The Determinants of Household's Bank Switching[*]

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Abstract

We investigate the determinants of bank switching in 2006-2012 period by households exploiting a unique nation-wide panel dataset from Bank of Italy Survey on Household Income and Wealth that follows households and their bank(s) over time. Focusing on the features of household-bank relationship, we find that exclusivity (using a single bank), intensity (number of services used), and scope (types of services used) of the relationship play a role in household decision to switch a bank. Moreover, we find that this decision is strongly positively correlated with both taking out and paying off a mortgage. We also find robust evidence that risk preferences, mobility and economic condition of the household do not affect the propensity to switch, whereas education and financial literacy do matter for this decision, albeit with opposite effects. Cooperative, large, and unlisted banks are significantly less likely to be discarded. Bank performance partly matters, and switching is also more frequent with banks losing more customers than attracting new ones.

Keywords: household-bank relationship, switching, bank specialization, mortgage

JEL Classification: G21; D14

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1.   Introduction

Bank clients are increasingly taking control of their banking relationships. The proportion of clients planning to change banks is 12% at world level in 2012, with sensitivity to fees and charges that lead the change (Ernst and Young, 2012). In response, banks need to embrace this trend and give greater flexibility, choice and control to their customers. As Ernst and Young (2012) puts it: "*Giving more power to customers may feel uncomfortable, but in the long run banks that do so will position themselves for success in the future*". Basel III also draws attention to bank relationship with its retail clients. BIS liquidity requirements discriminate between "stable" and "unstable" customer relationship. Specifically, a condition for a deposit to be considered stable is that: "*the depositors have other established relationships with the bank that make deposit withdrawal highly unlikely*" (paragraphs 74 and 75, BIS, 2013).

Despite these trends in retail banking and policy relevance, there is little research on the dynamics of household-bank relationship over time. In fact to the best of our knowledge this paper represents the first attempt to investigate household's decision to switch bank, focusing in particular on the features of their relationship, such as whether the household uses other banks, and how many and which type of services it uses.

To this end, we exploit a unique panel dataset mainly drawn from Bank of Italy Survey on Household Income and Wealth (SHIW) and spanning the 2006-2012 period. Italy lends itself particularly well to this kind of analysis given that as much as one out of four households in the sample change their main bank at least once in the observed period. The dataset identifies the bank(s) chosen by each household and the services used: for instance, a household which in 2006 uses bank A to manage its payment of utilities, in 2008 decides to switch from bank A to bank B to take out a mortgage in addition to (or instead of) its payment of utilities. Complementing this household level information with bank level information from BankScope (BS) enables us to single out

households that switch their bank and relate their decision to the features of their relationship, controlling for household, bank and background characteristics.

We find robust evidence that household's switching bank is strongly associated with the household-bank relationship features in terms of exclusivity (using a single bank), intensity (number of services used), and scope (type of services used) of the relationship. More specifically, we find that both taking out and paying off a mortgage strongly increase the likelihood of the household's decision to switch. Besides, several household characteristics which are traditionally identified as being associated with personal financial decisions – household size, marital status, education and financial literacy – matter for propensity to switch, whereas no role for the overall economic condition of the household is found. Finally, switching is found to be associated with bank's size and performance, and to be less frequent among clientele of cooperative banks, while the reverse is true for listed banks.

The rest of the paper is organized as follows. Next Section reviews the literature. Section 3 formalizes the estimation strategy. Section 4 describes the dataset, defines the variables of interest for the analysis, and provides the descriptive statistics. Section 5 presents the empirical findings and Section 6 discusses their robustness. Finally, Section 7 concludes and formulates some suggestions.

2.   Literature Review

Our study relies in the intersection of two main streams of literature, namely banking and household finance.

On the one hand, the well-established literature on bank-firm relationships cover, among other topics, the importance of deposit relationships in traditional lending (Hodgman, 1961; Kane and Malkiel, 1965; and Santikian, 2014), relationship duration (Ongena and Smith, 1998 and 2001), number of bank relationships (Ongena and Smith, 2000; Farinha and Santos, 2002; Detragiache et al. , 2000), the uniqueness of bank-firm relationship (Fama, 1985; James, 1987; Lummer and McConnell, 1989), the dynamics of consumer relationship in bank loan market (Sharpe, 1990), the importance of

competition in credit markets (Petersen and Rajan, 1995), and firm's decision to switch bank (Gopalan et al. 2011; Degryse et al., 2011). Our investigation draws from this bank-firm relationship literature and adapts it to a household-bank relationship in which a household (client) has the upper hand.

On the other, the increasing (positive) household finance literature (see Campbell, 2006 for an excellent review) investigates how households actually take financial decisions. Bulk of this literature focuses on the asset side of household's portfolio[1] and relates it to households' demographic and socio economic characteristics. The decisions investigated cover consumption and saving (see e. g. Browning and Lusardi, 1996 and references therein), payment and borrowing, (see Cox and Jappelli, 1990 and 1993; Crook, 2001; Guiso et al., 2014), various types of insurance (Lin and Grace, 2007; Goldman and Maestas, 2013), and especially portfolio choices, both financial (Guiso et al., 2002; Guiso and Sodini, 2012) and real (Flavin and Yamashita, 2002; Cocco, 2004; Battu et al., 2008).

Yet, to date very few contributions investigate the household-bank relationship. The exception is the literature on market discipline and bank runs, which focuses on clients' concern over bank's (potential) distress as a determinant of deposit interest rates, proportion of uninsured deposits and deposit withdrawals (see eg. Diamond and Dybvig, 1983; Iyer and Puri, 2012; Iyer et al., 2013; Demirguc-Kunt and Huizinga, 2004; Goldberg and Hudgins, 2002). Nevertheless, in this literature the main driver of household leaving the bank is the belief that the bank might fail, and hence is the same across all agents. In our research, we investigate the independent, heterogenous decisions of households to leave their bank, linked for instance to the possibility that the households find some better alternative offer for the bank product they need at the moment.

Our study touches upon the contributions by Kiser (2002), Brown and Hoffmann (2013) and Brown et al., 2013.

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[1] As Zinman (2014) puts it: "…*household debt is a neglected topic within the relatively neglected sub-field of household finance*".

Kiser (2002) empirically investigates the covariates of switching costs and decision to switch banks using a sample of 1500 US households drawn from the 1999 Michigan Surveys of Consumers. She looks at household socio-economic observables and self-reported reasons for remaining with their first-ever bank, finding a positive and significant role for income, age and especially homeownership, which may have a "lock-in" effect and guarantee a long-term bank relationship.

Brown and Hoffmann (2013) and Brown et al. (2013) rely on a telephone-based survey conducted in 2011 by GfK that samples around 1500 Swiss households. In the former, the authors focus on 470 mortgage holders with multiple bank relationships to compare mortgage and non-mortgage relations for the same household. They find that mortgage relations are used within a broader scope of services, are held with the banks geographically closer to the household and are recently established compared to non-mortgage relations. They also find a role for financial literacy, as more literate borrowers are less likely to hold a mortgage with a local bank. Brown et al. (2013) focus on the role of switching costs and insurance coverage in mitigating the risk of deposit withdrawals from large, distressed commercial banks in the financial crisis period (2008-2009). They find that household-level switching costs lower the propensity to withdraw deposits from a distressed bank, whereas no effect is found for deposit insurance coverage.

3. Estimation Strategy

In order to investigate the determinants of bank switching, we estimate the following probit model specification:

$$\Pr(S_{it} = 1) = \Phi(\alpha + \mathbf{R}_{it-1}\beta + \mathbf{H}_{it-1}\gamma + \mathbf{B}_{it-1}\delta + \mathbf{X}_{it-1}\theta) \tag{1}$$

where S_{it} (*Switch*) is a binary variable taking value 1 if household i changes its main bank between $t-1$ and t, and 0 otherwise, while Φ represents the cumulative distribution function of a standard normal distribution. Matrix $\mathbf{R}$ contains the variables of interest, namely household-bank relationship characteristics in terms of exclusivity,

intensity, and scope. By exclusivity we mean whether the household has relationship with only one bank, while with intensity we refer to the strength of the relationship, as represented for instance by the number of bank services used. Finally, the scope of the relationship captures the actual nature of the household-bank relationship, e.g. in terms of which types of banking services are used. Matrices **H** and **B** include standard socio-economic household's characteristics and bank's characteristics in terms of specialization, size and performance, respectively. Finally, matrix **X** includes further controls for background, such as time and space.

This specification allows us to disentangle the effects of household-bank relationship characteristics from potentially confounding factors, such as household and bank features, as well as characteristics of the institutional environment which may all be associated with household's propensity to switch a bank.

All regressors are entered lagged one period. This choice is driven by a twofold advantage. First, it assures model predetermination. Using controls in t would in fact be correct if and only if the switch from one bank to another occurred exactly in t. Yet, while our dependent variable *Switch* captures whether a bank switch has occurred at some point in time between $t-1$ and t, the exact timing of the switch remains unknown. Hence, entering the regressors at t would introduce the risk of modelling a choice as a function of controls actually located in a future point in time. Second, it allows to highlight which are the characteristics of the discarded bank that favour the switch, thereby providing more ready-to-use implications for the banks aimed at stabilizing their relationships with households.

Notice that, since probit is a nonlinear model, the estimated coefficients are not directly interpretable as marginal effects.[2] Thus, in order to ease interpretation, we will

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[2] In fact,

$$\frac{\partial \mathbb{P}[Y_i = 1 | X_{1i,\ldots\ldots}X_{Ki}; \ \beta_0, \ldots., \beta_K]}{\partial X_{ki}} = \beta_k(\beta_0 + \sum_{k=1}^{K} \beta_k X_{ki})$$

present the average marginal effects, computed as the average change in predicted probability due to a change in the independent variable,[3] i.e.:

$$\frac{\Delta \Pr(y = 1|x)}{\Delta x_k}$$

Finally, the model is estimated via maximum likelihood, using robust standard errors clustered at household level.

4.   Data

4.1. Dataset

The Bank of Italy Survey on Household Income and Wealth (SHIW) is a biannual survey which interviews in each wave a population-representative sample of around 8,000 Italian households, almost half of them panel. The survey encompasses plenty of information ranging from basic demographic to various economic variables, including detailed information on household-bank relationship(s). Among the latter, we are able to use the bank identifier.[4] This allows us three things. First, we observe which bank(s) each household uses in each wave, and which among those is the "main bank".[5] Second, following panel household over time, we are able to timely trace the household's decision to change the main bank (i.e. to construct our dependent variable *Switch*). Finally, we are able to match the household-level information to detailed bank-level information from BankScope (BS). BS in fact reports, on a yearly basis, information from bank balance sheet and income statement, as well as information on bank specialization and market listing status.

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[3] The marginal effects are computed as the (sample weighted) average of the marginal change in each household's probability when each of the explanatory variables changes from 0 to 1, if dichotomous, or by a marginal amount, if continuous.

[4] In using this variable, we took into account possible restructuring and associated name changes at the national level.

[5] See next Sub-section for the exact wording of the SHIW questionnaire.

Our final dataset thus contains all the relevant household's characteristics complemented with a rich set of bank indicators, representing the first attempt to provide a complete picture of the household bank relationship.

4.2. Variable definitions

This section describes the variables included in the empirical counterparts of model (1).

The dependent variable, named *Switch*, is a binary variable taking value 1 if household i changes its main bank between $t-1$ and t, and 0 otherwise.

Following estimation strategy Section, the controls include Matrix **R**, which contains household-bank relationship variables. The core information on household-bank relationship relies on the following questions. The first and second concern which bank(s) the household uses ("*Which among [the listed banks] do you use?*") and which among those they consider the main bank ("*Which of [the listed banks] do you use most often?*"). The third question is: *"Apart from your account, what other financial products/services of your main bank do you use?"*. Households might indicate one or more among the following: payments of utilities, rent or other expenses; mortgage; consumer credit and personal loans; securities custody, administration and management; and insurance payments.

Based on these questions we build: (i) exclusivity, a dummy taking value 1 if the household has relationship with one bank only, and 0 otherwise; (ii) intensity, a categorical variable counting the number of banking services used by the household; and (iii) scope of the relationship, function of the services used distinguished by type. More specifically, we capture the scope of the relationship in two different ways.

First, we group the used services into three homogeneous categories:

(1) pure services, including payment of all utilities, rent or other expenses and insurances instalments;

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(2) credit services, including consumer credit and personal loans as well as mortgages;

(3) trading services, including securities custody, administration and management.

Second, we define a set of dummy variables isolating each service added or dropped by the household between $t - 1$ and t. More precisely, these dummies take value 1 when the household does not use (uses) a specific service in $t - 1$ but uses (does not use) it in t, thereby capturing the change in the scope of the household-bank relationship. In this way, we link the (potential) decision of the household to change its main bank to the (potential) change in the bank services required by the household.

In line with the above cited literature on household finance, matrix **H** includes standard socio-economic and demographic controls. Namely we control for household size, as well as age, gender, marital status, education, financial literacy and risk aversion of the household head.[6] Education is entered with two dummies for the highest education level achieved being secondary school or college and graduate or post-graduate level, respectively. Information on the household head's financial knowledge vary slightly from wave to wave so we focus simply on the two questions common to the all the waves. One concerns mortgages: the respondent is asked to indicate the type of mortgage (fixed rate, adjustable rate, or adjustable rate with constant instalments) involving a fixed (in advance) number and amount of instalments to repay the debt. The other question concerns real interest rates: respondents are asked to indicate the amount of goods they can buy (the same, less, or more) at the end of the year if they leave 1,000 euro in a bank account, for a year, at an annual interest rate of 1% in nominal terms, when annual inflation is 2%. We thus create a categorical variable that count the total number of correct answers. Financial literacy is thus entered into the model with two dummies: one for answering correctly only one question out of two (Intermediate financial literacy), and one for answering correctly both questions (Good financial literacy). Risk aversion is measured based on a self-assessed preference for investment profiles, ranging from 1 (high risk, high returns) to 4 (no risk, low returns).

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[6] The head of the household in the SHIW is defined as the person in charge of taking the economic and financial choices of the household.

We thus include as a control a dummy taking value 1 if the preferred investment profile is the fourth. The overall economic condition of the household is captured by the main professional occupation of the household head, and by household's deposits, net disposable income and net wealth. Finally, mobility is proxied by means of two dummies: one for having changed municipality of residence between t - 1 and t, and one for owning the residential house.

As well for matrix **B** of bank characteristics, we take into account: bank size, merger & acquisition (M&A), specialization, market status, financial performance and customers net flows. The bank size is measured with the total assets, while M&A is a dummy taking value 1 if the bank was involved in a M&A process between t - 1 and t. Bank specialization is controlled for with a set of dummies for the bank being cooperative, saving or commercial. The bank listing status is captured by a dummy taking value 1 if the bank is listed, and 0 otherwise. For bank performance we use Return on Equity, Net Interest Revenue, Net Interest Margin, Equity over Total Asset, Net Loan over Total Asset. Finally, based on the total number of households which left (join) a bank, we create a variable counting the bank's customers net flows. The estimated model includes two dummies, namely Customer inflows (outflows), taking value 1 if the net flow is positive (negative), and 0 otherwise.

For the background matrix **X**, we include macro-region and time dummies, as well as the size of the city of residence, and the number of ATM (or of branches) at the province level as proxies for bank competition.

For a detailed definition of all the variables used in the analysis, see Appendix A.

4.3. Descriptive statistics

The estimation sample covers the 2006-2012 period and consists of an unbalanced panel of 2,972 unique households, for a total of 4,584 household-level observations.[7]

Table 1 reports descriptive statistics of the estimation sample. Looking at the dependent variable, around one out of four households in our sample changes its main bank. Almost all of them do actually switch to a new bank (Switch New). These are striking results if we think at the high level of inertia that characterizes household choices (see e.g. Haliassos and Bertaut, 1995). Looking at the time break-down, the share of households changing their main bank starts from more than 30% in 2008, while afterwards the path remains stable around 20%. This might be due to the Law 40/2007, also known as "Bersani's Decree", which came into force at the beginning of 2007. That law increased flexibility in Italian mortgage market by introducing, among other things, the "subrogation" of initial creditor, which *de facto* swept any switching cost out to move the original loan from one bank to another.[8]

As for the household-bank relationship, 80% of households have only one bank (exclusivity) and the median household uses only 1 service in addition to bank account. Almost all households (98%) use at least one pure service on top of a bank account, at least one crediting service is used by 19% of the households and trading services are used by 20% of the households. Changes in services is more frequent for payments (around 6% of households in the sample add this service and 11% drop it), mortgages (around 6% add it and 6% drop it) and portfolio management (7% add and 8% leave it).

Across the four waves, the median household counts 2 household members. Household head is male with probability of 67% and married with probability of 69%. The median household head is 54 years old and has completed secondary school. The

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[7] We exclude households with household head (defined in the SHIW as the person in charge of taking the economic and financial choices of the household) aged over 91 or below 19, as well as households which possess neither financial nor real assets, or that report negative total consumption.

[8] Since the law came into force between two SHIW waves, we cannot precisely assess its total impact on the switching decision. However, part of the higher share we observe in 2008 with respect to a more stable path we observe in the following years might well be ascribed to this change in legislation. As a robustness check, we report results on the 2010-2012 subperiod in Table 4.

average financial literacy is quite good, as the number of correct answers to questions concerning financial literacy is 1 with probability 32% and 2 with probability 57%. The average risk aversion in our sample is 3.2 on 1 to 4 scale, where 1 represents risk-lover and 4 risk-averse profile. Around 41% of household heads are employees, 17% are self-employed, while the rest are not employed.

The household has median annual net disposable income of slightly more than 36,000€ and net wealth of around 228,000€. When it comes to homeownership, around 76% of the households in our estimation sample do own their residential home, while only 2% of households have moved from one municipality to another between two waves, meaning that the degree of mobility is quite low.

Banks used by households are commercial with probability 82%, saving with probability 7% and cooperative with probability of almost 10%.

[Table 1 about here]

Our sample includes 84 unique banks, 53 of them are commercial, 16 saving, and 15 cooperative banks. These banks are representative of the Italian banking industry, as the commercial banks in our sample account for 97% in terms of total assets of all the commercial banks in the market. Similarly, these shares are 52%, and 43% for cooperative and saving banks respectively.[9] Our dataset also mimics the world' s bank distribution in terms of total assets by specialization, since the commercial banks in our sample hold around 80% in terms of total assets of all the banks in our sample, saving banks hold the 5%, and the cooperative ones the 14% which is very much aligned with the value of cooperative banks at world level that Hesse and Cihák (2007) who also report a value slightly above 14%.

Descriptive statistics for the unique banks are reported in Table 2 . More than 26% of the banks are listed. In terms of total assets, which we use as a proxy for size, the median bank has 11.84 billion euros. Notably, the size of cooperative banks is quite

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[9]The shares of cooperative and saving banks are indeed quite high in relative terms, due to the high level of parcellisation and territoriality of these types of banks.

similar to commercial ones and very much aligned to the overall bank size, meaning that bank size is not necessarily associated to bank specialization.

[Table 2 about here]

5.   Results

Table 3 reports the estimation output of the first empirical counterpart of equation (1), in which the scope of the household-bank relationship is captured by the types of banking services used by the household.

Remarkably, all the variables concerning the household-bank relationship are statistically significant. Consistently with our expectations, having relationship exclusively with one bank reduces the probability of switching by more 8%. The total number of services has a similar effect: for each additional service used at the main bank, the household is as much as 4% less likely to switch bank (see Column (1), Table 3). Since the latter is a well-recognized measure of cost of switching, this result is consistent with the existing literature (Brown et al., 2013). In order to further investigate this issue, Columns (2) and (3) show that this effect is mainly due to payments, consumer credit and portfolio management, suggesting that those are the services for which households are more likely to be loyal to their main bank.

Turning to bank's characteristics, all estimated specifications in Table 3 show that having undergone a merger & acquisition (M&A) process as well as bank's performance measured by ROE, Equity over total assets and Net loans over total assets do not play any role. What really seems to be associated to household's switch is instead the performance from the traditional credit activity, as measured by the Net Interest Revenues (NIR), and the Net Interest Margin (NIM). The two variables show an opposite effect: specifically, while higher net revenues are positively associated with switches, higher net interest rates reduce the probability of switching. The intuition behind this result is that revenues measure banks' profits regardless of the level of interest rates applied to the clients. In fact, a bank applying

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8% mortgage interest rate and giving 6% on deposits has the same NIM of 2% of another bank applying 3% and 1% respectively.

Moreover, bank specialization is crucial. In fact, the coefficients in Table 3 show that cooperative banks are considerably less likely (almost 9%) to be discarded with respect to commercial banks, while this is not true for saving banks. This result, coupled with the descriptive evidence reported in the Table 2, leads to the possible interpretation that households tend to leave their bank considering its specialization in addition to its size but not its recent history in terms of merges and acquisitions. This evidence can be extended to the entire banking sector since, as previously highlighted, our sample reflects the Italian as well as the worldwide market distribution (see e.g. Hesse and Cihák, 2007) in terms of bank specialization.

Finally, household are more prone to leave a listed bank. Our evidence, thus, might be suggestive of the fact that banks might actually play an active role in discouraging their clients to switch, thereby achieving the stability of customer's deposits, not only through the scope of the relationship, as suggested by Basel III liquidity requirement, but also by means of targeted strategies toward a specific bank specialization, market status, and performance.

For the household controls, Table 3 shows that household size slightly increases the probability of changing bank, while age (and its quadratic form) does not affect it. Marital status seems to matter in the expected direction: married households are less likely to change bank. The possible interpretation goes through intra-household bargaining, since the decision to switch in a couple implies the two partners converging on the decision (see e.g. Bertocchi et al., 2014 and references therein).[10] An interesting result is that while education has a positive gradient, a higher level of financial literacy is strongly and negatively associated with bank switch. This might mean that households with better financial comprehension are more able to choose the bank that better fits their needs since the very beginning of

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[10] This interpretation stems from our starting point being the collective household model in which the final decision of the household is the results of complex bargaining among all household members (and not the idea that only the breadwinner takes all the decisions).

the relationship.[11] Based on our evidence, gender, working status and risk aversion do not play a determinant role for switching, and interestingly even income and wealth do not affect this decision. Additionally, both proxies for mobility - namely, Homeowner and Moved - seem not to matter. To sum up, what really seems to shape the switching decision in terms of household characteristics are household size, marital status, education and financial literacy, rather than mobility or the overall economic condition of the household.

[Table 3 about here]

Table 4 reports the estimation output of a second empirical counterpart of equation (1), in which we take into account the dynamics of the household-bank relationship via a set of dummies capturing the changes (adds and drops) in each type of services used by the household.

The evidence referring to Exclusivity and to the cost of switching is confirmed. Yet, new insights can be obtained on the service-driven switches: in fact, in both specifications, what really seems to drive bank switching is mortgage, both in taking out (Add mortgage) and in paying off (Drop mortgage). Specifically, households opening a mortgage are 12% more likely to do it in a new bank. Similarly, households closing a mortgage are 14% more likely to switch to a new bank. These results suggest that customers' choice of a bank is strongly driven by offered mortgages, but that a chosen bank faces a challenge in retaining the clients after the mortgage has been paid off. This is not surprising considered that among all banking services, mortgages are those for which the households are more able to assess the total cost, given by the interest rate, and hence the advantages of switching bank. The same holds for consumer credit, whose cost is also given by the interest rate. Yet, mortgages are associated with the purchase of a house, which typically is the most important investment decision in a

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[11] As a robustness check, we also estimate specification in which financial literacy is modelled including three separate dummies: one for having answered correctly to the first question on interest rates, one for having answered correctly to the second question on mortgages and the third one for having answered correctly to both questions. The results, available upon request, hold even under this specification.

household life-cycle. This is why in such cases household might well apply a higher level of due diligence.

[Table 4 about here]

The time dummies, not shown in Tables 3 and 4 for reasons of space, suggest a decreasing trend in the probability of changing the bank with respect to 2008. This is consistent with the descriptive statistics in Table 1 that show a drop from the initial 30% to a stabilized 20% in the following waves. As already mentioned, this dynamics might be in part ascribed to the "Bersani's Decree". The high share of switches at the beginning of our sample period could be the expression of an initial backlog of households locked with their bank, which took advantage of the new mortgage subrogation opportunity as soon as the new legislation came into force. Afterward, the increased level of competition induced in the banking market by the "Bersani's Decree" made households more able to choose the right bank since the very beginning. [12]

6. Robustness

All our results are robust to alternative specifications of both the dependent variable (Switch) and the controls.

6.1. Dependent variable

We test an alternative and more restrictive measure of switching. Namely we use a binary variable labelled *Switch New* which takes value 1 if household i changes its main bank between $t-1$ and t and switches to a bank with which it did not have any previous relationship, and 0 otherwise.

Table 5 and Table 6 show that our results hold even under this more restrictive measure of switch.

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[12] Further evidence on this issue is provided in Table 5.

6.2. Control variables

In the specifications reported in Table 7 and Table 8 we use two different measures to capture household's loyalty to its main bank, namely the number of banks used by the household and a dummy taking value 1 if the household has been using its main bank for 10 years or more. In both tables, the former shows a positive marginal effect suggesting that for each additional bank used, the household is around 5% more likely to change its main bank. Similarly, households who are sticking with the same banks since a long time are 11% less likely to discard it for another bank.

Remarkably, switching is 33% more likely when the discarded bank is losing customers (Customers outflows), while Customers inflows do not seem to matter.

6.3. Subsample

We focus only on the 2010-2012 period in order to disentangle the effects of the financial crisis and of "Bersani Decree", finding even stronger results for the Add and Drop variables are even stronger.

7. Conclusion

This paper empirically investigates the household's decision to change bank, a timely issue given the increasing attention devoted to it by practitioners and policy makers.

To this end, we rely on a dataset which is unique on several grounds. First, it observes households and their main bank over time, providing plenty of information about the banking services used, such as payments, mortgages or portfolio management. This means that households' decision to switch or stay is timely observed, rather than inferred based on retrospective or intention question, and it is related to banking services. Second, the dataset relies on a survey which is

representative of the entire population. Third, it refers to the 2006-2012 period and to the Italian market, which particularly lends itself to this kind of analysis since: (i) as much as one out of four of the households do change their main bank; and (ii) it is highly representative of the world's bank specialization distribution allowing us to gauge differences in switching vulnerability of different types of banks.

We find that, even after controlling for household's and bank's characteristics, household-bank relationship matters crucially in terms of exclusivity, intensity and scope. Specifically, exclusivity plays a role since switching is found to be more frequent for households using more than one bank. Consistently with the existing literature, we also recognize a role for the intensity of the relationship, measured with the number of services used: for each additional services used, the probability of switching bank reduces by as much as 5%. This confirms the role of the costs of switching, since the higher the number of services, the more difficult is for the household to precisely assess the total cost of switching. Finally, the scope of the relationship crucially matters, since long-term credit services such as mortgages are found to be the main drivers of household's decision to switch bank, both in taking out and paying off. This might be due to the fact that the main cost of this type of services is mostly represented by the interest rate, so that the households are more able to identify both the benefits and the costs of switching. These results suggest that customers' choice of a bank is strongly driven by offered mortgages, but that a chosen bank faces a challenge in retaining the clients after the mortgage has been paid off.

We also find that household size, marital status, education and financial literacy are strongly associated with the decision to change the main bank, while mobility and the overall economic condition of the household are not. Some of the characteristics of the discarded bank also matter, with cooperative banks being significantly less likely to be abandoned. This result frames into the recently increasing attention devoted to cooperative banks from academics, politicians and the public opinion, who have wondered whether their specific characteristics have provided them with a safer shelter against the propagation of the global financial crisis. In fact, Hesse and Cihák (2007) find that, even though cooperative banks

account for a relevant and increasing share of bank total assets at world level (above 14 percent) and even higher share in terms of bank branches, they are far under-represented in terms of investigation as evidenced by the 0.1 percent share of Econlit banking-related entries.

Our results on bank's specialization might also be suggestive of a possible policy recommendation. So far, Basel III liquidity requirements strongly discriminate between "stable" and "unstable" customer deposits. More specifically, the regulation assumes that customer deposits which are embedded in a well-established bank-client relationship are less subject to withdrawal risk, thereby shaping liquidity requirements only on scope of the relationship. Based on our evidence we can add that liquidity requirements should discriminate the stability of the relationship not only based on its scope but also on bank's specialization.

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Table 1: Descriptive statistics on estimation sample

Dependent variables	N	Mean	Median	Min	Max	St.Dev.
Full sample						
Switch	4584	0.233	0	0	1	0.423
Switch New	4584	0.222	0	0	1	0.415
2008						
Switch	1010	0.312	0	0	1	0.464
Switch New	1010	0.300	0	0	1	0.459
2010						
Switch	2142	0.206	0	0	1	0.404
Switch New	2142	0.199	0	0	1	0.399
2012						
Switch	1432	0.209	0	0	1	0.407
Switch New	1432	0.190	0	0	1	0.393
Control variables						
R: Household-bank relationship characteristics						
Exclusivity	4,584	0.798	1	0	1	0.401
Nr. Total services	4,584	1.375	1	0	5	0.768
Nr. Pure services	4,584	0.981	1	0	3	0.407
Nr. Credit services	4,584	0.194	0	0	2	0.422
Nr. Trade services	4,584	0.200	0	0	1	0.400
Nr. Banks	4,584	1.235	1	1	5	0.504
Long-lasting relation	3,705	0.636	1	0	1	0.481
Payments	4,584	0.893	1	0	1	0.309
Insurance	4,584	0.040	0	0	1	0.195
Mortgage	4,584	0.153	0	0	1	0.360
Consumer credit	4,584	0.041	0	0	1	0.199
Portfolio mgmt.	4,584	0.200	0	0	1	0.400
Other services	4,584	0.048	0	0	1	0.213
Add payments	4,584	0.058	0	0	1	0.234
Add insurance	4,584	0.022	0	0	1	0.147
Add mortgage	4,584	0.056	0	0	1	0.230
Add consumer credit	4,584	0.041	0	0	1	0.199
Add portfolio mgmt.	4,584	0.074	0	0	1	0.261
Add other	4,584	0.042	0	0	1	0.201
Drop payments	4,584	0.105	0	0	1	0.306
Drop insurance	4,584	0.024	0	0	1	0.153
Drop mortgage	4,584	0.058	0	0	1	0.234
Drop consumer credit	4,584	0.026	0	0	1	0.158
Drop portfolio mgmt.	4,584	0.075	0	0	1	0.263
Drop other	4,584	0.034	0	0	1	0.181

Table 1: Descriptive statistics on estimation sample (ctd.)

	N	Mean	Median	Min	Max	St.Dev.
H: Household characteristics						
Household size	4,584	2.637	2	1	8	1.243
Age	4,584	54.181	54	20	90	14.356
Male	4,584	0.669	1	0	1	0.471
Married	4,584	0.693	1	0	1	0.461
Education	4,584	3.471	4	1	6	0.988
Medium education	4,584	0.684	1	0	1	0.465
High education	4,584	0.142	0	0	1	0.349
Intermediate financial literacy	4,584	0.322	0	0	1	0.467
Good financial literacy	4,584	0.577	1	0	1	0.494
Risk-aversion	4,584	3.241	3	1	4	0.761
Moved	4,584	0.019	0	0	1	0.136
Homeowner	4,584	0.758	1	0	1	0.428
Employee	4,584	0.413	0	0	1	0.492
Selfemployed	4,584	0.173	0	0	1	0.378
Income	4,584	42.916	36	0	428	28.268
Net wealth	4,584	357.317	228	-875.424	30934	766.732
Deposits	4,584	15641.710	7388	0	1421829	34937.680
B: Bank characteristics						
Commercial	4,584	0.820	1	0	1	0.384
Saving	4,584	0.077	0	0	1	0.266
Cooperative	4,584	0.104	0	0	1	0.305
Size (in logs)	4,584	11.035	10.795	7.924	13.948	1.481
ROE	4,584	7.255	5.570	-43.480	35.720	6.479
NIR (in logs)	4,584	7.114	6.788	3.235	9.973	1.488
NIM	4,584	2.343	2.440	0.580	4.050	0.782
Equity over total assets	4,584	7.135	7.280	1.240	26.690	2.710
Net loans over total assets	4,584	64.260	64.010	6.610	91.830	15.230
Listed	4,584	0.457	0	0	1	0.498
M&A	4,584	0.138	0	0	1	0.345
Customers outflows	4,584	0.338	0	0	1	0.473
Customers inflows	4,584	0.515	1	0	1	0.500

Note: *all statistics are computed using sample weights.*

Table 2: Descriptive statistics at bank level

Variable	N	Mean	Median	Min	Max	St.Dev.
Commercial	238	0.61	1	0	1	0.49
Saving	238	0.21	0	0	1	0.41
Coop	238	0.18	0	0	1	0.39
Listed	238	0.26	0	0	1	0.44
Total Assets (billions euro)	238	50.76	11.84	2.39	1,142.03	153.19
-Commercial	146	71.2	14.92	2.76	1,142.03	192.15
-Saving	49	11.29	5.67	2.39	50.8	11.75
-Cooperative	43	26.32	11.89	2.81	135.79	30.18
Return on Equity (ROE)	238	5.93	5.62	-45.36	31.62	9.62
-Commercial	146	6.77	6.49	-45.36	31.62	11.04
-Saving	49	4.38	4.95	-17.44	21.09	7.98
-Cooperative	43	4.88	4.88	-15.44	12.05	4.67
Net Interest Revenue (billions €)	238	0.97	0.28	0.03	19.33	2.58
-Commercial	146	1.31	0.35	0.03	19.33	3.22
-Saving	49	0.27	0.14	0.06	1.10	0.28
-Cooperative	43	0.59	0.26	0.07	3.00	0.69
Net Interest Margin	238	2.56	2.59	0.41	5.65	0.67
-Commercial	146	2.50	2.52	0.41	5.65	0.77
-Saving	49	2.68	2.63	1.91	3.88	0.41
-Cooperative	43	2.64	2.64	1.57	3.62	0.49
Equity / Total Assets	238	7.85	7.48	1.44	25.21	3.09
-Commercial	146	7.63	7.00	1.44	25.21	3.54
-Saving	49	7.47	7.20	3.76	11.93	1.61
-Cooperative	43	9.05	8.62	5.18	17.32	2.40
Net Loans / Total Assets	238	69.38	74.17	3.04	93.22	18.48
-Commercial	146	64.83	71.70	3.04	90.68	21.36
-Saving	49	78.69	80.31	55.31	93.22	9.63
-Cooperative	43	74.22	74.19	59.52	86.62	7.00

Table 3: Marginal effects on the probability of switch, main specification.

	(1)	(2)	(3)		(1) ctd	(2) ctd	(3) ctd
R: *Household-bank relationship controls*				**H**: *Household controls*			
Exclusivity	-0.084***	-0.084***	-0.084***	Household size	0.023**	0.023**	0.023**
	(0.024)	(0.023)	(0.023)		(0.010)	(0.010)	(0.010)
Nr. Total services	-0.038***			Age	0.003	0.003	0.004
	(0.012)				(0.005)	(0.005)	(0.005)
Nr. Pure services		-0.030		Age^2	-0.002	-0.002	-0.002
		(0.022)			(0.004)	(0.004)	(0.004)
Nr. Credit services		-0.026		Male	-0.011	-0.010	-0.010
		(0.020)			(0.021)	(0.021)	(0.021)
Nr. Trade services		-0.063***		Married	-0.085***	-0.085***	-0.089***
		(0.023)			(0.029)	(0.029)	(0.028)
Payments			-0.059**	Medium education	0.094***	0.095***	0.095***
			(0.030)		(0.025)	(0.024)	(0.024)
Insurance			-0.038	High education	0.118***	0.121***	0.121***
			(0.040)		(0.041)	(0.041)	(0.041)
Mortgage			-0.004	Intermediate fin.lit.	-0.070***	-0.071***	-0.066**
			(0.024)		(0.027)	(0.027)	(0.027)
Consumer credit			-0.083**	Good fin.lit.	-0.106***	-0.107***	-0.103***
			(0.033)		(0.029)	(0.029)	(0.029)
Portfolio mgmt.			-0.057***	Risk averse	-0.019	-0.019	-0.019
			(0.021)		(0.017)	(0.017)	(0.017)
Other services			0.045	Moved	-0.029	-0.030	-0.034
			(0.041)		(0.055)	(0.054)	(0.053)
B: *Bank controls*				Homeowner	-0.003	-0.007	-0.012
Cooperative	-0.084***	-0.084***	-0.086***		(0.030)	(0.030)	(0.030)
	(0.028)	(0.027)	(0.028)	Deposits (in logs)	-0.004	-0.003	-0.003
Saving	0.015	0.013	0.012		(0.003)	(0.003)	(0.003)
	(0.037)	(0.037)	(0.037)	Employee	-0.015	-0.016	-0.015
Size (in logs)	-0.160**	-0.159**	-0.159**		(0.025)	(0.025)	(0.025)
	(0.077)	(0.077)	(0.077)	Self-employed	-0.004	-0.006	-0.011
ROE	0.002	0.002	0.002		(0.033)	(0.033)	(0.032)
	(0.002)	(0.002)	(0.002)	Income – Q2	0.011	0.010	0.015
NIR (in logs)	0.176**	0.174**	0.174**		(0.041)	(0.041)	(0.041)
	(0.077)	(0.077)	(0.077)	Income – Q3	0.014	0.013	0.016
NIM	-0.122***	-0.121***	-0.120***		(0.041)	(0.041)	(0.041)
	(0.043)	(0.043)	(0.043)	Income – Q4	0.028	0.028	0.034
Equity over total assets	0.005	0.005	0.005		(0.042)	(0.042)	(0.043)
	(0.004)	(0.004)	(0.004)	Income – Q5	0.037	0.037	0.043
Net loans over total assets	-0.001	-0.001	-0.001		(0.047)	(0.047)	(0.047)
	(0.001)	(0.001)	(0.001)	Net Wealth – Q2	0.001	0.002	-0.002
Listed	0.058**	0.060**	0.060**		(0.037)	(0.037)	(0.036)
	(0.026)	(0.026)	(0.026)	Net Wealth – Q3	0.028	0.030	0.029
M&A	0.043	0.043	0.043		(0.046)	(0.046)	(0.045)
	(0.039)	(0.039)	(0.039)	Net Wealth – Q4	0.003	0.007	0.009
					(0.045)	(0.045)	(0.045)
				Net Wealth – Q5	-0.058	-0.052	-0.051
					(0.044)	(0.045)	(0.044)
				Observations	4,584	4,584	4,584
				Pseudo-R^2	0.0690	0.0701	0.0730

Note: *all regression specifications include matrix **X** (dummies for time, area of residence, and municipality size), that are omitted for reason of space.*

Table 4: Marginal effects on the probability of switch, change services specification

R: Household-bank relationship controls	(1)	(2)
Exclusivity	-0.078***	-0.081***
	(0.023)	(0.023)
Nr. Total services	-0.052***	
	(0.017)	
Nr. Pure services		-0.006
		(0.033)
Nr. Credit services		-0.046*
		(0.027)
Nr. Trade services		-0.100***
		(0.032)
Add payments	0.060	0.106**
	(0.040)	(0.050)
Drop payments	-0.002	-0.009
	(0.030)	(0.029)
Add insurance	-0.031	-0.024
	(0.053)	(0.053)
Drop insurance	0.029	-0.010
	(0.059)	(0.058)
Add mortgage	0.118***	0.117***
	(0.041)	(0.041)
Drop mortgage	0.145***	0.139***
	(0.043)	(0.048)
Add consumer credit	-0.019	-0.021
	(0.040)	(0.040)
Drop consumer credit	-0.038	-0.044
	(0.052)	(0.053)
Add portfolio mgmt.	-0.004	-0.013
	(0.029)	(0.029)
Drop portfolio mgmt.	0.046	0.088**
	(0.034)	(0.043)
Add other	-0.013	-0.009
	(0.036)	(0.036)
Drop other	0.094*	0.041
	(0.054)	(0.058)
B: Bank controls		
Cooperative	-0.088***	-0.088***
	(0.027)	(0.027)
Saving	0.018	0.016
	(0.038)	(0.037)
Size (in logs)	-0.158**	-0.159**
	(0.077)	(0.077)
ROE	0.002	0.002
	(0.002)	(0.002)
NIR (in logs)	0.173**	0.173**
	(0.076)	(0.076)
NIM	-0.117***	-0.118***
	(0.042)	(0.042)
Equity over total assets	0.005	0.005
	(0.004)	(0.004)
Net loans over total assets	-0.001	-0.001
	(0.001)	(0.001)

B: Bank controls (ctd)	(1) ctd	(2) ctd
Listed	0.062**	0.064**
	(0.026)	(0.026)
M&A	0.038	0.039
	(0.038)	(0.038)
H: Household controls		
Household size	0.022**	0.022**
	(0.010)	(0.010)
Age	0.003	0.003
	(0.004)	(0.004)
Age^2	-0.002	-0.002
	(0.004)	(0.004)
Male	-0.014	-0.012
	(0.021)	(0.021)
Married	-0.088***	-0.088***
	(0.028)	(0.028)
Medium education	0.093***	0.095***
	(0.024)	(0.024)
High education	0.117***	0.121***
	(0.041)	(0.041)
Intermediate fin.lit.	-0.059**	-0.061**
	(0.027)	(0.026)
Good fin.lit.	-0.096***	-0.098***
	(0.029)	(0.028)
Risk averse	-0.020	-0.021
	(0.017)	(0.017)
Moved	-0.036	-0.037
	(0.054)	(0.053)
Homeowner	-0.013	-0.016
	(0.030)	(0.030)
Deposits (in logs)	-0.004	-0.004
	(0.003)	(0.003)
Employee	-0.020	-0.021
	(0.025)	(0.025)
Self-employed	-0.019	-0.019
	(0.032)	(0.032)
Income – Q2	0.022	0.017
	(0.041)	(0.041)
Income – Q3	0.024	0.017
	(0.042)	(0.041)
Income – Q4	0.038	0.031
	(0.043)	(0.042)
Income – Q5	0.052	0.046
	(0.047)	(0.047)
Net Wealth – Q2	-0.001	0.003
	(0.036)	(0.036)
Net Wealth – Q3	0.028	0.033
	(0.045)	(0.045)
Net Wealth – Q4	0.007	0.015
	(0.044)	(0.045)
Net Wealth – Q5	-0.055	-0.043
	(0.044)	(0.045)
Observations	4,584	4,584
Pseudo-R^2	0.0817	0.0832

Note: *all regression specifications include matrix **X** (dummies for time, area of residence, and municipality size), that are omitted for reason of space.*

Table 5: Robustness: Switch New as dependent, main specification.

	(1)	(2)	(3)		(1) ctd	(2) ctd	(3) ctd
R: Household-bank relationship controls				**H**: Household controls			
Exclusivity	-0.021	-0.022	-0.022	Household size	0.025***	0.024***	0.025***
	(0.023)	(0.023)	(0.023)		(0.010)	(0.009)	(0.009)
Nr. Total services	-0.035***			Age	0.003	0.003	0.003
	(0.012)				(0.004)	(0.004)	(0.004)
Nr. Pure services		-0.032		Age^2	-0.002	-0.002	-0.002
		(0.022)			(0.004)	(0.004)	(0.004)
Nr. Credit services		-0.028		Male	-0.015	-0.014	-0.015
		(0.020)			(0.021)	(0.021)	(0.021)
Nr. Trade services		-0.049**		Married	-0.087***	-0.087***	-0.090***
		(0.023)			(0.028)	(0.028)	(0.028)
Payments			-0.060**	Medium education	0.086***	0.087***	0.087***
			(0.029)		(0.024)	(0.024)	(0.024)
Insurance			-0.025	High education	0.117***	0.119***	0.119***
			(0.041)		(0.041)	(0.041)	(0.041)
Mortgage			-0.007	Intermediate fin.lit.	-0.053**	-0.054**	-0.049*
			(0.024)		(0.026)	(0.026)	(0.027)
Consumer credit			-0.081**	Good fin.lit.	-0.093***	-0.093***	-0.090***
			(0.033)		(0.029)	(0.029)	(0.029)
Portfolio mgmt.			-0.045**	Risk averse	-0.015	-0.015	-0.015
			(0.022)		(0.017)	(0.017)	(0.017)
Other services			0.028	Moved	-0.027	-0.027	-0.031
			(0.041)		(0.054)	(0.054)	(0.053)
B: Bank controls				Homeowner	-0.009	-0.011	-0.015
Cooperative	-0.076***	-0.076***	-0.077***		(0.029)	(0.029)	(0.029)
	(0.028)	(0.028)	(0.028)	Deposits (in logs)	-0.003	-0.003	-0.003
Saving	0.022	0.021	0.020		(0.003)	(0.003)	(0.003)
	(0.037)	(0.037)	(0.037)	Employee	-0.021	-0.022	-0.021
Size (in logs)	-0.163**	-0.162**	-0.162**		(0.025)	(0.025)	(0.025)
	(0.076)	(0.076)	(0.076)	Self-employed	0.001	-0.000	-0.004
ROE	0.002	0.002	0.002		(0.032)	(0.032)	(0.032)
	(0.002)	(0.002)	(0.002)	Income – Q2	0.007	0.006	0.011
NIR (in logs)	0.179**	0.178**	0.177**		(0.040)	(0.039)	(0.039)
	(0.075)	(0.075)	(0.075)	Income – Q3	0.011	0.011	0.014
NIM	-0.129***	-0.128***	-0.127***		(0.040)	(0.039)	(0.039)
	(0.042)	(0.042)	(0.042)	Income – Q4	0.025	0.025	0.030
Equity over total assets	0.007*	0.007*	0.007*		(0.041)	(0.041)	(0.041)
	(0.004)	(0.004)	(0.004)	Income – Q5	0.028	0.029	0.034
Net loans over total assets	-0.000	-0.000	-0.001		(0.045)	(0.046)	(0.046)
	(0.001)	(0.001)	(0.001)	Net Wealth – Q2	0.002	0.003	-0.001
Listed	0.055**	0.056**	0.056**		(0.036)	(0.036)	(0.036)
	(0.025)	(0.025)	(0.025)	Net Wealth – Q3	0.035	0.036	0.034
M&A	0.049	0.049	0.049		(0.045)	(0.045)	(0.045)
	(0.039)	(0.039)	(0.039)	Net Wealth – Q4	0.005	0.007	0.009
					(0.044)	(0.044)	(0.044)
				Net Wealth – Q5	-0.051	-0.048	-0.048
					(0.043)	(0.044)	(0.044)
				Observations	4,584	4,584	4,584
				Pseudo-R^2	0.0685	0.0687	0.0708

Note: *all regression specifications include matrix* **X** *(dummies for time, area of residence, and municipality size), that are omitted for reason of space.* **Legend:** *Switch New used as dependent variable in alternative to Switch.*

	(1)	(2)		(1) ctd	(2) ctd
R: *Household-bank relationship controls*			**B**: *Bank controls (ctd)*		
Exclusivity	-0.018	-0.020	Listed	0.059**	0.061**
	(0.023)	(0.022)		(0.025)	(0.025)
Nr. Total services	-0.046***		M&A	0.045	0.045
	(0.017)			(0.038)	(0.038)
Nr. Pure services		-0.001	**H**: *Household controls*		
		(0.032)	Household size	0.024**	0.024**
Nr. Credit services		-0.048*		(0.009)	(0.009)
		(0.026)	Age	0.003	0.003
Nr. Trade services		-0.083***		(0.004)	(0.004)
		(0.031)	Age^2	-0.002	-0.002
Add payments	0.065*	0.109**		(0.004)	(0.004)
	(0.039)	(0.049)	Male	-0.018	-0.016
Drop payments	-0.016	-0.022		(0.021)	(0.021)
	(0.028)	(0.028)	Married	-0.089***	-0.089***
Add insurance	-0.032	-0.028		(0.028)	(0.028)
	(0.052)	(0.053)	Medium education	0.086***	0.087***
Drop insurance	0.038	-0.002		(0.024)	(0.024)
	(0.061)	(0.059)	High education	0.115***	0.118***
Add mortgage	0.103***	0.101**		(0.041)	(0.040)
	(0.040)	(0.040)	Intermediate fin.lit.	-0.043	-0.045*
Drop mortgage	0.124***	0.126***		(0.026)	(0.026)
	(0.042)	(0.046)	Good fin.lit.	-0.084***	-0.085***
Add consumer credit	-0.028	-0.030		(0.028)	(0.028)
	(0.038)	(0.038)	Risk averse	-0.015	-0.016
Drop consumer credit	-0.032	-0.030		(0.017)	(0.016)
	(0.052)	(0.055)	Moved	-0.032	-0.033
Add portfolio mgmt.	0.002	-0.005		(0.053)	(0.052)
	(0.029)	(0.029)	Homeowner	-0.017	-0.018
Drop portfolio mgmt.	0.045	0.078*		(0.029)	(0.029)
	(0.034)	(0.042)	Deposits (in logs)	-0.003	-0.003
Add other services	-0.009	-0.006		(0.003)	(0.003)
	(0.035)	(0.036)	Employee	-0.026	-0.026
Drop other services	0.064	0.015		(0.024)	(0.024)
	(0.051)	(0.053)	Self-employed	-0.010	-0.010
B: *Bank controls*				(0.031)	(0.031)
Cooperative	-0.080***	-0.079***	Income – Q2	0.016	0.012
	(0.028)	(0.027)		(0.040)	(0.039)
Saving	0.027	0.024	Income – Q3	0.020	0.013
	(0.038)	(0.038)		(0.040)	(0.039)
Size (in logs)	-0.161**	-0.160**	Income – Q4	0.033	0.027
	(0.075)	(0.075)		(0.041)	(0.041)
ROE	0.002	0.002	Income – Q5	0.040	0.034
	(0.002)	(0.002)		(0.045)	(0.045)
NIR (in logs)	0.175**	0.175**	Net Wealth – Q2	-0.000	0.003
	(0.075)	(0.075)		(0.036)	(0.036)
NIM	-0.124***	-0.125***	Net Wealth – Q3	0.032	0.037
	(0.042)	(0.042)		(0.044)	(0.045)
Equity over total assets	0.007*	0.007*	Net Wealth – Q4	0.007	0.014
	(0.004)	(0.004)		(0.043)	(0.044)
Net loans over total assets	-0.001	-0.001	Net Wealth – Q5	-0.051	-0.041
	(0.001)	(0.001)		(0.043)	(0.044)
			Observations	4,584	4,584
			Pseudo-R^2	0.0783	0.0794

Note: *all regression specifications include matrix **X** (dummies for time, area of residence, and municipality size), that are omitted for reason of space.* **Legend:** *Switch New used as dependent variable in alternative to Switch.*

Table 7: Robustness: alternative measures for household loyalty, main specification

	(1)	(2)	(3)	(4)	(5)	(6)
***R**: Household-bank relationship controls*						
Nr. Banks	0.055***	0.055***	0.055***			
	(0.017)	(0.017)	(0.016)			
Long-lasting relationship				-0.117***	-0.116***	-0.115***
				(0.023)	(0.023)	(0.022)
Nr. Total services	-0.037***			-0.032***		
	(0.012)			(0.012)		
Nr. Pure services		-0.028			-0.019	
		(0.022)			(0.024)	
Nr. Credit services		-0.026			-0.030	
		(0.020)			(0.022)	
Nr. Trade services		-0.063***			-0.050**	
		(0.023)			(0.025)	
Payments			-0.057*			-0.032
			(0.030)			(0.031)
Insurance			-0.036			-0.054
			(0.040)			(0.040)
Mortgage			-0.003			-0.013
			(0.024)			(0.025)
Consumer credit			-0.083**			-0.069*
			(0.034)			(0.041)
Portfolio mgmt.			-0.057***			-0.044*
			(0.021)			(0.023)
Other services			0.047			0.046
			(0.041)			(0.048)
Observations	4,584	4,584	4,584	3,705	3,705	3,705
Pseudo-R^2	0.0689	0.0694	0.0721	0.0899	0.0903	0.0919

Note: *all regression specifications include matrix **B**, **H** and **X**, here omitted for reason of space.*

Legend: *Exclusivity is substituted with Nr. Banks in Columns (1) to (3), and with Long-lasting relationship in Columns (4) to (6).*

Table 8: Robustness: alternative measures for household loyalty, change service specification.

	(1)	(2)	(3)	(4)
R: *Household-bank relationship controls*				
Nr. Banks	0.051***	0.053***		
	(0.017)	(0.016)		
Long-lasting			-0.110***	-0.112***
			(0.022)	(0.022)
Nr. Total services	-0.052***		-0.051***	
	(0.017)		(0.019)	
Nr. Pure services		-0.006		0.021
		(0.033)		(0.035)
Nr. Credit services		-0.047*		-0.071**
		(0.027)		(0.031)
Nr. Trade services		-0.100***		-0.088***
		(0.032)		(0.034)
Add payments	0.058	0.104**	0.059	0.130**
	(0.039)	(0.049)	(0.044)	(0.055)
Drop payments	-0.001	-0.008	0.012	0.003
	(0.030)	(0.030)	(0.033)	(0.032)
Add insurance	-0.030	-0.024	-0.054	-0.049
	(0.053)	(0.053)	(0.053)	(0.054)
Drop insurance	0.032	-0.007	0.012	-0.047
	(0.060)	(0.059)	(0.058)	(0.055)
Add mortgage	0.119***	0.117***	0.129***	0.124***
	(0.041)	(0.041)	(0.046)	(0.046)
Drop mortgage	0.147***	0.141***	0.160***	0.180***
	(0.043)	(0.048)	(0.047)	(0.055)
Add consumer credit	-0.020	-0.022	-0.005	-0.008
	(0.040)	(0.039)	(0.043)	(0.043)
Drop consumer credit	-0.037	-0.042	-0.007	0.014
	(0.053)	(0.054)	(0.061)	(0.068)
Add portfolio mgmt.	-0.004	-0.013	0.012	0.005
	(0.029)	(0.029)	(0.033)	(0.033)
Drop portfolio mgmt.	0.045	0.087**	0.072*	0.106**
	(0.034)	(0.043)	(0.037)	(0.047)
Add other services	-0.016	-0.012	-0.001	0.001
	(0.036)	(0.036)	(0.039)	(0.039)
Drop other services	0.096*	0.042	0.079	0.001
	(0.054)	(0.058)	(0.061)	(0.060)
Observations	4,584	4,584	3,705	3,705
Pseudo-R^2	0.0807	0.0821	0.1039	0.1062

Note: *all regression specifications include matrix* **B**, **H** *and* **X**, *here omitted for reason of space.*

Legend: *Exclusivity is substituted with Nr. Banks in Columns (1) and (2), and with Long-lasting relationship in Columns (3) and (4).*

Table 9: Robustness: adding bank's customers flows, main specification.

	(1)	(2)	(3)
R*: Household-bank relationship controls*			
Customer outflows	0.336***	0.335***	0.332***
	(0.035)	(0.035)	(0.035)
Customer inflows	-0.003	-0.004	-0.008
	(0.028)	(0.028)	(0.028)
Exclusivity	-0.084***	-0.085***	-0.084***
	(0.022)	(0.022)	(0.022)
Nr. Total services	-0.038***		
	(0.011)		
Nr. Pure services		-0.028	
		(0.021)	
Nr. Credit services		-0.029	
		(0.019)	
Nr. Trade services		-0.063***	
		(0.022)	
Payments			-0.063**
			(0.028)
Insurance			-0.026
			(0.041)
Mortgage			-0.010
			(0.023)
Consumer credit			-0.077**
			(0.032)
Portfolio mgmt.			-0.059***
			(0.020)
Other services			0.051
			(0.038)
Observations	4,584	4,584	4,584
Pseudo-R²	0.1279	0.1284	0.1312

Note: *all regression specifications include matrix **B**, **H** and **X**, here omitted for reason of space.*

Table 10: Robustness: adding bank's customers flows, change service specification.

	(1)	(2)
***R**: Household-bank relationship controls*		
Customer outflows	0.333***	0.331***
	(0.035)	(0.035)
Customer inflows	-0.006	-0.007
	(0.028)	(0.028)
Exclusivity	-0.078***	-0.080***
	(0.022)	(0.022)
Nr. Total services	-0.051***	
	(0.017)	
Nr. Pure services		-0.003
		(0.032)
Nr. Credit services		-0.051*
		(0.026)
Nr. Trade services		-0.093***
		(0.030)
Add payments	0.069*	0.117**
	(0.038)	(0.048)
Drop payments	0.015	0.008
	(0.030)	(0.030)
Add insurance	-0.045	-0.039
	(0.047)	(0.048)
Drop insurance	0.030	-0.011
	(0.058)	(0.056)
Add mortgage	0.107***	0.105***
	(0.038)	(0.038)
Drop mortgage	0.135***	0.136***
	(0.042)	(0.047)
Add consumer credit	-0.039	-0.041
	(0.035)	(0.035)
Drop consumer credit	-0.039	-0.039
	(0.048)	(0.050)
Add portfolio mgmt.	0.003	-0.004
	(0.027)	(0.027)
Drop portfolio mgmt.	0.036	0.073*
	(0.032)	(0.040)
Add other services	-0.013	-0.009
	(0.033)	(0.033)
Drop other services	0.098*	0.042
	(0.051)	(0.055)
Observations	4,584	4,584
Pseudo-R^2	0.1398	0.1412

Note: *all regression specifications include matrix **B**, **H** and **X**, here omitted for reason of space.*

Table 11: Robustness: 2010-2012 subsample, main specification.

	(1)	(2)	(3)		(1) ctd	(2) ctd	(3) ctd
R: *Household-bank relationship controls*				**H**: *Household controls*			
Exclusivity	-0.072***	-0.073***	-0.073***	Household size	0.019*	0.019*	0.020*
	(0.025)	(0.025)	(0.025)		(0.011)	(0.011)	(0.011)
Nr. Total services	-0.038***			Age	-0.003	-0.003	-0.003
	(0.013)				(0.005)	(0.005)	(0.005)
Nr. Pure services		-0.028		Age^2	0.003	0.003	0.003
		(0.025)			(0.004)	(0.004)	(0.004)
Nr. Credit services		-0.032		Male	0.010	0.011	0.011
		(0.022)			(0.022)	(0.022)	(0.022)
Nr. Trade services		-0.057**		Married	-0.071**	-0.071**	-0.075**
		(0.025)			(0.031)	(0.031)	(0.031)
Payments			-0.050	Medium education	0.068**	0.069***	0.070***
			(0.035)		(0.027)	(0.027)	(0.027)
Insurance			-0.051	High education	0.102**	0.104**	0.106**
			(0.044)		(0.044)	(0.044)	(0.044)
Mortgage			-0.005	Intermediate fin.lit.	-0.060*	-0.060*	-0.058*
			(0.027)		(0.032)	(0.032)	(0.032)
Consumer credit			-0.095***	Good fin.lit.	-0.091**	-0.091**	-0.090**
			(0.033)		(0.036)	(0.035)	(0.035)
Portfolio mgmt.			-0.050**	Risk averse	-0.023	-0.023	-0.025
			(0.023)		(0.018)	(0.018)	(0.018)
Other services			0.027	Moved	0.020	0.020	0.011
			(0.042)		(0.064)	(0.064)	(0.063)
B: *Bank controls*				Homeowner	0.005	0.002	-0.005
Cooperative	-0.104***	-0.104***	-0.106***		(0.034)	(0.034)	(0.034)
	(0.025)	(0.025)	(0.025)	Deposits (in logs)	-0.000	0.000	0.000
Saving	0.011	0.010	0.009		(0.004)	(0.003)	(0.003)
	(0.040)	(0.040)	(0.040)	Employee	-0.021	-0.022	-0.020
Size (in logs)	-0.016	-0.014	-0.019		(0.027)	(0.027)	(0.027)
	(0.089)	(0.089)	(0.090)	Self-employed	-0.009	-0.011	-0.013
ROE	-0.001	-0.001	-0.001		(0.034)	(0.034)	(0.034)
	(0.002)	(0.002)	(0.002)	Income – Q2	0.002	0.001	0.005
NIR (in logs)	0.030	0.028	0.032		(0.042)	(0.042)	(0.043)
	(0.089)	(0.089)	(0.089)	Income – Q3	0.004	0.003	0.006
NIM	-0.010	-0.009	-0.011		(0.043)	(0.043)	(0.044)
	(0.048)	(0.049)	(0.048)	Income – Q4	0.030	0.030	0.034
Equity over total assets	0.011***	0.011***	0.011***		(0.046)	(0.046)	(0.046)
	(0.004)	(0.004)	(0.004)	Income – Q5	0.051	0.052	0.055
Net loans over total assets	-0.001	-0.001	-0.001		(0.052)	(0.053)	(0.053)
	(0.001)	(0.001)	(0.001)	Net Wealth – Q2	0.011	0.012	0.008
Listed	0.043	0.044	0.046*		(0.042)	(0.042)	(0.041)
	(0.028)	(0.028)	(0.028)	Net Wealth – Q3	0.031	0.034	0.033
M&A	0.026	0.025	0.028		(0.052)	(0.052)	(0.051)
	(0.065)	(0.064)	(0.065)	Net Wealth – Q4	0.005	0.009	0.010
					(0.050)	(0.050)	(0.050)
				Net Wealth – Q5	-0.054	-0.048	-0.048
					(0.050)	(0.051)	(0.050)
				Observations	3,574	3,574	3,574
				Pseudo-R^2	0.0498	0.0501	0.0529

Note: *all regression specifications include matrix* **X** *(dummies for time, area of residence, and municipality size), that are omitted for reason of space.*

Table 12: Robustness: 2010-2012 subsample, change services specification

	(1)	(2)		(1) ctd	(2) ctd
R: *Household-bank relationship controls*			**B**: *Bank controls (ctd)*		
Exclusivity	-0.065***	-0.066***	Listed	0.051*	0.053*
	(0.025)	(0.025)		(0.028)	(0.028)
Nr. Total services	-0.046**		M&A	0.019	0.018
	(0.019)			(0.064)	(0.064)
Nr. Pure services		-0.019	**H**: *Household controls*		
		(0.039)	Household size	0.020*	0.020*
Nr. Credit services		-0.043		(0.011)	(0.011)
		(0.029)	Age	-0.003	-0.003
Nr. Trade services		-0.072**		(0.005)	(0.005)
		(0.032)	Age^2	0.003	0.003
Add payments	0.045	0.071		(0.004)	(0.004)
	(0.043)	(0.054)	Male	0.007	0.008
Drop payments	0.006	0.002		(0.022)	(0.022)
	(0.030)	(0.030)	Married	-0.080***	-0.080***
Add insurance	0.007	0.009		(0.031)	(0.031)
	(0.054)	(0.054)	Medium education	0.069***	0.070***
Drop insurance	-0.016	-0.037		(0.026)	(0.026)
	(0.067)	(0.067)	High education	0.101**	0.102**
Add mortgage	0.151***	0.151***		(0.044)	(0.044)
	(0.046)	(0.046)	Intermediate fin.lit.	-0.046	-0.047
Drop mortgage	0.146***	0.143**		(0.032)	(0.032)
	(0.052)	(0.058)	Good fin.lit.	-0.080**	-0.081**
Add consumer credit	-0.052	-0.053		(0.035)	(0.034)
	(0.040)	(0.039)	Risk averse	-0.027	-0.027
Drop consumer credit	-0.072	-0.073		(0.018)	(0.018)
	(0.049)	(0.051)	Moved	0.001	-0.000
Add portfolio mgmt.	-0.010	-0.014		(0.061)	(0.061)
	(0.032)	(0.032)	Homeowner	-0.010	-0.012
Drop portfolio mgmt.	0.027	0.049		(0.034)	(0.034)
	(0.036)	(0.043)	Deposits (in logs)	-0.000	-0.000
Add other services	-0.029	-0.026		(0.003)	(0.003)
	(0.038)	(0.038)	Employee	-0.025	-0.026
Drop other services	0.099*	0.066		(0.027)	(0.027)
	(0.056)	(0.065)	Self-employed	-0.023	-0.023
B: *Bank controls*				(0.033)	(0.033)
Cooperative	-0.108***	-0.108***	Income – Q2	0.015	0.013
	(0.025)	(0.025)		(0.044)	(0.044)
Saving	0.009	0.009	Income – Q3	0.016	0.013
	(0.040)	(0.040)		(0.044)	(0.044)
Size (in logs)	-0.012	-0.012	Income – Q4	0.043	0.039
	(0.090)	(0.090)		(0.047)	(0.047)
ROE	-0.001	-0.001	Income – Q5	0.067	0.064
	(0.002)	(0.002)		(0.053)	(0.053)
NIR (in logs)	0.024	0.023	Net Wealth – Q2	0.009	0.012
	(0.089)	(0.089)		(0.041)	(0.041)
NIM	-0.005	-0.005	Net Wealth – Q3	0.034	0.038
	(0.048)	(0.048)		(0.051)	(0.051)
Equity over total assets	0.011***	0.011***	Net Wealth – Q4	0.007	0.012
	(0.004)	(0.004)		(0.049)	(0.050)
Net loans over total assets	-0.001	-0.001	Net Wealth – Q5	-0.047	-0.040
	(0.001)	(0.001)		(0.050)	(0.050)
			Observations	3,574	3,574
			Pseudo-R^2	0.0648	0.0653

Note: *all regression specifications include matrix **X** (dummies for time, area of residence, and municipality size), that are omitted for reason of space.*

Appendix A – Description of variables

Variable	Description	Data source
Dependent variable		
Switch	Binary variable taking value 1 if the household changes its main bank, 0 otherwise.	SHIW
Switch_New	Binary variable taking value 1 if a household changes its main bank switching to a new one with which it did not have any previous relationship, 0 otherwise.	SHIW
Control variables		
R: Household-bank relationship characteristics		
Exclusivity	Binary variable taking value 1 if a household has only one bank, 0 otherwise.	SHIW
Nr. Services Overall	Categorical variable counting the total number of bank services used by the household.	SHIW
Nr. Pure services	Categorical variable counting the number of payment services (i.e. payment of utilities, rent and other expenses and insurance services) a household uses with its main bank.	SHIW
Nr. Credit services	Categorical variable counting the number of credit services (namely mortgage, consumer credit and personal loans) a household uses with its main bank.	SHIW
Nr. Trade services	Categorical variable counting the number of trade services (securities custody, administration and management) the household uses with its main bank.	SHIW
Use Payments	Binary variable taking value 1 if the household uses its main bank for the payment of utilities, rent and other expenses, and 0 otherwise.	SHIW
Use Insurance	Binary variable taking value 1 if a household uses its main bank for insurance services, and 0 otherwise.	SHIW
Use Mortgage	Binary variable taking value 1 if a household uses its main bank for mortgage, and 0 otherwise	SHIW
Use Consumer Credit	Binary variable taking value 1 if a household uses its main bank for consumer credit or personal loans, and 0 otherwise	SHIW

Variable	Description	Data source
Use Portfolio Management	Binary variable taking value 1 if a household uses its main bank for securities custody, administration and management, and 0 otherwise.	SHIW
Use Other services	Binary variable taking value 1 if a household uses its main bank for other services besides those described above, and 0 otherwise.	SHIW
Add [Specific service]	Binary variable taking value 1 if a household does not use the specific service in wave $t-1$, but uses it in wave t, and 0 otherwise.	SHIW
Drop [Specific service]	Binary variable taking value 1 if a household uses a specific service in wave $t-1$, but does not use it in wave t, 0 otherwise.	SHIW
Nr. of banks	Categorical variable counting the number of banks the household has relationship with (used in alternative to the variable "exclusivity" defined above, as a measure of household's loyalty to its main bank)	SHIW
Long-lasting relationship	Binary variable taking value 1 if a household has been using its main bank for more than 10 years, and 0 otherwise (used in alternative to the variable "exclusivity "defined above, as a measure of household's loyalty to its main bank).	SHIW
H: Household characteristics		
Household size	Categorical variable counting the number of household members	SHIW
Male	Binary variable taking value 1 for male, 0 for female.	SHIW
Age, Age^2	Integer variables representing the age of household head and its quadratic form.	SHIW
Married	Binary variable taking value 1 if the household head is married, and 0 otherwise.	SHIW
Medium Education, High Education	Binary variables taking value 1 for the corresponding level of education: Medium education corresponds to having completed secondary school and/or college; High education corresponds to having achieved a graduated and/or post-graduate level. Reference category is Low education, i.e. having completed only primary education or having no education at all.	SHIW

Variable	Description	Data source
Intermediate Financial Literacy, Good Financial Literacy	Binary variables taking value 1 for the corresponding level of financial literacy: Intermediate financial literacy corresponds to having answered correctly only one question out of 2; Good financial literacy corresponds to having answered correctly 2 questions out of 2. Reference category is no Financial Literacy, meaning having given no correct answer.	SHIW
Risk averse	Binary variable taking value 1 if risk aversion level is 4, 0 otherwise. Risk-aversion level is obtained by means of a categorical variable representing the preferred risk profile of financial investments: 1 = High risk, high returns 2 = Reasonable risk, good returns 3 = Low risk, reasonable returns 4 = No risk, low returns	SHIW
Moved	Binary variable taking value 1 if the household residence has moved from one municipality to a new one between wave t-1 and wave t, and 0 otherwise.	SHIW
Homeowner	Binary variable taking value 1 if the household owns his primary residence, and 0 otherwise	SHIW
Employee, Self-employed	Binary variables taking value 1 for household heads being in the corresponding occupational status, 0 otherwise. Reference category is Non-working position.	SHIW
Income (Net Wealth) quintiles	Binary variables taking value 1 if the household yearly disposable income (net wealth, defined as the sum of real and financial assets net of liabilities) is within the relevant distribution quintiles, and 0 otherwise.	SHIW
Deposits	Total amount of deposits owned by the household, in logs.	SHIW

B: Bank characteristics

Variable	Description	Data source
Size	Bank's total assets, in logs.	BS
Cooperative, Saving	Binary variables taking value 1 for the corresponding bank's specialization. The reference category is Commercial bank	BS
Listed	Binary variable taking value 1 if the bank is listed, and 0 otherwise.	BS

Variable	Description	Data source
M&A	Dummy variable taking value 1 if the bank underwent a process of Merge & Acquisition between t - 1 and t, and 0 otherwise.	BS
Equity on Total Assets	Variable representing the ratio between bank's equity and total assets.	BS
Net loans on Total Assets	Variable representing the ratio between bank's net loans and total assets.	BS
ROE	Variable representing the ratio between the bank's returns and equity.	BS
NIR	Variable representing the bank's net interest revenue, in logs.	BS
NIM	Variable representing the bank's net interest margin, in %.	BS
Customer outflows	Binary variable taking value 1 if the number of households leaving the bank is higher than the number of households joining the bank in year t, and 0 otherwise.	SHIW
Customer inflows	Binary variable taking value 1 if the number of households leaving the bank is lower than the number of households joining the bank in year t, and 0 otherwise.	SHIW
X: Background characteristics		
Time dummies (2010, 2012)	Dummy variables taking value 1 in the relevant year, and 0 otherwise. The reference category is 2008.	SHIW
Regional dummies	Dummy variables taking value 1 for the relevant macro-region (North-West, Centre, South), and 0 otherwise. The reference category is North-East.	SHIW
Municipality size	Categorical variable representing the size of the residential municipality: 1 = less 5,000 2 = [5,000-20,000] 3 = [20,000-50,000] 4 = [50,000-200,000] 5 = more than 200,000 The model specifications include four dummies for municipality size from 2 to 5, i.e. the reference category is 1 (municipality size less than 5,000)	SHIW
Regional bank competition	Total number of ATM points (or branches) in the province of residence (x100,000 inhabs.)	BI

Note: *SHIW is Survey on Household Income and Wealth; BS is BankScope; BI is Bank of Italy.*