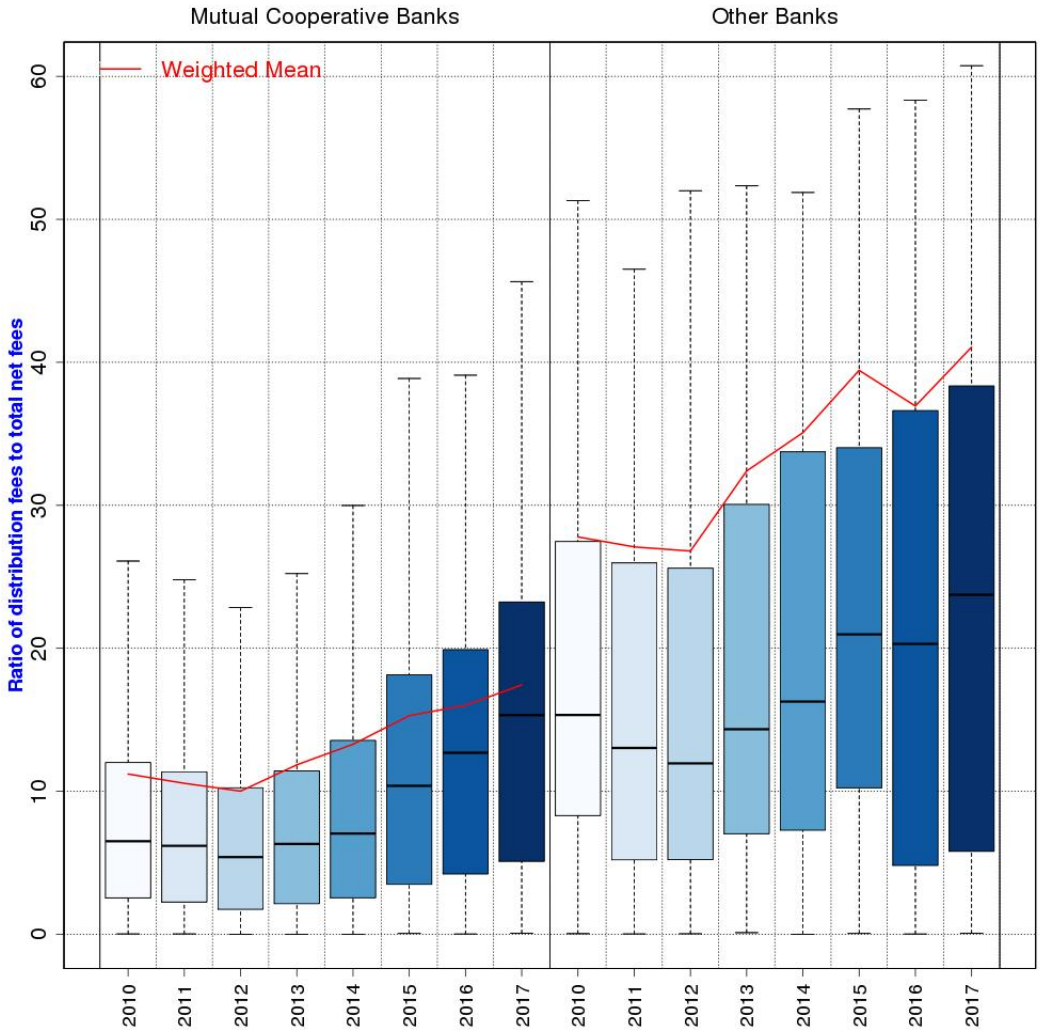
(1) The line in the middle of each box is the median; the lower and the upper side of the box represent the first and the third quartile respectively; the notches extend to $\pm 1.58 \cdot IQR/\sqrt{n}$ so as to give roughly a 95% confidence interval. The red line is the weighted average in terms of total net fees.

Figure A.1.4: Ratio of distribution fees to total net fees by bank headquarters location (1)
(*Percentage values*)



(1) The line in the middle of each box is the median; the lower and the upper side of the box represent the first and the third quartile respectively; the notches extend to $\pm 1.58 \cdot IQR/\sqrt{n}$ so as to give roughly a 95% confidence interval. The red line is the weighted average in terms of total net fees.

Figure A.1.5: Ratio of distribution fees to total net fees by bank legal category (1)
(*Percentage values*)



(1) The line in the middle of each box is the median; the lower and the upper side of the box represent the first and the third quartile respectively; the notches extend to $\pm 1.58 \cdot IQR/\sqrt{n}$ so as to give roughly a 95% confidence interval. The red line is the weighted average in terms of total net fees.

A.2 List of Tables

Table A.2.1: Distribution of AMI – Tier 1 capital ratio

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Capital ratio (lag)	-0.03*	-0.03*	-0.03*	-0.03*	-0.03*	-0.03*	-0.03*	-0.01	-0.03
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.03)
Capital ratio (lag) post 2014								-0.03	
								(0.03)	
Capital ratio (lag) · MCB									-0.01
									(0.03)
Bad loans/Assets (lag)	0.12***	0.11***	0.11***	0.10***	0.09***	0.11***	0.08**	-0.03	-0.00
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.04)	(0.09)
Bad loans/Assets (lag) post 2014								0.18***	
								(0.06)	
Bad loans/Assets (lag) · MCB									0.10
									(0.09)
Performing Loans/Assets (lag)	-0.03***	-0.03***	-0.03***	-0.03***	-0.04***	-0.03***	-0.04***	-0.04***	-0.06***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)
Performing Loans/Assets (lag) post 2014								-0.01	
								(0.02)	
Performing Loans/Assets (lag) · MCB									0.03
									(0.02)
Deposits/Assets (lag)	-0.00	-0.00	0.00	0.01	-0.00	0.00	0.00	-0.01	0.03
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)
Deposits/Assets (lag) post 2014								0.03**	
								(0.02)	
Deposits/Assets (lag) · MCB									-0.04**
									(0.02)
Interest Margin/Total Revenues (lag)		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
		(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)
Interest Margin/Total Revenues (lag) post 2014								-0.00	
								(0.01)	
Interest Margin/Total Revenues (lag) · MCB									-0.01
									(0.02)
Log Tot. Assets (lag)	-0.73**	-0.65**	-0.63**	-0.61*	-1.37***	-0.63**	-1.30***	-1.33***	-1.33***
	(0.31)	(0.30)	(0.31)	(0.31)	(0.43)	(0.31)	(0.43)	(0.43)	(0.43)
% Bank Bonds/Households Wealth (lag)			0.01	0.02*	0.01	0.01	0.02*	0.02	0.01
			(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
% Clients €50-250k				0.00			0.00	0.00	0.00
				(0.01)			(0.01)	(0.01)	(0.01)
% Clients €250-500k				-0.23***			-0.22***	-0.23***	-0.22***
				(0.05)			(0.05)	(0.05)	(0.05)
% Clients +€500k				-0.09			-0.06	-0.06	-0.05
				(0.11)			(0.11)	(0.11)	(0.11)
Log Clients Income					1.59**		1.49**	1.55**	1.38**
					(0.66)		(0.68)	(0.67)	(0.67)
Demand Shock (Std.; Greenstone)						0.00	-0.00	0.00	-0.00
						(0.02)	(0.02)	(0.02)	(0.02)
Time F.E.	YES	YES	YES	YES	YES	YES	YES	YES	YES
Bank F.E.	YES	YES	YES	YES	YES	YES	YES	YES	YES
N clusters	498	498	498	494	497	494	494	494	494
P-value Time F.E.	0	0	0	0	0	0	0	0	0
R^2	0.37	0.37	0.37	0.37	0.37	0.37	0.38	0.38	0.38
Observations	2553	2525	2525	2514	2524	2519	2514	2514	2514

First Difference Estimations. Outstanding amounts of AMI owned by clients (over financial instruments). Standard errors clustered at the bank level in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A.2.2: Distribution of AMI – Funding Gap

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Texas Ratio (lag)	0.02***	0.02***	0.02***	0.02***	0.02***	0.02***	0.01**	0.04***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.01)	(0.01)
Texas Ratio (lag) post 2014							0.02**	
							(0.01)	
Texas Ratio (lag) · MCB								-0.02*
								(0.01)
Funding Gap (lag)	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.02*
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.01)	(0.01)
Funding Gap (lag) post 2014							0.00	
							(0.01)	
Funding Gap (lag) · MCB								0.02**
								(0.01)
Interest Margin/Total Revenues (lag)		0.00	0.00	0.00	0.00	0.00	0.00	0.02
		(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)
Interest Margin/Total Revenues (lag) post 2014							-0.01	
							(0.01)	
Interest Margin/Total Revenues (lag) · MCB								-0.02
								(0.02)
Log Tot. Assets (lag)	-0.65**	-0.59**	-0.57**	-0.97***	-0.58**	-0.90**	-0.91**	-0.85**
	(0.27)	(0.27)	(0.28)	(0.35)	(0.28)	(0.37)	(0.37)	(0.36)
% Clients €50-250k			0.01			0.01	0.01	0.01
			(0.01)			(0.01)	(0.01)	(0.01)
% Clients €250-500k			-0.24***			-0.24***	-0.24***	-0.24***
			(0.05)			(0.05)	(0.05)	(0.05)
% Clients +€500k			-0.12			-0.11	-0.11	-0.08
			(0.11)			(0.11)	(0.11)	(0.11)
Log Clients Income				1.01*		0.88	0.92	0.74
				(0.59)		(0.62)	(0.62)	(0.62)
Demand Shock (Std.; Greenstone)					0.01	0.01	0.01	0.01
					(0.02)	(0.02)	(0.02)	(0.02)
Time F.E.	YES	YES	YES	YES	YES	YES	YES	YES
Bank F.E.	YES	YES	YES	YES	YES	YES	YES	YES
N clusters	501	501	497	500	497	497	497	497
P-value Time F.E.	0	0	0	0	0	0	0	0
R2	0.37	0.36	0.37	0.37	0.36	0.37	0.37	0.38
Observations	2630	2589	2578	2588	2583	2578	2578	2578

First Difference Estimations. Outstanding amounts of AMI owned by clients (over financial instruments). Standard errors clustered at the bank level in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A.2.3: AMI and profitability - System-GMM estimates

	(1)	(2)	(3)	(4)	(5)
	b/se	b/se	b/se	b/se	b/se
ROE (lag)	0.97**	1.06**	1.02**	1.02**	1.01**
	(0.41)	(0.44)	(0.42)	(0.42)	(0.42)
% Own PM Fees (lag)	0.02	0.04*	0.02	0.00	0.03
	(0.01)	(0.02)	(0.01)	(0.02)	(0.02)
% Own PM Fees (lag) post 2014				0.03	
				(0.02)	
% Own PM Fees (lag) · MCB					-0.02
					(0.02)
% Oth PM Fees (lag)	0.01	0.03*	0.02*	0.02	0.00
	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)
% Oth PM Fees (lag) post 2014				0.01	
				(0.03)	
% Oth PM Fees (lag) · MCB					0.03
					(0.02)
% INS Fees (lag)	0.00	0.00	0.00	0.01	-0.01
	(0.00)	(0.01)	(0.01)	(0.01)	(0.01)
% INS Fees (lag) post 2014				-0.01	
				(0.01)	
% INS Fees (lag) · MCB					0.01
					(0.01)
Texas Ratio (lag)	0.01	-0.04**	-0.03*	-0.03*	-0.03*
	(0.03)	(0.02)	(0.02)	(0.02)	(0.02)
Performing Loans/Assets (lag)	-0.05***	-0.01	-0.03*	-0.04*	-0.03*
	(0.01)	(0.02)	(0.02)	(0.02)	(0.02)
Deposits/Assets (lag)	0.01	0.02	0.02	0.01	0.02
	(0.02)	(0.02)	(0.03)	(0.03)	(0.03)
Interest Margin/Total Revenues (lag)	0.06***	0.06***	0.08***	0.08***	0.08***
	(0.01)	(0.02)	(0.02)	(0.02)	(0.02)
Log Tot. Assets (lag)	0.21***	0.50***	-1.00	-1.04	-0.87
	(0.08)	(0.12)	(0.65)	(0.66)	(0.67)
Risk-adjusted Loans Returns (lag)		2.59**	2.59***	2.60**	2.59**
		(1.02)	(1.00)	(1.02)	(1.01)
% Bank Bonds/Households Wealth (lag)			0.02	0.02	0.02
			(0.02)	(0.02)	(0.02)
% Clients €50-250k			-0.06	-0.06*	-0.06*
			(0.04)	(0.04)	(0.03)
% Clients €250-500k			-0.01	0.02	0.01
			(0.13)	(0.13)	(0.13)
% Clients +€500k			0.39**	0.38**	0.38**
			(0.17)	(0.17)	(0.17)
Log Clients Income			1.67**	1.71**	1.60**
			(0.76)	(0.77)	(0.75)
Demand Shock (Std.; Greenstone)			0.19*	0.19*	0.20*
			(0.11)	(0.11)	(0.11)
Constant	-2.30	-12.81**	-11.26***	-11.12***	-11.68***
	(1.62)	(5.13)	(4.10)	(4.06)	(4.10)
Time F.E.	YES	YES	YES	YES	YES
Bank F.E.	YES	YES	YES	YES	YES
N clusters	468	466	461	461	461
P-value Time F.E.	0	0	0	0	0
P-value AR(1)	0.010	0.004	0.003	0.003	0.003
P-value AR(2)	0.284	0.270	0.263	0.267	0.272
P-value Sargan Test	0.298	0.293	0.201	0.201	0.199
P-value Hansen Test	0.565	0.502	0.339	0.319	0.352
N Instruments	17	18	24	27	27
Observations	2193	2184	2173	2173	2173

System GMM Estimations. Return on Equity (ROE). The lagged dependent variable is instrumented using the second and the third lag. Standard errors clustered at the bank level in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

A.3 Methodology for obtaining bank demand shocks

In Section 3 we explain that our regressions should include controls for the demand of AMI. Among the controls added to the regressions, we also consider a proxy for demand shocks which is obtained following a methodology in spirit with Greenstone et al. (2014). The basic idea is to exploit bank-province data on distributed financial instruments to disentangle a supply shock – measured through bank fixed effects, that do not depend on local demand shocks – and a demand shock – measured through province fixed effects, that do not depend on bank policies. The first shock is identified if banks operate in more than one province, whereas the second one is identified if several banks operate in each province.

Within Supervisory Reports, data on the distribution activity at the bank-province level are not available. However, banks are required to provide information on the outstanding amounts of the financial products they have in custody according to the holders' province of residence. Therefore, assuming that clients deposit financial instruments at the same bank that distributed them, we can exploit these data to approximate the distribution activity at the bank-province level.

First, we run the following regression year by year:

$$\Delta Q_{p,i,t} = d_{p,t} + s_{i,t} + \varepsilon_{p,i} \quad \forall t \tag{A.3.1}$$

where $\Delta Q_{p,i,t}$ is the yearly change of the stocks of financial products (in log terms) kept in custody by bank i and held by clients of province p. The parameters $s_{i,t}$ are the bank fixed effects while $d_{p,t}$ represent the province fixed effects. So, the bank fixed effects capture the supply shocks while the province fixed effects capture the local demand shock for financial products distributed by banks.

Second, we use the estimated parameters to compute our proxy of demand shocks for bank i and year t, $\pi_{i,t}$:

$$\pi_{i,t} = \sum_{p} m_{p,i,t-1} \hat{d}_{p,t} \tag{A.3.2}$$

where $\hat{d}_{p,t}$ is the estimated fixed effect of province p and $m_{p,i,t-1}$ is the ratio between the financial products held by clients resident in province p and the overall financial products kept in custody by bank i. In practice, we derive the local demand shock faced by bank i in year t by weighing the estimated province fixed effects by the (lagged) relevance of province p for bank i.

The estimated proxy is added to the model as a control for the demand of AMI.