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PRICE DISPERSION AND CONSUMER INATTENTION: EVIDENCE FROM THE MARKET OF BANK ACCOUNTS

by Nicola Branzoli*

Abstract

This paper analyzes consumer inattention in the market of checking accounts. I examine the behavior of consumers who keep account tariffs that are dominated, i.e. that charge higher costs for any amount of bank services consumed through the account, by tariffs available at the same bank and introduced after the account was opened. I show that the probability of observing an inattentive consumer decreases as the dispersion of prices across tariffs of her bank increases. Moreover, consumers using services with the greatest price dispersion across their banks' tariffs are less likely to be inattentive, while consumers using only services with the lowest price dispersion are more likely to be inattentive. These results are consistent with decision-theoretic models in which consumers focus their attention on attributes which differ more across options and can be useful in improving consumer choice in this market.

JEL Classification: D4, D8, D12, L11.
Keywords: dominated tariffs, consumer inattention, price dispersion.

Contents

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"Choose well. Your choice is brief, and yet endless."

Johann Wolfgang von Goethe.

1 Introduction

Comparing tariffs can be complicated, even when they are offered by the same firm. Sometime sellers design different options to accommodate consumer preferences, multi-product firms offer different bundles of goods at different prices, single-product firms may charge different prices for the same good consumed at different moments. Consumers often react to these difficulties by sticking to their past choices, even when changing tariffs might save them money.[1]

Understanding why consumers sometime ignore new and cheaper tariffs is an issue for both academics and policy makers. Regulators need to cope with its consequences for competition and the effectiveness of policy interventions. On the one hand, such behavior can limit the competitive pressure put by attentive consumers, keeping alive inefficient firms or leading the efficient ones to maintain higher prices; on the other hand, consumer inattention may reduce the effect of policy interventions seeking to correct market inefficiencies. Academics, on their part, have become increasingly interested in extending the standard consumer choice model to account for behaviors which are hard to reconcile with rational thinking, and understand whether firms design tariffs to profit from it.

This paper contributes to this issue by studying consumer inattention for new tariffs in the market of bank checking accounts. The data contain tariffs and usage information of a representative sample of all bank checking accounts held by private individuals and households in Italy.[2] I define the set of inattentive consumers as those keeping tariffs that are dominated by some non-promotional alternative, i.e. a tariff available to old clients, introduced after the account has been opened by the same bank where the account is held. Inattentive consumers are therefore consumers who spend too much to use their checking account because, at their own bank, there is a tariff that would allow them to pay always less. This approach compare tariffs using all possible combinations of usage of bank services and number of

[1] See Grubb (2015) for a review.

[2] Checking accounts held by businesses are excluded.

financial operations observed in the representative data.[3] A tariff is therefore dominated not only when it charges higher prices for all services, but also when it charges a lower price for one or more services but the implied savings never lead to lower costs of the account.[4] Moreover, it does not depend on the characteristics of a specific consumer nor her use of the account.

One possible drawback of the analysis is that consumer inattention is measured imperfectly. Infact, there can be inattentive consumers also among those with undominated tariffs: the consumers who have a non-dominated tariff by chance, even though they are inattentive to the costs of their accounts or the new options offered by their banks. However, comparing the behavior of consumers with dominated tariffs, who are all inattentive to the costs of their accounts, to the consumers having undominated tariffs, among whom some are attentive enough not to have tariffs that are avoidably expensive, provides field evidence on what inattentive consumers pay more and why. For example, I can observe which prices tend to be higher in dominated tariffs, and therefore less salient to consumers, or I can observe when consumers tend to be more attentive, examining, for example, whether attention improves or deteriorates with the length of the relationship between banks and their clients.

Consistent with other studies of this market (Ater and Landsman (2013), Stango and Zinman (2014)), the results show that consumer inattention for the tariffs of their bank accounts is a common phenomenon. A significant fraction of consumers, roughly 50% in the main analysis, keep tariffs that are dominated by some non-promotional alternative later introduced by their bank. Moreover, using a simple measure of foregone savings, I find that consumers could lower the costs of their accounts by 38% to 68% by switching to a non-dominated tariff of their bank.

Interpreting all these these consumers as locked-in by their tariffs, and these foregone savings as search or switching costs, would be misleading.[5] First, because tariff update does not involve any search.

[3] The approach used is similar to the one introduced by Miravete (2013), who however does not have information on usage. See Section 3.2 for details.

[4] As a simple example, suppose that transfers are the only activity that can be made through an account and that a bank offers two tariffs: tariff A charges a fixed fee of €2 and €0.5 for each transfer and tariff B charges a fixed fee of €20 and €0.1 for each transfer. Tariff B is cheaper than tariff A only if consumers make more than 45 transfers. If, in the data, consumers never make more than 45 transfers, I consider tariff B as dominated even if it charges a lower price for transfers. These dominated tariffs might not be immediately evident to a consumer who simply compares prices service-by-service. See Section 3.2 for more the details.

[5] In principle, any inertial behavior could be rationalized by introducing an arbitrary cost of changing past decisions and, probably, some consumers with dominated tariffs have some costs of switching tariffs, for example because they moved to an area where there are no branches of their bank. However, for the reasons explained below in this section, interpreting 1 out 2 consumers as having such large costs would be a mistake. The results indeed show that there are systematic differences

Second, because there are no monetary switching costs associated to switching tariffs and the non-monetary switching costs are limited. Service discontinuites are generally limited to less than 24 hours and changing tariff does not involve changes in the credit card or the account code used for payments and other financial services.[6]

Consumer inattention have therefore two potential explanations in this context:[7] either understanding information about new tariffs is costly, and consumers rationally trade-off potential savings and information costs (the rationally inattentive consumers in Reis (2006), Matêjka and McKay (2015) and Caplin and Dean (2015) among others); or consumers heuristically focus their attention on some prices, sometime concluding that their tariff is similar to the others even when it is not. An empirically successful model for how consumers heuristically focus their attention is the context-dependent approach (Tversky (1969), Tversky and Kahneman (1981)), in which consumers look at the attributes of their options, prices in this context, which are more diverse. In other words, larger differences attract consumer attention. This would suggest that the larger is the dispersion of prices across tariff of the bank, the more attentive are consumers, and the less likely they are to have a dominated tariff.[8] Evidence of this form of heuristic thinking has been found in laboratory experiments (Simonson and Tversky (1992)) and can explain various behaviors inconsistent with rational thinking documented empirically (see the discussion in Bordalo *et al.* (2012) and Kőszegi and Szeidl (2013)).

Three main results examine the causes of this inattention. First, the probability of keeping a dominated tariff increases with the age of the account.[9] Second, the only price systematically higher in accounts held by inattentive consumers is the fixed fee paid simply to have the account. Third, the dispersion of

between the tariffs kept by inattentive consumers and those held by attentive consumers.

[6] Consumers changing tariff are required to sign the legal documents necessary to change tariff, although banks are usually flexible in this respect, allowing their costumers to sign these documents at their convenience.

[7] Grubb (2015) discusses all the potential explanations for why consumers may not buy at the best available price.

[8] As an example, consider a consumer with a tariff charging a fixed fee of €20 and 0.5 cents per transfer. Suppose that this consumer faces an alternative tariff charging a fixed fee of €15 and €1 per transfer. Because comparing tariffs in this market requires some attention, given the number of prices to look at and the computations to make, this consumer might quickly dismiss the idea of changing tariff: the fixed fee is only few euros lower and transfers are more expensive. Suppose instead that the consumer faces a different alternative tariff, one charging €5 of fixed fee and €3 per transfer. Now the consumer may decide to put more attention into the comparison of the two tariffs because the fixed fee of the new tariff is one third of the current tariff, but transfers are 6 times more expensive. The first comparison is not more complicated than the second, nor it is ex-ante clear that expected savings from switching to the second alternative are larger than the first, larger differences are simply more salient.

[9] I do not have enough observations to analyze whether initial choices are optimal, beacuse only 341 accounts are observed in the year they open. However, among them, only 15% of the observations have dominated tariffs.

prices across tariffs offered by the same bank is sistematically related to consumer attention.

The positive relation between inattention and account tenure indicates that consumers do not learn through experience in this market, as they do in others (Agarwal *et al.* (2013), Miravete and Palacios-Huerta (2014)).[10] This evidence is consistent with the results from surveys in Italy and other countries. In 2010 the Bank of Italy included in its bi-annual survey on consumer finance a question on what the respondents read when they receive the account statement. More than one third of the households answered that they don't read the account statement at all, or check only the available balance, effectively overlooking all tariff information contained in it. A similar survey in the UK found that "half of the respondents have no information about the fees for common financial services at their own bank".[11]

The unique role of the fixed fee in determining which tariffs are dominated excludes rational inattention as the main exaplantion of consumer behavior. The fixed fee, which is the only component of tariffs systematically overlooked by consumers, is the easiest price to observe and compare among tariffs because it is constant, it is zero for more than a quarter of the accounts, it is often advertised by banks as the one to check and it is the single largest component of bank account costs (on average one third of the overall costs).[12] Thus inattentive consumers fail to check the part of the tariff with the lowest information costs: it is the easiest to observe and compare among options, it is often zero and it is advertised by firms as the one where consumers could save. If information costs were the main driver of consumer inattention, the easiest price to compare would not be the only component determining tariff dominance.[13]

Multiple results indicate that the dispersion of prices across tariffs offered by the same bank is sistematically related to consumers' having dominated tariffs, and therefore that are larger differences the focus

[10] On the contrary, the inertia in keeping old and dominated tariffs indicate that consumers are not fully aware that their account costs have fallen in recent years. The costs of bank accounts have decreased in Italy since the survey started, in some years by as much as ten per cent a year. The official analysis are available at https://www.bancaditalia.it/pubblicazioni/indagine-costo-cc/index.html?com.dotmarketing.htmlpage.language=1.

[11] See Cruickshank (2000). A related interesting question would by why consumers tend to ignore the information contained in their account statement. See Stango and Zinman (2014) for an analysis of a randomized shock to consumer attention to their overdraft fees.

[12] The other fixed fees, which include fixed, debit and credit card fees, made two thirds of the total costs of these accounts on average. See the analysis in Section 3.1.

[13] Moreover, in Section 5 I will show that conditioning the analysis to the consumers whose foregone savings are small, hence who are more likely to rationally ignore small savings rather than to selectively focus their attention on some parts of the tariffs, do not change the results. Thus, also the behavior of these consumers seems to be driven by inattention rather indifference for small sums.

of consumer attention. For example, consumers using services with the most dispersed prices among the tariffs offered by their bank are less likely to be inattentive, and consumers using only the services with the least dispersed prices are more likely to be inattentive. These results are not driven by selection of some consumers into those using specific services, since the services with the most dispersed prices across tariffs vary considerably across banks.[14] Moreover, the probability of being inattentive decreases when the dispersion of prices of the services used by the consumer increases, including the dispersion of the fixed fee.[15] This evidence indicates that the characteristics of alternative tariffs matter for consumer choice, that consumers are more attentive when the prices they pay are more dispersed across their option, and that the more dispersed are the prices, the more attention they focus, even though they do not pay attention on the level of a price, as for the fixed fee. In conclusion, consumers in this market do not behave as rationally inattentive, but they heuristically focus their attention, and the dispersion of prices across tariffs is what attracts their attention.

The distinction between rationally inattentive consumers and context-dependent choice is important not only because the first explanation implies that consumers' decisions are ex-ante optimal, while the second does not, but also for the policy interventions that they would recommend to improve consumer choices in this market. The theoretical literature on heuristic thinking suggests that an effective intervention in this context would be to change the default option, now the automatic renewal of old tariffs, because limited focusing lead to procrastination (Kőszegi and Szeidl (2013)).[16] Therefore, a feasible policy intervention could ask consumers to actively pick a new tariff the first time they visit a branch when their tariff is no longer offered to new clients, or once in a while, such as every eight years, which is the median account age in the sample. The costs imposed on consumers would be limited, direct costs imposed on banks null, and many old tariffs still charged because of consumers' heuristic think-

[14] There could also be a supply-side explanation: banks increase prices for those services where consumers are most inattentive, therefore increasing price dispersion for those services. Given that the services with most and the least dispersed prices vary considerably across banks, this explanation would require that consumers inattentive to the same prices self-select into the same banks, which seems unlikely. However, whether firms in this market do design contracts to take advantage of consumer inattention is an interesting topic that I leave for future research.

[15] For example, consumers using branch transfers are less likely to have dominated tariffs in banks where branch transfers is the operation with the highest coefficient of variation of prices, or consumers using only branch transfers are more likely to be inattentive in banks where branch transfers is the operation with the lowest coefficient of variation of prices. Moreover, when the dispersion in the prices of branch transfers increases, consumers using branch transfers are less likely to have a dominated tariff. These results are robust to using other measures of price dispersion.

[16] For the importance of the default option and its role on pricing decisions, see Ericson (2014) and Decarolis (2015).

ing would be updated, benefiting consumers and, potentially, competition.[17]

The reminder of the paper is organized as follows. Section 2 reviews the literature on consumer inattention, focusing on the empirical evidence from the market of bank accounts. Section 3 describes the data and the empirical strategy. Sections 4 and 5 present the results and some selected robustness checks respectively. Section 6 concludes.

2 Related literature

In many subscription markets consumers make optimal decisions, or eventually learn to behave in their best interests (Grubb and Osborne (2015)). In the retail market of bank accounts, however, a growing empirical literature has started to document that consumers make sizable mistakes, that these mistakes are expensive and persistent, and that, paradoxically, experience can exacerbate sub-optimal decisions.[18]

Stango and Zinman (2009) examine the daily behavior of a group of consumers with both checking and credit card accounts. They find that all panelists could reduce the costs of their accounts simply by reallocating their wealth across accounts they already own.[19] These avoidable costs could be substantial: for the median panelist, the average savings are 60% of the costs of the accounts, equivalent to 300$ per year. Interestingly, consumers in their sample are wealthier and better educated than the average consumer in the US, suggesting that these suboptimal choices may not be primarily caused a lack of understanding of the various options. In fact, Stango and Zinman (2014) point to inattention as a determinant of consumer mistakes in the market of bank accounts. In a field experiment, the authors use survey questions as randomized shocks to consumer attention to overdraft fees. They find that respondents who face overdraft-related questions in the survey are significantly less likely to incur in an overdraft fee in the survey month. Ater and Landsman (2013) document sizable mistakes in the

[17] Finding that the rational trade-off of information costs vs. savings was the main explanation of consumer inattention would have suggested the simplification of tariffs or the use of single cost indices. In Italy there already is a single index used to summarize the overall costs of bank account tariffs, called ISC profile (an acronym for Indicatore Sintetico di Costo). For an analysis of the introduction of single indices see Hastings and Duarte (2012).

[18] The market of personal bank accounts has also been analyzed in a older stream of papers which focused on switching costs. See for example Zephirin (1994), Sharpe (1997), Kiser (2002) and Stango (2002).

[19] For example, 85% of consumers pay late fees on their credit card payments while keeping enough money on the checking account to meet the minimum credit card payment.

choice of checking account tariffs, and that these mistakes exacerbate for some consumers after they switch tariff.[20] In particular, customers who pay a over-usage fee tend to switch to plans with larger allowances, and the subsequent monthly payments end up exceeding the average monthly charges before switching. Ater and Landsman (2016) show that simple heuristics play a key role in the learning process. The results shown in this paper are consistent with this research, based on similar data from other countries, and extend its analysis, being the firsts that examine the causes of consumer inattention and analyze the role of simple heuristics in consumer mistakes.

This paper is also related to the empirical literature analyzing context effects. While the non-experimental literature has focused on the stability of risk preferences across contexts using insurance data (Barseghyan *et al.* (2011)), most of the evidence about other decisions are confined to laboratory experiments (Simonson and Tversky (1992)). The findings presented below complement the laboratory experiment, providing evidence of context effects in the choice of tariffs in a non-experimental setting.

Finally, this paper is related to the available evidence documenting the presence of dominated tariffs (Miravete (2013)) and consumer making dominated decisions (Abaluck and Gruber (2011)).[21] The results presented extend these analysis distinguishing among possible explanations for consumer inattentive choices.

3 Industry characteristics, data and empirical strategy

The data comes from a survey of personal bank account costs carried out every year by the Bank of Italy.[22] At the beginning of each year the Italian Central Bank selects a representative sample of all branches belonging to Italian banks in the country[23] and collects all information contained in the

[20] The authors also show that the initial choices are often sub-optimal. For example, they find that less than 20% of accounts are associated to their cost-minimizing plans based on their account usage either before or after the adoption of the plans, and that monthly payments would have been on average 30% lower had the owners chosen the cost-minimizing plan.

[21] Abaluck and Gruber (2011) focus on a new industry, the Medicare Part D sector, used by the elderly part of the population, while I analyze a mature market where the median client age is in the 30's.

[22] This dataset is combined with the Supervisory Reports on banks' balance sheets to merge banks' characteristics.

[23] The sampling scheme reflects the distribution of branches by bank type (top 5 banks, mutual banks - in Italian "banche di credito cooperativo" - and others) and municipality type (high, medium and low population density). If, for example, 10% of the population of all Italian banks' branches belong to the top 5 banks in municipalities with low population density, 10% of the branches sampled have such characteristics. The selected brenches are required to respond the detailed questions in the survey, with costs and usage of financial services associated to checking accounts, plus additional informations, using

account statement sent to clients at the end of the previous year. This includes total expenditures and number of operations for all the main services associated to an account, additional information on the account holder and the other financial services provided by the bank to the client, such as whether the bank has issued a loan to that client or manage her savings.

The costs of checking accounts have mildly decreased in Italy in the period covered in the analysis, by few percentage points each year.[24] This trend reflects both recent changes in the banking sector, where financial institutions have gone through considerable reorganizations to cut costs after the crisis, passing to consumers part of the savings, and changes in the typical use of bank accounts by consumers, who increasingly rely on cheaper services such as online transfers.

Checking accounts allow the immediate access to the entire account balance and are used mostly for day-to-day financial transactions. They are priced accordingly: the amount deposited in the account bear a very low interest rate (close to nihil in the period under study)[25] because consumers do not commit to keep money in the account, as in savings accounts, and bank revenues come from the charges associated to withdrawals, transfers and other financial services associated to accounts.

Tariffs in this market are complicated, mainly because of the number of different types of financial operations that are commonly executed through an account. To simplify, operations can be categorized into three broad groups: withdrawals, transfers and payments. These categories can be further classified into sub-categories, each with a different price. For example, transfers can be to an account opened in the same bank, in a bank within the Single Euro Payments Area (SEPA) or to an account opened in another bank around the world. Each type of transfer have a different price. For the analysis of this paper, I will consider the sub-categories used by at least 5 per cent of the sample: branch withdrawals, withdrawals from ATM of their bank, branch transfers within SEPA, online transfers within SEPA and automatic payments.[26]

The second key characteristic of tariffs in this market is their non-linearity: banks usually charge a

accounts of their choosing, provided that they reflect the distribution of account age at their branch.

[24] Details are available at https://www.bancaditalia.it/pubblicazioni/indagine-costo-cc/index.html?com.dotmarketing.htmlpage.language=1

[25] Since 2009 the average rate paid on checking accounts in Italy has been lower than 0.41% per year. See Bank of Italy (2016).

[26] Each type of operation not considered, e.g. ATM withdrawals from machines not owned by the bank or transfers outside the SEPA system, are never used by more than 95% of the sample described below.

fixed fee to keep the account open ("canone base", basic fee henceforth), a fee for each debit or credit card and two fees related to the costs of sending the account statements and contract terms periodically ("costo estratto conto" and "costo trasparenza" respectively). These five fees are independent of the number of operations executed through the account or through the cards associated to it. This tariff complexity is likely to increase the costs of comparing tariffs. The empirical literature has indeed found substantial costs of switching bank in this market (Zephirin (1994), Sharpe (1997), Kiser (2002), Stango (2002)).[27]

3.1 Summary statistics

The sample contains a repeated cross section of 44,500 accounts sampled from 2009 to 2014.[28] To describe the activity of these accounts and their costs, I will focus on the services used by at least 5 per cent of the sample: branch and ATM withdrawals, branch and online transfers and automatic payments (see the discussion at the beginning of this section).

Costumers spend on average €82 per year including both the fixed and the variable components (Table 1).[29]

Costs (in €)	**Mean**	**S.d.**	**Percentiles**		
			25th	**50th**	**75th**
Basic fee	35.1	37.4	0	30.0	55.1
Other fixed fees	26.3	38.4	2.0	11.4	35.7
Variable Costs	20.4	31.4	0	7.0	26.3
Total costs	81.9	64.9	38.1	68.1	112.4

Table 1 – Determinants of the overall yearly costs. Notes: *mean, standard deviation and the three quartiles of the distribution of the three main categories of yearly costs associated to payment accounts. Number of observations: 44,501.*

[27] By law, monetary switching costs are zero in Italy, cfr. art. 120-bis TUB (d.lgs. n. 385/1993) and art. 126-bis TUB. I should also mention the fact that banks are multi-product firms, providing not only basic retail banking services but they also allow their clients to borrow, buy insurance products, invest and so on. These activities are risky and therefore involve some trust between bank and clients, which is likely to create switching costs even if tariffs were simple.

[28] The survey originally contains data on a sample of roughly 63,000 checking accounts from which I drop accounts which benefit from a special agreement between the bank and the account holder's employer (conti in convenzione). The number of accounts increases over time: there are 5,774 accounts in 2009, 8,032 in 2010, 10,888 in 2011, 12,087 in 2012, 12,214 in 2013, 13,118 in 2014.

[29] These statistics are not directly comparable with the ones presented by the official Bank of Italy's annual report published online because I do not consider accounts which benefit from a special agreement between the bank and the account holder's employer (conti in convenzione), which are included in the official analysis.

The largest component of these costs is the basic fee, which accounts for 43% of the overall costs, while the other fixed fees account for 32%. The costs associated with usage make up the remaining 25%. There is significant variation in the basic fee considering that 30% of the accounts pay a zero fee while accounts in the top quartile pay more than €55.

In Table 2 I report information on unit prices. Debit and credit cards cost, on average, €5 and €15 per year respectively. The most expensive services are transfers, both in the branch and online. The other operations are rarely priced (only the top quartile pay a price different from zero).

Financial service	**Mean**	**S.d.**	**Percentiles**		
			25th	**50**th	**75**th
Unit fees:					
Basic fee	35.1	37.4	0	30.0	55.1
Debit Card	5.02	6.34	0	0	10.0
Credit Card	14.78	16.27	0	12.0	30.0
Average prices:					
Branch withdrawal	0.10	0.61	0	0	0
Branch transfers	2.36	2.70	0.5	2.5	3.5
ATM withdrawal	0.30	0.70	0	0	0.3
Online transfers	0.65	1.15	0	0.50	1.0
Automatic payments	0.25	2.10	0	0	0.2

Table 2 – Prices and fees. Notes: *mean, standard deviation and the three quartiles of the distribution of account prices, conditional on using the service. Number of observations: 44,501.*

Table 3 reports summary statistics on usage.

Service	Users* (%)	Mean**	S.d.**	Percentiles**		
				25^{th}	50^{th}	75^{th}
Debit card	71.7	1.1	0.41	1	1	2
Credit card	46.5	1.2	0.52	1	1	1
Branch withdrawal	56.5	8.6	10.7	2	5	12
ATM withdrawal	60.0	36.1	33.9	11	28	51
Branch transfer	35.6	4.4	6.0	1	2	5
Online transfer	19.0	9.2	15.0	2	6	12
Automatic payment	66.4	25.2	140.8	10	16	29

Table 3 – Summary statistics on yearly usage. Notes: **: percentage of the sample who used at least once the service during the year; **: conditional on using the service. Number of observations: 44,501.*

A significant fraction of the sample use only some services. For example, 30% of the sample do not have a debit card associated to the account, more than 80% do not make online transfers. Rougly 5% of the sample have no card at all nor use any operation during a year.

These statistics on usage and prices suggest that the heterogeneity in the fixed fee is too large to be driven by some consumers choosing to pay higher fixed fees for lower prices the other services (Hayes (1987), Spulberg (1989)). To understand whether higher basic fees are associated with lower prices, I have estimated a tobit regression for each price using various controls and the basic fee as explanatory variables. The results, reported in Appendix A.1, show that the average marginal decrease is very small, and in some cases insignificant, for all fees and prices .[30]

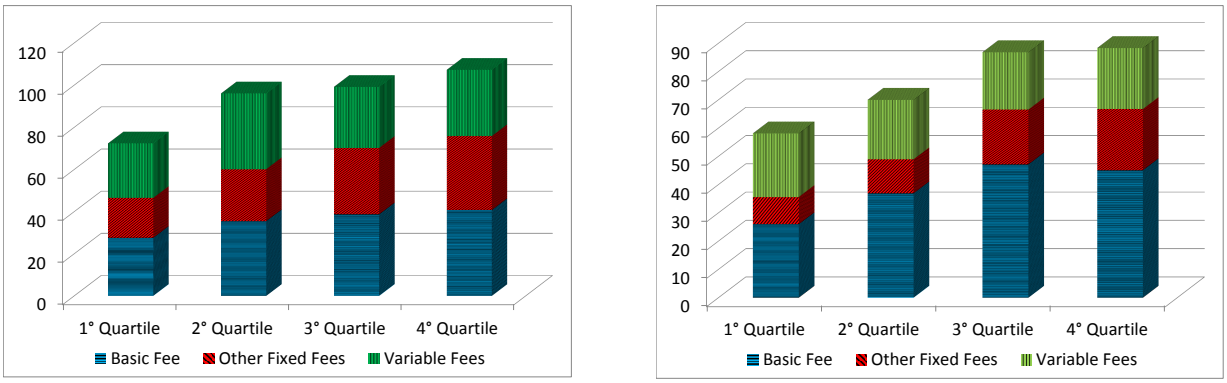
Prices increase with the age of the account, as one would expect in markets with switching costs (Klemperer (1987)). However this positive relationship keeps increasing with the age of the account, therefore it is not only due to introductory discounts (Figure 1a).[32] For example, the average basic fee of accounts older than 12 years, i.e. those in the top quartile of the distribution of tenure, is 15% higher than the average basic fee in the second quartile (account with 3 to 7 years). The positive correlation between prices and tenure at all tenure levels holds also for accounts within the same bank (Figure 1b), suggest-

[30] For example the fee associated to a credit card price[31] fall of 3 cents for an increase of one euro in the basic fee. A consumer would need to use more than 30 debit cards to consider it profitable.

[32] With one exception: costs associated with usage are higher in the second quartile than in all other quartiles. Ignoring this, variables costs are still strictly increasing with tenure, although this can potentially be due to usage. I will address this issue below.

ing that switching costs are not the only explanation.[33]

To conclude, the evidence just described indicates that the basic fee is the most important single component of account costs for most consumers. The variability of the fixed fee is not explained by second degree price discrimination, and account costs are an increasing function account tenure, at all tenure levels.



(a) All accounts.

(b) Accounts of the most sampled bank.

Figure 1 *– Summary statistics on account costs by tenure. The first quartile includes accounts younger than 3 years, the second quartile includes accounts with tenure between 3 and and 7 years, the third quartile includes all accounts with tenure between 7 and 12 years. Panel a) includes all accounts (44,501 observations), panel a) includes only accounts opened in the most represented bank in the sample (4,562 observations).*

3.2 Construction of dominated tariffs

In this section I describe the approach used to identify tariffs dominated by some alternative offered by the same bank and how I compute foregone savings from not being on the efficient tariff frontier.

The approach proposed is based on comparing tariffs offered by banks to their clients using all potential uses of the account present in the data. To describe all potential uses of the accounts, I define consumption profiles as the combination of the number cards and the number of times each service described in

[33] A positive correlation between prices and tenure at all tenure levels could indicate the presence of third degree price discrimination of consumers' switching costs (Holmes (1989)). If account tenure helps banks to learn conusmer preferences and switching costs through time, price discrimination may occur on the basis of tenure, i.e. banks could increase prices on older accounts. However, financial intermediaries are not allowed to explicitly discriminate consumers based on tenure, and they would face potentially large reputation costs if they did.

Section 3.1 is used.[34] To collect the largest possible set of consumption profiles, I include just for the definition of consumption profiles the accounts not included in the main analysis because they benefit from special agreements between the bank and the client's employer (see footnote 29). Thus the set of consumption profiles used to compare tariffs is given by all combinations of the number of debit cards, credit cards, periodic statements and number of times each service is used present at least once in the dataset. I obtain roughly 47,000 different consumption profiles that will be used to identify which tariffs are "always" more expensive than the alternatives offered by the same bank.

It is useful to highlight the wide range of these consumption profiles. For instance, at one extreme there are consumption profiles that involve using no cards nor services, so that tariffs with the lowest basic fee is never dominated. On the other end of the spectrum, there are consumption profiles which use all cards and operations many times. Moreover, for each card type and each service, there is at least one consumption profile that has only that card/service different from zero. So, for example, some consumption profiles have some debit card associated, but no credit card nor any use of withdrawals, transfers or automatic payments. Therefore some dominated tariff are characterized by having all prices strictly higher than their alternatives. This condition is sufficient but not necessary. For example, suppose that the only service provided by banks is branch withdrawals. If tariff A has a fixed fee of €20 and free branch withdrawals, and tariff B has a 0 fixed fee and branch withdrawals priced at €0.5 but I observe all account owners making always less than the break-even number of branch withdrawal (40), then I will consider tariff A as dominated. Then a tariff is dominated when it has strictly higher prices for all services or when it charges a lower price for one, or a subset, of the services but the implied savings never lead to lower overall costs of the account.

Second, I identify the set of non-promotional tariffs available to the client. A tariff is the combination of average prices and fees for the services used to construct consumption profiles. To identify tariffs available to the client, I consider those that are associated to an account with at least one year of age and that have been opened after 2008, to exclude respectively non-promotional tariffs and old tariffs that might no longer be available. In addition I require that the alternative tariff must be associated to a younger account, to consider only tariffs that have been effectively available to that client at some point

[34] As discussed above, I consider only the services used by at least 5 per cent of the sample

during her relationship with the bank. All these restrictions are important to consider alternatives that were effectively available to the client, however each of them reduces the number of accounts available for the empirical analysis. To maintain the sample size large enough, I decide to avoid restrictions based on the year in which the account is sampled.[35]

For each tariff I compute the costs associated to each consumption profile and compare all tariffs of accounts held in the same bank. Tariffs that never have the minimum costs are tagged as dominated and I interpret his owner as an inattentive consumer.[36] It is possible that account owners with undominated tariffs are inattentive too. However their inattention does not lead them to clear mistakes in the tariff they have, therefore I consider their inattention as less relevant the the kind of inattention that lead to keep dominated tariffs.

To provide additional evidence on the costs associated to keeping a tariff that is dominated, I compute measures of foregone savings from not being on the efficient frontier of tariffs offered by their bank. The number of services in this market, and therefore prices making a tariff, would make the computation of elasticities and cross-substitution patterns necessary to endogenize responses to changes in tariffs complicated. Therefore, to compute a single measure of savings, I use the empirical distribution of usage given by the sample frequency of each consumption profile. Using the example represented in Figure 2, if $\pi(q_i)$ is the empirical frequency of the number of times the quantity q_i (for $i = 1, 2$) is consumed in the sample, the single measure of saving I compute is given by $\pi(q_1)\Delta C(q_1) + \pi(q_2)\Delta C(q_2)$. In case I find more than one dominant tariff, which happens in most cases, I compute the minimum and the maximum of these savings. Note that these measures do not take into account the endogenous response of consumption of different services to a change in prices, however it is informative of how far a tariff is from the efficient tariff frontier offered by the same bank where the client has the account.

[35] Consider, for example, an account opened in the year 2001 and sampled in 2014. If I find a tariff of an account opened in 2000 and sampled in 2013, i.e. opened and sampled before the accout, I assume that our client could have chosen in 2013 such tariff and could have kept it in 2014. I make such choice for data requirements. If I imposed that the sampled year of the alternative tariff must be equal to the one of the account, the size of the available sample would be significantly reduced.

[36] A similar approach is proposed by Miravete (2013). Miravete (2013)'s analysis however confront tariffs with combinations of tariffs offered by the same firm, while I make pairwise comparisons among tariffs.

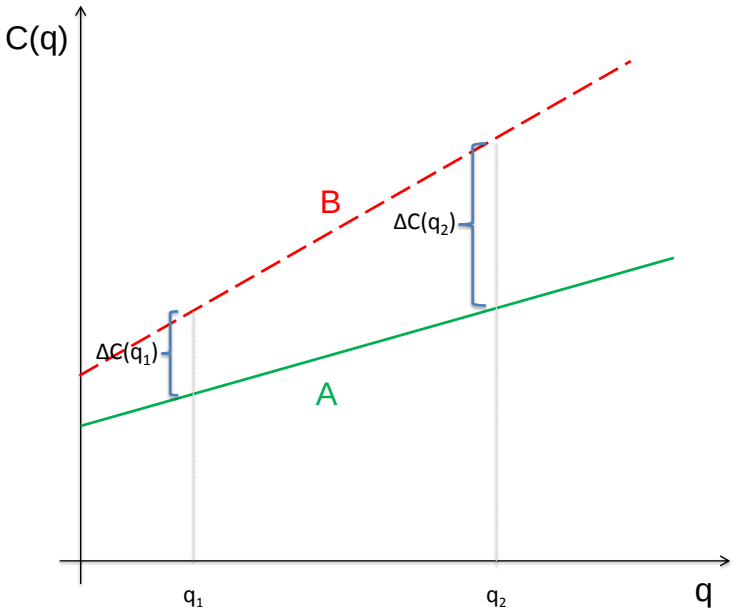


Figure 2 *– This figure provides a graphical representation of a dominated tariff for a single service. The x-axis represent the quantity of the service consumed, the y-axis total costs of the account. The figure assumes for simplicity that there are only two possible levels of consumption, q_1 and q_2. Tariff B is dominated by tariff A because it is always more expensive.*

4 Results

I now present the results of the analysis. I compared the tariffs of 33,862 accounts, which represent roughly 76% of the original sample, using 44,700 different consumption profiles observed in the data.[37] By construction, these accounts tend to be in larger banks and in most populated geographic areas, therefore the analysis focuses on markets where there is more competition and clients are more likely to be financially educated.

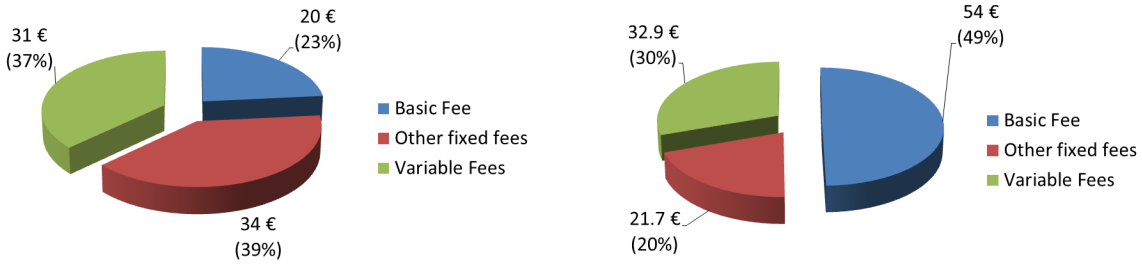
I find that 51% of the sample keep tariffs strictly dominated by a non-promotional tariff introduced after the account has been opened by the same bank where the account is held. Roughly 90% of banks in the

[37] As explained in Section 3.2, I can analyze tariffs only if I observe an account with at least one year of age opened after 2007 by a client with a similar usage of the account. For 12,000 observations, the survey does not contain accounts with these characteristics in the same bank where the account is open, therefore I do not have tariffs suitable for computing tariff dominance.

sample have some accounts with dominated tariffs. This proportion ranges from just a few accounts to more than 48 percent for the top decile.

4.1 Which clients have dominated tariffs and how much does it cost?

Figure 3 report basic costs of accounts with and without dominated tariffs.



(a) Accounts with undominated tariffs. **(b)** Accounts with dominated tariffs.

Figure 3

Accounts holders with dominated tariffs spend much more on the basic fee and less on the other fixed fees. This is mainly due to the fact that consumers with undominated tariffs tend to have more credit cards,[38] which suggests that they might be financially educated and use a more diversified range of bank basic services. Variable costs are instead roughly similar.

For each account with a dominated tariff, I have computed expected account costs using the empirical distribution of consumption profiles (see Section 3.2 for more details on how these savings are computed)[39] and measured the difference from expected costs of the most and the least expensive non-dominated tariff. I interpret this value as a simple measure of how much each consumer can save if she switched to a non dominated tariff. The empirical distribution is shown in Figure 4.

[38] 40 per cent of the accounts among those with undominated tariffs have a credit card, while 26 per cent among those with dominated tariffs have a credit card.

[39] These measures are computed as if demand was randomly chosen from the empirical distribution of consumption profiles, thus exogenous to prices. This assumption is clearly unrealistic, nonetheless I use it as a crude measure of how costly is to be off the efficient frontier of tariffs offered by the bank where the client has the account .

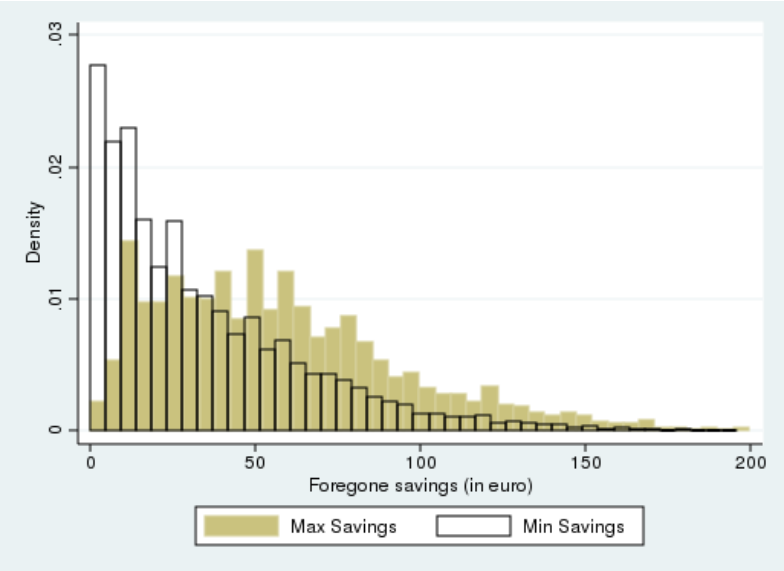


Figure 4 *– Distribution of the maximum and minimum expected savings from switching to a non-dominated tariffs offered by the same bank.*

The results suggest that foregone savings from keeping a tariff that is not on the efficient frontier can be significant. The most expensive non-dominated tariff would allow the consumers to save on average €24, the cheapest €51. These number are equivalent to 38 and 68 per cent respectively of the total costs of the bank account during the year.

To study how foregone savings vary with client and account characteristics, I estimate a tobit model and compute the marginal change of foregone savings. The results from the minimum and maximum savings, which use the most and the least expensive undominated tariff, are qualitatively similar, therefore I show here the most conservative ones associated with the most expensive. The results are reported in Table 4.

Tobit model Dep. variable: Maximum foregone savings	(1)	(2)	(3)
Account characteristics:			
Age	9.99***	9.54***	9.39***
	(1.72)	(1.63)	(1.61)
Dummy Asset Management	-7.88***	-6.77***	-6.76***
	(1.86)	(2.11)	(2.12)
Dummy Home Banking	-19.9***	-20.4***	-20.4***
	(2.93)	(2.97)	(2.96)
Dummy Loan	10.9***	10.3***	10.3***
	(1.92)	(1.84)	(1.84)
Client characteristics:			
Age	2.13***	2.12***	2.12***
	(0.55)	(0.58)	(0.57)
Dummy male	0.88	1.26	1.28
	(1.29)	(1.33)	(1.32)
N.Obs.	34775	34730	34524
Bank Controls	No	Yes	Yes
Branch Controls	No	No	Yes

Table 4 *– Notes: Marginal effects estimated using a tobit model for the maximum foregone savings. Account and client age are measured in decades. All specifications contain fixed effect for bank group, year and region fixed effects. Bank controls are are log of total assets and various measures of bank characteristics normalized by total assets. Branch controls are branch employees, total amount deposited and total amount of credit issued. Standard errors clustered at bank and regional level.*
****: Significant at 1 percent; **: Significant at 5 percent; *: Significant at 10 percent.*

The average marginal effect of the account age is significant, roughly one euro per year. This means that accounts in the top quartile of the distribution of tenure, which are older than 12 years, tend to forgo larger savings from not switching to a tariff on the frontier than younger accounts. This indicates that consumers in this market do not learn how to choose a better tariff, as in other markets (Miravete and Palacios-Huerta (2014)). On the contrary they leave on the table larger savings by not checking other options within the same bank.

Table 4 also reports some additional results that provide a better understanding of consumers' mis-

takes. The presence of an investment account (labeled "Dummy Asset Management") is significantly related to savings. Using Italian data, Jappelli and Padula (2015) show that this variable correlates with client's financial literacy, therefore these results suggest that financial literacy improve the ability of understanding and comparing account costs. The correlation with the use of home-banking is even stronger in absolute terms. This can be interpreted both as the effect of easier access to the other bank's tariff through the use of Internet, or through its correlation with client's education.

4.2 Which parts of the tariffs are overlooked by consumers?

In this Section I investigate which prices are significantly higher in the dominated tariff kept by inattentive consumers. This analysis can be informative on consumers mistakes for two reasons. First, different prices are characterized by different level of salience. For example, prices for branch transactions can be checked every time the client asks the branch employee to make one, the price of on-line transfers is shown on the computer screen every time an operation is requested. Fees are instead less salient: the basic, credit and debit card fees are automatically charged to the account either yearly or quarterly. Similarly, automatic payments are charged without the client being aware every time the transaction is executed.

Second, comparing prices can be more or less complex depending on the specific component of the tariff. The basic fee is the easiest to compare, being independent of consumption. Transactions are the most complicated. A consumer has to forecast how much she will consume of a given transaction, take into account uncertainty, eventual non linearities in the tariff given by free operations and considering substitutability among transactions, such as on line and branch transfers.

To look into these issues, I repeat the main exercise 8 times, each time ignoring one component of the tariff. For example, I ignore the basic fee and I compute which tariffs are dominated, or I ignore credit cards (and ignore also duplicates of consumption profiles which differ only in the number of credit cards) and compute which tariffs are dominated. Table 5 reports, for each component of the tariffs, the fraction of consumers with dominated tariff ignoring such component and the foregone savings, measured as before.

Financial service excluded*	Inattentive consumers (%)**	Foregone savings***	
		Min.	Max.
Baseline results	51.2	38.6	68.3
Basic fee	0	-	-
Debit Card	52.0	37.2	65.2
Credit Card	52.1	37.7	66.1
Branch withdrawal	52.0	31.5	67.0
Branch transfers	53.0	28.6	65.0
ATM withdrawal	53.3	37.3	63.8
Online transfers	51.6	38.7	66.9
Automatic payments	53.0	35.7	65.1

Table 5 – Dominated tariffs and financial services. Notes: **: financial service excluded for the computation of dominated tariffs; **: percentage of accounts with dominated tariffs; ***: foregone savings are expressed as a percentage of the yearly account costs. See Section 3.2 on more details on how they are computed*

All consumers have undominated tariffs if I do not consider the basic fee. Instead, the results about the other prices are quite similar across services. Roughly half of the accounts in the sample have dominated tariffs and the foregone savings from not being on the frontier of tariffs offered by their bank range between one third and two thirds of the yearly costs of the accounts.

It is worth stressing two observations to understand the implication of these results. First the basic fee is the single largest component of the costs of checking accounts, making up one third of the overall costs (see summary statistics in Section 3.1). This suggests that it should be the first to be checked by consumers but, in practice, it is not. Second the basic fee is easier to compare among tariffs than all the other components of a tariff: it can not be avoided by substituting services (for example like branch and on line transfers) and there is no uncertainty associated to its amount. On the contrary, it is among the least salient components of tariffs, since it is not shown every time an operation is used. Therefore I consider this result as quite important to understand the source of consumer inattention in this market. In the next Section I investigate the issue of the dispersion of tariff components.

4.3 Dispersed prices and the probability of having a dominated tariff

Building on the seminal paper of Tversky (1969), Bordalo *et al.* (2012), Bordalo *et al.* (2013) and Kőszegi and Szeidl (2013) have recently proposed decision-theoretic models in which choice attributes which differ more across options have also larger weights in the decision of the agent. Instead, attributes which are similar across options tend to be disregarded in the decision process.

For example, in Bordalo *et al.* (2012) an individual choosing among lotteries assigns larger weights to the states of the world in which payoffs are significantly different across lotteries. The presumption is that people do not compare lotteries when they pay the same. The authors show that a decision maker following such process behaves as risk-seeking when the payoffs are more diverse in the winning states of the world and become risk-averse when payoffs are more diverse in the losing states of the world, thus explaining some of the empirical puzzles of choice under risk, such the Allais paradox. In another application, Kőszegi and Szeidl (2013) show that a decision maker focusing on the attributes which have larger effects on her final utility display procrastination when many future small gains reward a present costly decision. In this case, the decision maker focuses more on the present large cost than on the small future gains. In sum, the context-dependent approach to choice is able to model many of the irrational behaviors documented in laboratories (risk-loving, time inconsistency, procrastination etc.).

Consider the problem of a consumer deciding whether to change her old tariff with a new one introduced by her bank. Such costumer has to decide whether the two tariffs are significantly different, and in case they are, change. The comparison is not easy in this market: tariffs are made of many prices and consumers are often unsure of the use they will make of their account. Therefore this decision requires focusing. The prices making a tariff define payoffs in different states of the world (the states of the world being different consumption levels of bank services), and are the attributes of the various tariff options. Under the context-dependent approach to decision making, consumers should therefore focus their attention on the prices which differ more among tariffs offered by their bank. This suggests, for example, that the more dispersed is the basic fee, which is paid by all consumers, the more the clients should pay attention to their tariffs. Moreover, consumers which use the services with the most dispersed prices across tariffs should pay more attention to their tariff choice, hence they should be less

likely to have dominated tariffs. [40]

To investigate whether price dispersion is associated with consumer attention, Figure 6 provides a first inspection of the relationship between the dispersion of the basic fee, which has been shown to be the most important component of the tariff, and the fraction of accounts with dominated tariff in a bank. Each dot is a bank, on the x-axis I plot the coefficient of variation of the basic fee and on the y-axis I plot the fraction of consumers with dominated tariff.

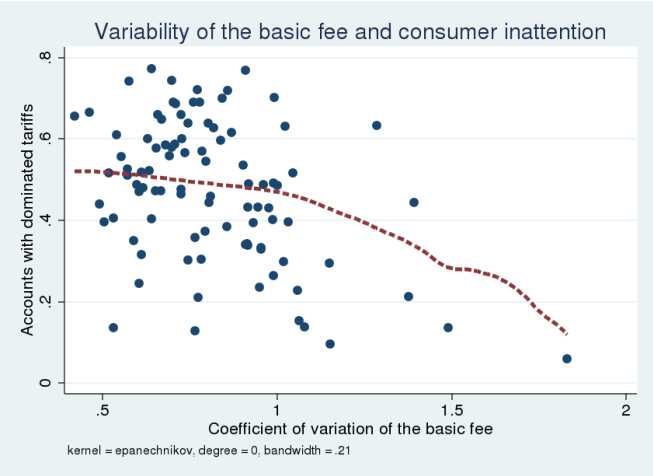


Figure 5 *– Scatter plot and local polynomial regression of the fraction of accounts with dominated tariffs and the dispersion of the basic fee (left panel) and the credit card fee (right panel) at the bank level.*

A linear regression coefficient, controlling for bank variables described in Table 4, is equal to -0.31 and significant at 1 percent level.[41]

I therefore investigate this exaplantion with a set of regression results. I first rank bank services associated to checking accounts[42] with respect to the coefficient of variation of prices across tariffs and study whether consumers that use the services with the most dispersed prices are less likely to have a dominated tariff.[43]

[40] Issues of endogeneity, which could potentially arise if consumers who are more financially educated are also more likely to use services with dispersed prices will be discussed explicitly below. The ability to detect whether a tariff is dominated can be correlated with many unobservable characteristics of the client, such as financial literacy, occupation etc.

[41] Figure 6 in the Appendix shows the cases for the other prices.

[42] See Table 2 for details on the servies used.

[43] I use the coefficient of variation instead of standard deviations to measure price dispersion because otherwise services with higher prices, such as credit cards, will mechanically have larger dispersion. Indeed for roughly 75% of banks the service with the highest standard deviation is the credit card, for 17% is the debit card, and the remaining share is equally devided among the other types of transactions. In this case the results could be driven by the selection of attentive consumers into the set of users of a specific service. Nonetheless, I report the results using standard devitions in Table 11 in the

Among the 360 banks in the sample, for roughly 20% of banks the service with the highest coefficient of variation is the debit card, for an equal share it is the credit card and the ATM withdrawals. The remaining share is almost equally devided among the other services. Thus, the service with the most variable price can vary significantly across banks and is therefore unliekly to be related with unobserved characteristics of the client. I then construct a dummy variable equal to one if the account owner has used one of the two services with the most dispersed price at least once in the year.[44] I then regress the dominated tariff dummy on the dummy of whether the client has used the services with the most dispersed prices within her bank, controlling for client, account and bank characteristics. The first two lines of Table 6 report the main results.

Appendix. These additional results confirm the interpretation provided in the main text.

[44] Using only the service the most dispersed prices, or the first the three services with the most dispersed price give simlar results.

Logit model Dep. variable: dummy account with dominated tariff			
	(1)	(2)	(3)
Use the services	-0.044***	-0.053***	-0.055***
with most dispersed prices	(0.017)	(0.015)	(0.014)
Use only services	0.058***	0.054***	0.052***
with least dispersed prices	(0.014)	(0.014)	(0.014)
Account Age	0.038***	0.037***	0.036***
	(0.010)	(0.0098)	(0.0095)
Client Age	0.0081*	0.0085*	0.0083*
	(0.0043)	(0.0045)	(0.0044)
Dummy Loan	0.063***	0.061***	0.061***
	(0.0079)	(0.0078)	(0.0079)
Dummy Asset Management	-0.048***	-0.044***	-0.044***
	(0.014)	(0.015)	(0.015)
Dummy Home Banking	-0.069***	-0.069***	-0.069***
	(0.019)	(0.019)	(0.019)
Observations	28161	28122	27930
Bank Controls	No	Yes	Yes
Branch Controls	No	No	Yes

Table 6 *– Notes: Marginal effects estimated using a probit model for the dummy account with dominated tariff. Among the the explanatory variable shown, "Use services with most dispersed prices" is a dummy equal to 1 if the account owner uses the two services whose prices have the maximum coefficient of variation among all services within the bank; the variable "Use only services with least dispersed prices" is a dummy equal to 1 if the account owner uses only the two services whose prices have the minimum coefficient of variation among all services within the bank. See Table 4 for the details on the additional regressors included in the specification.*
****: Significant at 1 percent; **: Significant at 5 percent; *: Significant at 10 percent.*

The first line shows the estimated conditional relationship between the probability of having a dominated tariff and whether the account owner uses the services whose prices are most disperesed. In the case of context-dependent choice among tariffs, these clients should focus more attention to the differences between their tariff and the other options offered by their bank, and therefore they should be less likely to have a dominated tariff. The relationship I find is negative and significant in all specifications and, assuming that such behavior is exogenous to unobserved client characteristics, indicate that when

the client uses such services the probability of having a dominated tariff falls of 5%.

The second line reports the estimated relationship between the probability of having a dominated tariff and a dummy equal to one if the account owner uses only the two services whose prices are the least dispersed among bank services. If consumers' decision making process is best described by context-dependent choice, these clients should be more likely to have a dominated tariff because for them their tariff is the same as the others ofered by the bank. The estimates are positive and significant, confirming the interpretation proposed.

It is useful to stress that these services vary considerably among banks, therefore these results should not driven by the selection of attentive consumers into the set of users of a specific service. Consumers are likely to pay more attention to what they pay when prices vary considerably among options.

The bottom part of Table 6 reports some additional results on the characteristics of the accounts with dominated tariffs. These estimates are consistent with the discussion in Section 4.1.

Table 7 provides a second set of results which corroborate the previous evidence on consumer inattention. The dependent variable is, as in Table 6, the dummy for whether the client has a dominated tariff. The explanatory variable is the standard deviation across tariffs of the prices of the services they use.

Logit model Dep. variable: dummy dominated tariff	(1)	(2)	(3)
Standard deviation of fixed fees:			
Basic Fee	0.0036	-0.0067***	-0.0069***
	(0.0038)	(0.0023)	(0.0023)
Debit Card	-0.00073	-0.00075	-0.00080
	(0.0012)	(0.0010)	(0.0010)
Credit Card	-0.0037***	-0.0038***	-0.0038***
	(0.00065)	(0.00068)	(0.00069)
Standard deviation of prices per transaction:			
Branch withdrawals	-0.062***	-0.060***	-0.059***
	(0.013)	(0.012)	(0.012)
ATM withdrawals	-0.031*	-0.034**	-0.032**
	(0.017)	(0.017)	(0.016)
Branch transfers	-0.069***	-0.071***	-0.071***
	(0.0086)	(0.0088)	(0.0088)
Online transfers	-0.063***	-0.067***	-0.067***
	(0.015)	(0.015)	(0.015)
Automatic payments	-0.019	-0.022	-0.024
	(0.016)	(0.016)	(0.016)
Obs.	18441	18441	18290
Bank Controls	No	Yes	Yes
Branch Controls	No	No	Yes

Table 7 *– Notes: all specifications include client, account, bank and branch constrols. See Table 4 for details on the additional variables.*
****: Significant at 1 percent; **: Significant at 5 percent; *: Significant at 10 percent.*

The estimated coefficient are negative, as expected, for all but two variables: debit card fees and automatic payments. The presence of negative and significant coefficients confirm that clients using services with more dispersed prices are less likely to have dominated tariffs. This confirms the context-dependent choice as a likely interpretation of consumer mistakes in this market. The estimated coefficients are larger for transactions than for the fixed fees. This can be interpreted in light of the difference salience of the two kind of prices: the price of each operation is more salient, since it is paid every time an operation is requested, while fees are automatically charged on the account once a year, therefore

a larger variance in these prices is more likely to attract consumer attention on her tariff, even if these services are not the main determinants of the overall costs of checking accounts.

On the contrary, note that the standard deviation of the fixed fee is also (negatively) related to the probability of keeping a tariff dominated. This suggests that the dispersion of prices attracts consumer attention even though consumers tend to ignore the level of a price, as shown above for the fixed fee.

5 Robustness analysis

5.1 Mis-measurement of the marginal price

The dataset used in the analysis contains detailed information on the characteristics of the services sold,[45] but it lacks a complete characterization of tariffs' non-linearities. For example, the data specify whether a tariff includes free operations and the number of operations free of charge, but it does not specify the marginal price when the free amount is exausted. All I know, beside these characteristics, are total expenditures for the amount consumed for each service. To address this issue, this section examines the potential mis-measurement of prices due to three-part tariffs, the most common of the non-linearities present in this market.[46] The drawback of the approaches proposed below, and therefore why they have not been used in the main section, is that I loose a significant number of observations.

I report two sets of estimates that assess the role of three-part tariffs.[47] First, I compare only tariffs without free operations, for which the marginal and average price coincide. Second, I have modified the approach described in Section 3.2 to make it robust to the case in which average prices of financial services are increasing in the amount consumed.[48] More specifically, a tariff is compared to an alternative only if the account owner consumes all services fewer times than the account owner of the alternative tariff. If the tariff includes a limited number of free operations, the average price should

[45] See Section 3 for a detailed description of the dataset

[46] Another source of non-linearities is block pricing, in which the unit price change across ranges of usage. To our knowledge, this form of pricing is not used in the market of personal bank accounts.

[47] In addition, I manually went through the contracts of the 7 banks most represented in the dataset, accounting for 40% of the observations in the dataset, which are available on-line on the banks' websites. I found that none of the contracts offered included a limited number of free operations for the services used in the paper, indicating that this pricing strategy is rarely used by firms in this market.

[48] Although not explicitly forbidden, a decreasing average price, which would happen when there are price discounts abouve some consumption levels, is seldomly used for personal bank accounts.

increase with the number of operations, therefore finding that the tariff is dominated would not be determined by a positive derivative in the average price. Table 8 is the analogous of Table 6, but for these two robustness checks.[49]

Logit model **Dep. variable: dummy account with dominated tariff**						
	No free operations			**Restriction on usage**		
	(1)	(2)	(3)	(4)	(5)	(6)
Use the services with most dispersed prices	-0.24*** (0.038)	-0.24*** (0.037)	-0.24*** (0.037)	-0.24*** (0.023)	-0.23*** (0.022)	-0.24*** (0.022)
Use only services with least dispersed prices	0.13*** (0.021)	0.13*** (0.020)	0.14*** (0.020)	0.16*** (0.015)	0.16*** (0.014)	0.16*** (0.014)
Obs.	10705	10705	10643	10371	10371	10279
Bank Controls	No	Yes	Yes	No	Yes	Yes
Branch Controls	No	No	Yes	No	No	Yes

Table 8 *– Notes: Marginal effects estimated using a probit model for the dummy account with dominated tariff. See Table 6 for a description of the variables. In column 1 to 3 I compute dominated tariffs only considering tariffs that do not include free operations; in column 4 to 6 a tariff is compared to an alternative only if the account owner consumes all services fewer times than the account owner of the alternative tariff.*
****: Significant at 1 percent; **: Significant at 5 percent; *: Significant at 10 percent.*

The results are qualitatively similar to the ones reported in Table 6, both in terms of sign of the coefficients and their significance. They are quantitatively larger. Thus I can conclude that tariff non-linearities do not drive the results and, if anything, that in the subset of accounts which are not affected to the mismeasurement of prices, the results above are larger. In Table 13 I provide results analogous to those reported in Table 7, but using the subsample and the approach described above. These results confirm what has been shown in the previous section.

[49] See Table 12 in the Appendix for the additional results on the other variables.

5.2 Are consumers inattentive or indifferent to the costs of their accounts?

The results reported in Section 4.1 highlight that foregone savings from keeping a dominated tariff can be substantial. A client changing her dominated tariff with a non-dominated one offered by her bank could save, on average, between 38 and 68% of the overall costs her account. These values are significant in relative terms, however they are probably a small fraction of consumers' income: these percentages correspond to euro 24 and 51 per year respectively.[50] Are clients simply indifferent to such amounts, or they really focus on some aspects of their tariffs as the results above suggest?

I do not have access to the clients' income, which could allow additional analysis on this issue. However one alternative way to address whether consumers are indifferent to what they pay for their accounts because the amounts involved are too small is to normalise savings for the average account balance during the year. In this subsection I consider accounts with dominated only those whose minimum forgone savings are less than 10% of the average yearly account balance. For these costumers, either the average account balance is large, so they are presumably wealthy, or the foregone savings are small, so their tariff is not significantly different from non-dominated alterantives. Either way, the owners of these accounts are more likely to be indiferrent to having a dominated tariffs, given the relative small savings they would get. If indifference, rather than context-dependent attention, is a significant explanation for consumer inattention, these clients are those more likely to be indifferent and for them I should not observe the relationship between prices and inattention found in Section 4.3.[51] Table 9 reports the results.

[50] After-tax average monthly income in Italy in 2014 was euro 1,239 according to the Italian Ministry of Finance.

[51] Figure 7 in the appendix report the distribution of the yearly average account balance. Accounts with negative balance are also considered among those dominated. I have performed several robustness checks with respect to the threshold of 10%, finding results similar to those shown below.

Logit model Dep. variable: dummy account with dominated tariff			
	(1)	(2)	(3)
Use the services	-0.026	-0.034**	-0.036**
with most dispersed prices	(0.017)	(0.015)	(0.015)
Use only services	0.053***	0.050***	0.047***
with least dispersed prices	(0.014)	(0.014)	(0.014)
Account Age	0.044***	0.043***	0.042***
	(0.010)	(0.0099)	(0.0096)
Client Age	0.013***	0.013***	0.013***
	(0.0045)	(0.0047)	(0.0046)
Dummy Loan	0.050***	0.048***	0.047***
	(0.0083)	(0.0082)	(0.0082)
Dummy Asset Management	-0.023	-0.019	-0.019
	(0.015)	(0.016)	(0.016)
Dummy Home Banking	-0.061***	-0.062***	-0.062***
	(0.018)	(0.018)	(0.018)
Observations	25638	25606	25432
Bank Controls	No	Yes	Yes
Branch Controls	No	No	Yes

Table 9 *– Notes: Marginal effects estimated using a probit model for the dummy account with dominated tariff using only accounts whose minimum savings are larger than 10% of average account balance. See Table 6for details.*
****: Significant at 1 percent; **: Significant at 5 percent; *: Significant at 10 percent.*

The estimates are smaller than those reported in Table 6, but of the expected sign and significant. The coefficients are negative, as expected, for those accounts using the services with the most dispersed prices, and positive for those accounts using only the services with the lest dispersed prices. Thus they confirm the evidence of context-dependent choice among tariffs also for accounts for which the owners are more likely to be simply indifferent, since the foregone savings are very small.[52]

[52]Table 14 in the Appendix provides additional results.

6 Conclusions

This paper presents field evidence of consumer inattention from the market of personal checking accounts using a representative sample of all checking accounts held by households and individuals in Italy. I identify inattentive consumers as those keeping account tariffs that are strictly dominated, i.e. more expensive for any use of the account, than non-promotional tariffs offered by the same bank where the account is held and introduced after the account has been opened. This approach does not depend on consumer's characteristics or the services she uses, comparing tariffs using all possible use of a bank account observed in the data. For these accounts I compute measures of foregone savings from not being on the efficient frontier of tariffs offered by their bank and analyze the relationship between tariff characteristics and consumption behavior to understand the causes of inattention in this market.

The results indicate that significant fraction of consumers are inattentive to the costs of their accounts, keeping tariffs that are dominated by some available alternative offered later by the same bank where they have their account. In the baseline analysis roughly half of accounts have dominated tariffs. Foregone savings from not having to a non-dominated tariff range from €24 to €51 per year, equivalent to 38 and 68% of the average costs of the account.

The probability of having a dominated tariff, and the expected savings from not switching to one on the frontier, increases with account tenure. This indicates that a significant fraction of consumers in this market do not improve their choice over time. On the contrary, they ignore that their tariff becomes expensive with time and should be updated to a new and cheaper one after few years. Two results shed light on the origins of this inattention. First, the fixed fee is the only component overlooked by consumers even though it is the easiest to observe and compare among options and it is the single largest component of account costs. Thus many consumers fail to check the part of the tariff with the lowest information costs. If information costs were the explanation of consumer inattention, the easiest price to compare would not be the only component determining tariff dominance. Second, consumers using services with the highest dispersion of prices across tariffs offered by their bank are less likely to have a dominated tariff, consumers using only services with the lowest dispersion of prices across tariffs offered by their bank are more likely to have a dominated tariff, and consumer inattention increases

with the dispersion of prices across tariffs offered by their bank, including the dispersion of the fixed fee. This evidence suggests that consumers pay more attention when prices are more dispersed across tariffs at their bank. Therefore consumers, when they do compare tariffs, focus their attention on the characteristics of their tariffs that vary more and ignore those that are less diverse across options, even if they are the main determinants of the overall costs of their accounts. These results are consistent with recent theories of context-dependence choice (Bordalo *et al.* (2012) and Kőszegi and Szeidl (2013)), which has been shown to explain other behaviors inconsistent with rationality documented empirically. These findings may contribute to design policy interventions aiming at improving consumer choice in this market. One of the implications of the models described above is that consumers with limited focus tend to procrastinate optimal decisions, focusing more on a single current cost than on many small future benefits than a rational decision maker would do. A feasible, zero-costs policy intervention would than be having consumers actively re-making their choice when their tariff become old, say older than the median account age which is 8 years. Our analysis suggests that in this market this simple policy could be quite effective.

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A Additional results

A.1 Price discrimination and tariff characteristics

The high dispersion in the fixed fee could be a form of price discrimination (Stole (2007)). Some costumers willingly pay a higher fixed fee in exchange for lower prices on cards and other services (see Hayes (1987), Spulberg (1989)). To investigate this possibility, I estimate a tobit model for each price using as independent variable the basic fee.[53]

	Dependent Variable:						
	Cards		Withdrawals		Transfers		Automatic
	Debit	Credit	Branch	ATM	Branch	on-line	payments
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
$\frac{\partial E(p_i)}{\partial \text{Basic Fee}_i}$	0.00179	-0.0382***	-0.0198***	0.00217***	-9.32e-05	0.00531**	0.00797***
(s.e)	(0.00964)	(0.0129)	(0.00544)	(0.000743)	(0.000879)	(0.00217)	(0.00270)
Obs.	31820	14029	25149	26700	15911	8444	29554

Table 10 *– Notes: Maximum Likelihood Estimates of the Tobit model:*

$$max(0, p_i) = \alpha + \beta \textit{Basic Fee}_i + \epsilon_i$$

where the dependent variable p_i is price of the service indicated at the top of the column. All regressions include bank fixed effects. Standard errors clustered at bank level.
****: Significant at 1 percent level.*
***: Significant at 5 percent level.*
**: Significant at 10 percent level.*

Table 10 shows that this is unlikely the case. In most cases the relationship is not significant or even positive while when there is a negative relationship between a price and the basic fee, i.e. for the price of credit cards and branch withdrawals, the effect is so small that it unlikely justifies the higher fee.

[53] Results with additional variable are similar and can be obtained from the authors.

A.2 Price dispersion and the probability of having a dominated tariff

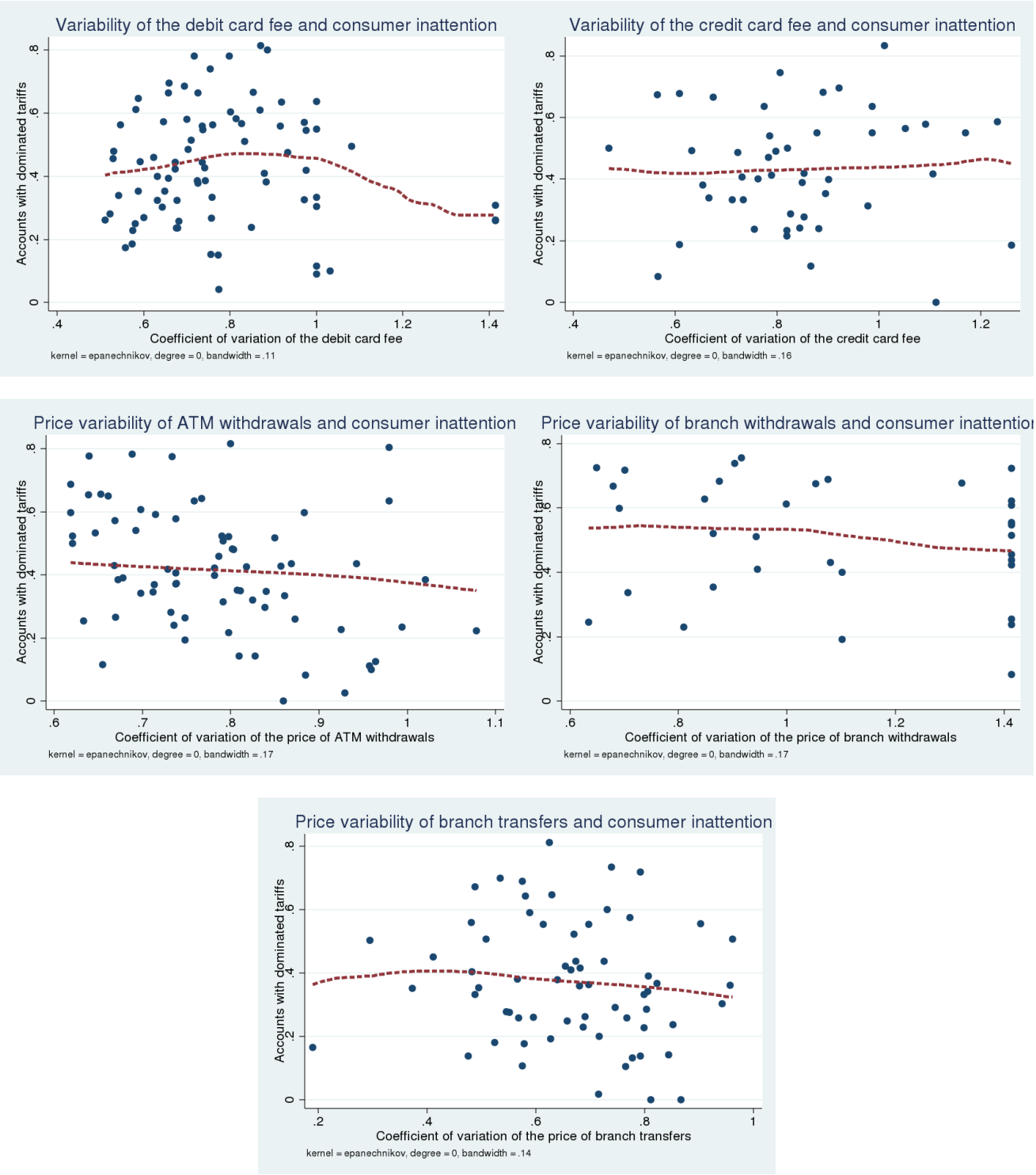

Figure 6 *– Scatter plot and local polynomial regression of the fraction of accounts with dominated tariffs and the dispersion of the credit card fee (top left panel), branch withdrawals (top right panel), ATM withdrawals (middle left panel), branch withdrawals (middle right panel) branch transfers (bottom panel) at the bank level.*

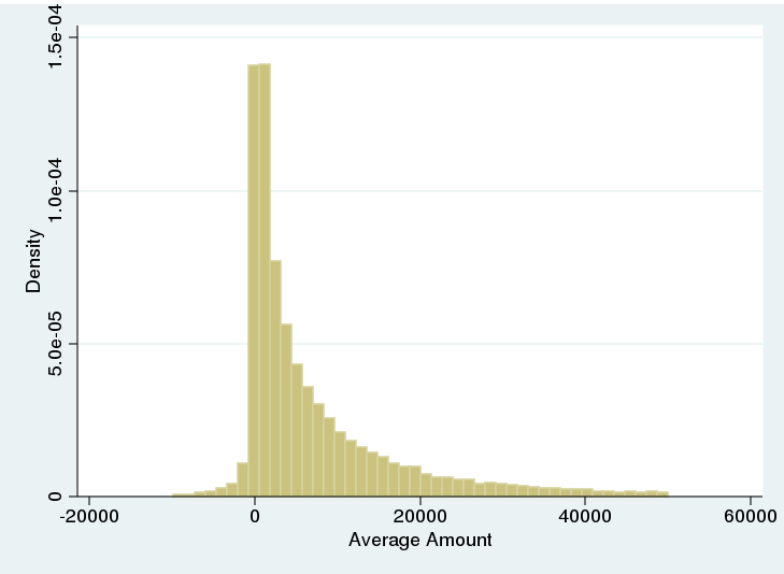

Figure 7 *– Distribution of the average account balance winsorized at the first and* 99^{th} *percentiles.*

Probit model **Dep. variable: dummy account with dominated tariff**			
	(1)	(2)	(3)
Use the services	-0.057***	-0.061***	-0.061***
with most dispersed prices	(0.012)	(0.011)	(0.011)
Use only services	0.070***	0.066***	0.065***
with least dispersed prices	(0.015)	(0.015)	(0.015)
Account Age	0.040***	0.039***	0.038***
	(0.010)	(0.0098)	(0.0095)
Client Age	0.0052	0.0056	0.0054
	(0.0044)	(0.0046)	(0.0045)
Dummy Loan	0.061***	0.059***	0.058***
	(0.0078)	(0.0078)	(0.0078)
Dummy Asset Management	-0.046***	-0.041***	-0.042***
	(0.014)	(0.016)	(0.016)
Dummy Home Banking	-0.059***	-0.060***	-0.060***
	(0.017)	(0.017)	(0.018)
Observations	28161	28122	27930
Bank Controls	No	Yes	Yes
Branch Controls	No	No	Yes

Table 11 *– Notes: Marginal effects estimated using a probit model for the dummy account with dominated tariff. Among the the explanatory variable shown, "Use services with most dispersed prices" is a dummy equal to 1 if the account owner uses the two services whose prices have the maximum standard deviation among all services within the bank; the variable "Use only services with least dispersed prices" is a dummy equal to 1 if the account owner uses only the two services whose prices have the minimum standard deviation among all services within the bank. See Table 4 for the details on the additional regressors included in the specification.*
****: Significant at 1 percent; **: Significant at 5 percent; *: Significant at 10 percent.*

Logit model Dep. variable: dummy account with dominated tariff						
	No free operations			Restriction on usage		
	(1)	(2)	(3)	(4)	(5)	(6)
Account Age	0.023**	0.023**	0.022**	0.0091	0.0079	0.0079
	(0.0094)	(0.0098)	(0.0098)	(0.0077)	(0.0079)	(0.0080)
Client Age	0.017***	0.017***	0.017***	0.014***	0.014***	0.015***
	(0.0021)	(0.0022)	(0.0023)	(0.0021)	(0.0021)	(0.0021)
Dummy Loan	0.049***	0.049***	0.049***	0.014	0.013	0.013
	(0.014)	(0.014)	(0.014)	(0.010)	(0.010)	(0.011)
Dummy Asset Management	-0.035***	-0.035***	-0.034***	-0.019***	-0.016**	-0.016**
	(0.011)	(0.011)	(0.011)	(0.0070)	(0.0073)	(0.0071)
Dummy Home Banking	-0.071***	-0.070***	-0.070***	-0.061***	-0.060***	-0.060***
	(0.017)	(0.017)	(0.017)	(0.011)	(0.011)	(0.011)
Obs.	10705	10705	10643	10371	10371	10279
Bank Controls	No	Yes	Yes	No	Yes	Yes
Branch Controls	No	No	Yes	No	No	Yes

Table 12 *– Notes: Marginal effects estimated using a probit model for the dummy account with dominated tariff. See Table 6 for a description of the variables. In column 1 to 3 I compute dominated tariffs only considering tariffs that do not include free operations; in column 4 to 6 a tariff is compared to an alternative only if the account owner consumes all services fewer times than the account owner of the alternative tariff.*
****: Significant at 1 percent; **: Significant at 5 percent; *: Significant at 10 percent.*

Logit model Dep. variable: dummy account with dominated tariff						
	No free operations			Restriction on usage		
	(1)	(2)	(3)	(4)	(5)	(6)
Standard deviation of fixed fees:						
Basic Fee	-0.00062	-0.0074	-0.0079	-0.0052	-0.013**	-0.013**
	(0.0080)	(0.0071)	(0.0070)	(0.0061)	(0.0064)	(0.0065)
Debit Card	-0.0020	-0.0021	-0.0020	0.0010	0.00092	0.00096
	(0.0014)	(0.0014)	(0.0014)	(0.0020)	(0.0019)	(0.0020)
Credit Card	-0.017***	-0.017***	-0.017***	-0.0089***	-0.0089***	-0.0089***
	(0.0043)	(0.0043)	(0.0044)	(0.0023)	(0.0022)	(0.0022)
Standard deviation of price per transaction:						
Branch withdrawals	-0.085***	-0.084***	-0.085***	-0.11***	-0.11***	-0.11***
	(0.024)	(0.024)	(0.024)	(0.022)	(0.022)	(0.023)
ATM withdrawals	-0.080***	-0.081***	-0.081***	-0.19***	-0.19***	-0.19***
	(0.019)	(0.019)	(0.019)	(0.017)	(0.017)	(0.017)
Branch transfers	-0.15***	-0.15***	-0.15***	-0.12***	-0.12***	-0.12***
	(0.030)	(0.030)	(0.030)	(0.020)	(0.020)	(0.020)
Online transfers	-1.01***	-1.00***	-1.01***	-	-	-
	(0.23)	(0.23)	(0.23)	-	-	-
Automatic payments	-0.046*	-0.047*	-0.047*	-0.19***	-0.19***	-0.19***
	(0.024)	(0.024)	(0.024)	(0.025)	(0.024)	(0.025)
Obs.	7062	7062	7013	7908	7908	7829
Bank Controls	No	Yes	Yes	No	Yes	Yes
Branch Controls	No	No	Yes	No	No	Yes

Table 13 *– Notes: Marginal effects estimated using a probit model for the dummy account with dominated tariff. See Table 7 for a description of the variables. In column 1 to 3 I compute dominated tariffs only considering tariffs that do not include free operations; in column 4 to 6 a tariff is compared to an alternative only if the account owner consumes all services fewer times than the account owner of the alternative tariff.*
****: Significant at 1 percent; **: Significant at 5 percent; *: Significant at 10 percent.*

Logit model Dep. variable: dummy dominated tariff			
	(1)	(2)	(3)
Standard deviation of fixed fees:			
Basic Fee	0.0027	-0.0058	-0.0054
	(0.0091)	(0.0070)	(0.0068)
Debit Card	-0.0021	-0.0023	-0.0022
	(0.0016)	(0.0016)	(0.0016)
Credit Card	-0.017***	-0.017***	-0.017***
	(0.0045)	(0.0045)	(0.0046)
Standard deviation of prices per transaction:			
Branch withdrawals	-0.12***	-0.12***	-0.12***
	(0.029)	(0.029)	(0.029)
ATM withdrawals	-0.067***	-0.067***	-0.067***
	(0.021)	(0.021)	(0.021)
Branch transfers	-0.15***	-0.15***	-0.15***
	(0.029)	(0.028)	(0.028)
Online transfers	-	-	-
	-	-	-
Automatic payments	-0.016	-0.017	-0.018
	(0.020)	(0.020)	(0.021)
Obs.	6198	6198	6162
Bank Controls	No	Yes	Yes
Branch Controls	No	No	Yes

Table 14 *– Notes: all specifications include client, account, bank and branch constrols. See Table 4 for details on the additional variables.*
****: Significant at 1 percent; **: Significant at 5 percent; *: Significant at 10 percent.*

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