Switching Costs in the Finnish Retail Deposit Market*

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Abstract

I calibrate the switching cost for the Finnish retail deposit market by using the approach developed by Oz Shy (2002). It turns out that switching costs faced by deposit customers of the main Finnish banks manifest large variation and are high, ranging from 200 euros to nearly 1,400 euros. Over a 20-year period, switching costs have increased by roughly 50% in real terms, but in relation to average account balance, switching costs have not essentially changed. Changes and differences in the banks' competitive strategies might explain the variation in switching costs across time and banks..

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1. Introduction

Switching costs shape bank competition by conveying market power and affecting pricing (see, e.g., Gehrig and Stenbacka, 2007, Degryse and Ongena, 2008, ICB, 2011, and Ciet and Verdier, 2019). Bank switching costs are also recognized as a determinant of financial stability (Stenbacka and Takalo, 2019, and Brown et al., 2020). The influential Vickers report (ICB, 2011) elevates switching costs to a central role in banking regulation, and reviews many policy tools to affect switching costs. Direct evidence of the magnitude of bank switching costs is, however, scant. In this paper I measure the switching cost in the Finnish deposit market by using the approach developed by Oz Shy (2002). As Shy (2002) also applied the method to the Finnish deposit market, comparing the results of these two studies reveals how bank switching costs have changed over a 20-year period in Finland.

I find that switching costs faced by customers of the main Finnish banks manifest large variation and are high, ranging from 200 euros to nearly 1,400 euros. In relation to the average account balance of a customer, switching costs range from 2% to 15%. Comparing these numbers with those reported by Shy (2002) suggests that while switching costs have increased some 50% in real terms over 20 years, switching costs per average account balance have not changed.

The cross-sectional variation in switching costs might partially reflect differences in the banks' loyalty programs: For example, the Savings Banks Group does not run loyalty programs invariantly and imposes the lowest switching costs to its clients. In contrast, the clients of the OP Financial Group face the highest switching costs. The OP Group is a co-operative entity running a sophisticated loyalty program where loyalty bonuses accumulate from an owner-customer's use of the OP Group's banking and insurance services and can only be used for paying the OP Groups' banking service charges and insurance fees. Such loyalty bonuses cannot be transferred to another bank and they thus work much like frequent flier miles for airlines.

My results indicate that the OP Group's loyalty program might have been successful in locking in their owner-customers. The OP Group's loyalty program has also raised competition policy concerns: The Finnish Competition and Consumer Authority (FCCA) launched an investigation into the OP Group's loyalty program in December 2015 after a rival insurance provider, If P&C, filed a complaint, accusing the OP Group for abusing its dominant position by bundling the Group's banking and insurance products via its loyalty program. In its decision the FCCA, while considering the OP groups' loyalty program problematic from the competition policy point of view, finds no clear evidence that the loyalty program would significantly restrict competition in the non-life insurance market (FCCA, 2019). More generally, increasingly wide-spread loyalty programs and other changes in bank competition might explain relatively high switching costs found by this study.

While the existence of switching costs in deposit markets is well documented (see, e.g., Kiser, 2002, Carbo-Valverde et al., 2011, Hannan and Adams, 2011, and Brunetti et al., 2016), the evidence is, however, often indirect. A notable exception is Shy (2002) who develops a method of estimating switching costs in the banking industry directly and applies the method to the Finnish deposit markets. Shy's (2002) method only requires information about bank service charges and market shares. In contrast to Shy (2002), I can use banks' real names, and market shares are based on accurate numbers. However, determination of bank service fees is much more complicated today than it was in Shy (2002) due to more sophisticated product versioning and loyalty programs of banks. Prior to this study, Shy's method has been used to measure switching costs in the banking industry at least by Egarius and Weill (2016) but they do not analyze deposit market switching costs separately.[1]

Another method to estimate bank switching costs is developed by Kim et al. (2003). Their method uses bank accounting data, and is applied to deposit markets at least by Silva and Lucinda (2017). Silva and Lucinda (2017) report even higher estimates of switching costs relative to deposit account balance than in this study.

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[1] *Shy's method has also been employed in thesis work – see, e.g., Carlström (2010) and Stenvik (2016).*

Customer loyalty programs have been extensively studied (see, e.g., Basso et al., 2009, and Kari et al., 2017, for a discussion of the issues). According to this literature, loyalty programs could be seen as a way for firms to increase switching costs, to lock in customers, and even to deter entry, since a customer will lose their loyalty benefits if they switch to a rival. Some loyalty programs could also be seen as a form of product versioning where a firm with a market power attempts to price discriminate its customers. Loyalty programs also provide firms with valuable information about their customers, allowing for more accurate customer tracking and database marketing. The competitive implications of customer loyalty programs are not clear; as in the case of switching costs more generally, they can make markets more or less competitive depending on the circumstances (see, e.g., Basso et al., 2009; Ruiz-Aliseda, 2016). In the banking context, the competitive implications of switching costs have been shown to be particularly complex since they may also depend on the banking regulation such as deposit insurance, and information-disclosure and bail-out policies (see, e.g., Gehrig and Stenbacka 2007, Ciet and Verdier, 2019, and Stenbacka and Takalo, 2019).

I next replicate the main parts of Shy's (2002) model. Then, in Section 3, I explain the institutional environment of the Finnish banking industry and collection of the data. I combine the data with the model in Section 4 so as to provide new evidence of the deposit market switching costs. Section 5 concludes and discussed policy implications.

2. The Model

I replicate here the key features of the model in Shy (2002), referring the reader to the original source for more details and proofs (see also Shy, 2001).

Consider a market with k banks, $\{k \in \mathbb{N} | k \geq 2\}$, indexed by $i = 1, ...k$. Each bank i has initially $N_i \in \mathbb{N}$ customers who face the choice of either remaining in the bank or switching to another one. A customer's utility is given by

(1)
$$U_i = \begin{cases} -f_i, & \text{if the consumer stays,} \\ -f_j - \delta_i, \forall j \neq i, & \text{if the consumer switches,} \end{cases}$$

in which $f_i \in \mathbb{R}_+$ is the service fee charged by bank i, and $\delta_i \in \mathbb{R}_+$ is the switching cost in the case where bank i's customer decides to change their banking relation to the rival bank j.

The profits of bank i are then given by

(2)
$$\pi_i(f_1, ..., f_k) = f_i q_i$$

in which $q_i \in \mathbb{N}$ is the number of customers who will choose to deposit in bank i.

The banks are indexed according to a decreasing market share order so that bank 1 has the largest market share and bank k has the smallest market share. It is further assumed that i) each bank i, $i \neq k$, fears being undercut by bank k, and sets its fee f_i in reference to f_k, and that ii) the smallest bank k fears being undercut by the largest bank 1, and therefore sets its fee f_k in reference to f_1.

Under these assumptions there exists a vector of fees $(f_1, ..., f_k)$ that satisfies the Undercut-proof Property (UPP). In price competition, firms have an incentive to undercut a rival's price in order to attract customers from their competitor. Intuitively the UPP is satisfied when no bank can increase its profits by undercutting a rival bank and no bank can increase its service fee without being undercut by a rival.

Formally, when the UPP is satisfied, each bank i, $i \neq k$, chooses its fee f_i to maximize $\pi_i(f_i, f_k)$ (as given by equation (2)) subject to the constraint

$$(3) \qquad\qquad f_k q_k \geq (f_i - \delta_i)(N_i + N_k), \quad i \neq k,$$

taking f_k as given. Bank k in turn chooses f_k to maximize $\pi_k(f_k, f_1)$ subject to

$$(4) \qquad\qquad f_1 q_1 \geq (f_k - \delta_k)(N_i + N_k), \quad i \neq k,$$

taking f_i as given.

Equations (2)–(4) imply that the banks choose the highest possible prices satisfying constraints (3) and (4). Therefore constraints (3) and (4) hold as equalities. Furthermore, in an UPP equilibrium it must hold that $q_i = N_i \ \forall i$. Substituting N_i for q_i in equations (3) and (4), and solving for δ_i yields the UPP switching costs as

$$(5) \qquad \begin{aligned} \delta_i &= f_i - \frac{N_k f_k}{N_i + N_k}, \quad i \neq k, \\ \delta_k &= f_k - \frac{N_1 f_1}{N_1 + N_k}. \end{aligned}$$

Equation (5) implies that estimating switching costs only requires information about banks' service fees and the relative number of retail customers in each bank.

3. Institutional Environment and Data

3.1 Finnish Retail Banking Industry

Since the Finnish banking crisis of the early 1990s, there has been a large number of mergers in the Finnish banking industry. As a result the Finnish retail banking market is concentrated. As shown by Table 1 the deposit market shares of the two and four largest banks are over 65% and 80%, respectively. In what follows, I will focus on the four largest banking groups, the OP Group, Nordea, Danske Bank and the Savings Banks Group.

The Finnish retail banking market is also characterized by the use of customer loyalty programs, which reward customers for concentrating all their banking services and assets on the same bank. Typically, a customer gets bonuses, discounts, or other benefits once they have a threshold amount of assets (e.g., deposits and loans) at their bank.

Table 1: Bank Deposit Market Shares in Finland in 2016

Bank	Deposits (M€)	Market share (%)
OP Group	55,198	37.5
Nordea	40,723	27.7
Danske Bank	18,411	12.5
Savings Bank Group	6,072	4.1
Others	26,694	18.1
Total	147,098	100

Notes: This table lists deposit account balances (excluding deposits from financial institutions) at the largest banks in Finland, and the corresponding deposit market shares at the end of year 2016. Deposit and market share figures are in million euros and percentages, respectively. Source: Finance Finland (2017).

Of the four main banks in Finland, three run a customer loyalty program. The market leader, the OP Group, is a cooperative, offering loyalty discounts to those customers who are also its owners. The amount of discounts awarded to a customer depends on the customer's average monthly assets and loans at the OP Group. The loyalty benefits at Danske Bank and Nordea, the two main commercial banks in Finland, depend on the amount of assets in the bank; the key details of their programs are listed in Table 2. Out of the four main banking groups, only the Savings Banks Group does not run customer loyalty programs invariantly.

Table 2: Loyalty Programs of Nordea and Danske Bank

Nordea			
Regular customer	Key customer		
Assets $\geq$6,000 €	Assets $\geq$30,000 €		
Products from $\geq$3 different categories	Products from $\geq$5 different categories		
Regular monthly income $\geq$500 €	Regular monthly income $\geq$500 €		
Danske Bank			
Level 1	Level 2	Level 3	Level 4
Assets 0–10,000 €	Assets 10,000–50,000 €	Assets 50,000–150,000 €	Assets $\geq$150,000 €

Notes: This table lists the requirements for each level of the customer loyalty programs of the two main commercial banks in Finland, Nordea and Danske Bank, in 2017. "Assets" includes both savings and loans.

3.2 Measuring Market Shares and Service Fees

While equation (5) suggests that estimating switching costs only requires information about service fees charged by each bank and the relative number of retail customers in each bank, I do not have these figures but need to approximate them from available data.

I approximate a bank's market share in terms of retail customers by a bank's market share in terms of retail deposits, as given in Table 1. Shy (2002) suggests of using the number of bank accounts as a proxy for the bank's customer base. The problem with this proxy is that many accounts are inactive. For example, according to the Bank of Finland sources, there were in total 16,211,877 bank accounts in Finland in 2016, which corresponds roughly 3.5 bank account per adult person.[2] The deposit market share proxy circumvents this problem but I cannot take into account the skewed distribution of deposits across customers in calculations.

Service fees are typically monthly or annual fees. Hence, when a customer contemplates switching a bank, relevant consideration is the discounted sum of fees that the customer expects to pay if they stay with their current bank or switch to another bank. I therefore calculate lifetime fees by discounting the infinite sum of monthly and annual fees with the same four percentage real interest rate that Shy (2002) also used. More specifically, the lifetime fee $f_{l,i}$ for bank i is calculated from the bank's monthly fee $f_{m,i}$ with the formula $f_{l,i} = 12 \cdot f_{m,i}/(1 - d)$ whered $d = 1/(1 + r)$ is the discount factor when the real interest rate is $r \in \mathbb{R}_+$. With $r = 0.04$, $f_{l,i} = 312 \cdot f_{m,i}$.

I collect information about banks' service fees from the VertaaEnsin.fi on-line platform in January 2018. VertaaEnsin.fi is a part of the CompareEurope-Group, a leading provider of online comparison platforms for financial services in Europe. VertaaEnsin.fi contains up-to date information about various retail banking packages, customer loyalty pro-

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[2] *There were 5.503 million people in Finland in 2016, of which 84% were at least 15 years, see Statistics Finland, http://www.stat.fi/tup/suoluk/ suoluk_vaesto.html, last accessed on 30 October, 2017.*

grams, and the associated account and payment card fees in Finland. To facilitate a customer's comparison of banks and their service fees, the platform also selects the most relevant service packages for each bank. I include all these packages in the service fee calculations, and double-check the accuracy of the information for these packages from the banks' own websites.

VertaaEnsin.fi, however, contains no information about the Savings Banks Group. It provides service fee information for Oma Säästöpankki, the largest savings bank in Finland, but Oma left the Savings Banks Group in 2015. I therefore use Nooa Säästöpankki as the representative of the Savings Banks Group. Nooa is owned by the other group member bank and is a large savings bank operating in the Helsinki metropolitan area. I obtain Nooa's fee information from the bank's website. Using the fee information for Oma from VertaaEnsin.fi as a representative of savings banks fees instead of Nooa's fees gives essentially the same results (see Section 4.3).

Using the collected service fee information, I calculate the average monthly and lifetime fees for the banks. Table 3 displays the results. The first service package featured in Table 3 for each bank is a mandatory banking service package: A customer residing in Finland has a statutory right to basic banking services that include a current account, a payment card, and internet banking services (Amendment to Act on Credit Institutions §1054/2016). The other packages I consider typically include a more advanced payment card and some other services. The packages in the table are labeled according to the most advanced payment card included in a package. (In some premium packages, a customer can have access to another payment card and bank account for the same fee.)

Table 3 shows that the lifetime fees for the mandatory service package and for a package with a standard combined debit-credit card are roughly 1,000–2,000 euros. Customers having access to the highest loyalty benefit package in Nordea face the lowest fees. To reach such loyalty benefit levels, a customer needs to hold some non-negligible amount of assets in the bank (see Table 2). Therefore it is likely that such a customer pays other fees to Nordea, such as mortgage interest rates and repayment fees, or fund management fees, which are not captured by the service fee calculations here. Customers willing to purchase a premium service package at the lowest loyalty benefit level in Danske Bank face the highest fees, but such customers are probably rare.

Table 3 also reveals that the banks' average fees across all customer categories of a bank, except in the case of Danske Bank, are close to each other, approximately five euros per month or roughly 1,500–1,600 euros over the lifetime. However, Danske Bank's larger average fee is driven by the high price of the premium (Platinum) service package for the lowest loyalty benefit levels. If the Platinum package is excluded from two or three lowest benefit levels, Danske Bank's average fee becomes similar to the rivals' average service fee.

Table 3: Service Fees of the Largest Finnish Banks

Bank and Package	Monthly (€)	Lifetime (€)
Savings Banks Group		
Debit/Credit	4	1,248
Gold Debit/Credit	6.25	1,950
All customers, average	5.13	1,599
OP Group		
Non-owner customers		
Electron	5.45	1,700
Owner-customers		
Debit/Credit	2.95	920
Gold Debit/Credit	6.50	2,028
All customers, average	4.95	1,550
Nordea		
Basic customers		
Electron	7.5	2,340
Regular customers		
Debit/Credit	5.25	1,638
Gold Debit/Credit	6.7	2,090
Key customers		
Gold Debit/Credit	0	0
All customers, average	4.86	1,517
Danske Bank		
Benefit level 1		
Debit	6.8	2,122
Gold Debit/Credit	6.9	2,153
Platinum Debit/Credit	18	5,616
Benefit level 2		
Debit	4.8	1,498
Gold Debit/Credit	5.9	1,841
Platinum Debit/Credit	12	3,744
Benefit level 3		
Debit	1.6	499
Gold Debit/Credit	3.8	1,187
Platinum Debit/Credit	9	2,808
Benefit level 4		
Debit	1.5	468
Gold Debit/Credit	3.7	1,154
Platinum Debit/Credit	8	2,496
All customers		
Average	6.83	2,132
Average excl. Platinum for bl. 1–3	4.83	1,505

Notes: The first column explains service packages at each bank and the second column their corresponding monthly service fees. The lifetime fees in the third column are calculated by using four percentage real interest rate, as in Shy (2002). All service packages include at least the statutory banking services (a bank account, internet banking, and a payment card). The service packages in the first column are labeled according to the most advanced payment card included in the package. "Electron" means that a package only includes the Visa Electron debit card, "Debit/Credit" means that a package includes a standard combination card that has both debit and credit payment features, and "Gold" and "Platinum" mean that a package includes a premium combination debit-credit card (Visa Gold, Mastercard Gold, or Mastercard Platinum). Visa is the main provider of cards for the Savings Bank and OP Groups, and Mastercard for Nordea and Danske Bank. The service packages and fees are collected in January 2018 from the VertaaEnsin.fi online comparison platform and banks' websites. The Savings Bank Group is represented by Nooa Säästöpankki. "Average" is an average service fee across all customer categories of a bank, and "Average excl. Platinum for bl. 1–3" is an average service fee of Danske Bank when the Platinum package is excluded from the benefit levels 1–3 but included in the benefit level 4.

4. Results

4.1 Calibration Procedure

Using the model of Section 2, and the deposit market shares and service fees calculated in Section 3, I can attempt to measure the switching costs. A challenge in this exercise is that I do not know the distribution of customers across various levels of the banks' customer loyalty programs. Thus, while Table 3 suggests that three main banks with the largest market shares engage in product differentiation, there is no point to extend the single fee model of Section 2 to capture this phenomenon. I thus proceed as if the all banks would set a single fee as in the model of Section 2.

In equation (5), I first let $k = 4$, and then use the third column of Table 1 to set $N_1 := N_{OP} = 0.375$, $N_2 := N_N = 0.277, N_3 := N_{DB} = 0.125$ and $N_4 := N_{SB} = 0.041$ in which subscripts OP, N, DB, and SB refer to the OP Group, Nordea, Danske Bank and the Savings Banks Group, respectively. Of the four banks considered the OP Group has the largest market share and the Savings Banks Group the lowest. Therefore the model is based on the assumption that the Savings Banks Group sets its fee by using the fee of the OP Group as the reference point, and the other three banks set their fees in reference to the fee of the Savings Bank Group.

As an example of switching cost calculation, let us consider the OP Group. I approximate the OP Group's service fee by its average fee across its customer categories. The assumption is heroic. It is plausible to think that a majority of the OP Group's customers are also its owners and use a standard combined Visa Debit/Credit card. Thus, using the average service fee approximates the service fees upwards. Yet, the service fee calculations only take into account the basic internet banking account fees and fixed annual fees from a payment card. Since most customers use some other banking services (e.g., withdraw cash, use credit features of a payment card, exchange currency, and so on), the service fees in my calculations are approximated downwards. Furthermore, since market shares are based on account balances and since it is plausible to think that customers using a Visa Gold card have larger account balances, the OP Group's service fee and, by implication, the switching costs of its customers, relative to account balances are more accurately captured than the average service fee and the switching cost in terms of euro amounts. In any event, by using Table 3, it is easy to calculate alternative switching costs by using alternative weightings of customer segments.

Under these assumptions, Table 3 reveals that the average lifetime discounted sum of service fees charged by the OP Group (f_{OP}) is approximately 1,550 euros. Similarly, the average life-time fee charged by the Savings Bank Group (f_{SB}) is approximately 1,599 euros. Then, equation (5) suggests that the switching costs facing the OP Group's customers are given by

$$(6) \qquad \delta_{OP} = f_{OP} - \frac{N_{SB} f_{SB}}{N_{OP} + N_{SB}} = 1,550 - \frac{0.041 \cdot 1,599}{0.375 + 0.041} \approx 1,392.$$

Proceeding in the way outlined by equation (6) gives the switching costs for three remaining banks. In the case of Danske Bank, I use the average service fee that excludes the Platinum package from the benefit levels 1–3 but include it in the benefit level 4. To measure the switching costs per average account balance, I calculate the average account balance by dividing the total account balance in the Finnish banking industry from Table 1 by the total number of bank accounts in Finland in 2016.

4.2 Results

The main results are summarized in Table 4. The two bottom rows display the calibrated switching costs. The mean lifetime switching cost is 1,004 euros, and 11% in relation to the average account balance. The Savings Bank Group's customers can switch a bank more cheaply than the customers of the other banks. Shy (2002) also finds that the customers of the smallest bank face much lower switching costs than the customers of its rivals.

Table 4: Switching Costs in the Finnish Banking Industry in 2017

	OP Group	Nordea	Danske Bank	Savings Banks
Market share (%)	37.5	27.7	12.5	4.1
Average monthly fees (€)	4.95	4.86	4.83	5.13
Lifetime fees (€)	1,550	1,517	1,505	1,599
Switching costs (€)	1,392	1,311	1110	202
SC/avg. bal. (%)	15	14	12	2

Notes: The last row expresses switching costs per average account balance (9074 euros). The average account balance is calculated by dividing aggregate balance (147,098 M€), obtained from from Table 1, by the total number of bank accounts (16,211,877) in 2016, obtained from the Bank of Finland. Market shares are from Table 1, and monthly and lifetime fees are from Table 3. The fees reflect the situation at the beginning of year 2018 and other variables at the end of year 2016.

It is useful to compare the results of Table 4 to the results in Table 2 in Shy (2002). Since Shy (2002) uses the Finnish deposit market data from 1997 and here the data comes approximately around the year 2017, the comparison reveals that switching costs have increased by roughly 50% in real terms during the 20-year period from 1997 to 2017. However, the comparison shows no essential changes in switching costs per average account balance over the 20-year period in the Finnish banking industry. This pattern of higher switching costs and deposit account balance could reflect an increase in wealth and opportunity cost of time of the Finnish depositors since 1997.

Silva and Lucinda (2017) use a different method – the one developed by Kim et al. (2003) – to estimate switching costs in the Brazilian deposit markets. In the most comparable set up to mine, Silva and Lucinda (2017) report that switching costs faced by the depositors of the largest Brazilian banks range from 26% to 30% relative to average deposit account balance, which is even a higher figure than here.

An explanation for the Savings Bank Group's lower switching costs might be that savings banks are stakeholder banks where managers might have lower incentives to lock in their clients. This explanation is put forward by Egarius and Weill (2016) who find that across all banking activities and in lending markets (they do not consider deposit markets separately), the customers of cooperative banks tend to have lower switching costs than the customers of other bank types. In my data, however, the customers of the cooperative bank (the OP Group) face the highest switching costs. Thus the differences in profit-maximization objectives provide no obvious explanations for the findings here.

An alternative explanation could arise from the fact that as a cooperative, the OP Group attracts members based on common bonds. Such bank customers face higher switching costs. The importance of common bonds as a rationale for the cooperative bank membership has, however, diminished over time in Finland (Jones et al., 2016). Rather, I interpret the findings as to suggest that the OP Group's loyalty program has been successful to lock in their owner-customers, and the absence of the loyalty program in the Savings Banks Group might be a major reason for its lower switching costs.

Increasingly wide-spread adoption of loyalty programs might also contribute to the documented increase in the switching costs since Shy's (2002) study. For example, the OP Group introduced its loyalty program in 1999 after Shy collected his data. Moreover, after 2011 the only way to use the OP Group's loyalty bonuses has been to pay for the OP Group's service fees (FCCA, 2019).

These loyalty bonuses cannot be transferred to another bank and they thus work much like frequent flier miles for airlines, generating switching costs. The extent to which the loyalty programs of Danske Bank and Nordea outlined in Table 2 create switching costs is less clear, although the FCCA (Saarinen, 2014) appears to regard the loyalty programs of all major Finnish banks as switching barriers. The loyalty programs of Danske Bank and Nordea at least obscure the comparison of banks' service charges which – according to the Vickers report (2011) – is linked to high switching costs.

High switching costs documented in this study might indicate weak competition in the Finnish banking industry. As also documented in this study, the market shares of the largest banks are high. According to some measures, the Finnish banking industry is the most concentrated in Europe (see, e.g., Saarinen, 2014 and Savolainen, 2016). The Finnish banking industry has repeatedly attracted attention from the competition policy authorities during this millennium. Even prior to the case related to the OP Group's loyalty program, the lack of competition and high switching costs due to loyalty programs have been a concern to the FCCA (see, e.g., Saarinen, 2014). The FCCA has also raised the concern that the Finnish banks use Finance Finland – the industry association of the Finnish financial sector firms – as a collusive device so as to raise service fees (see, FCCA, 2016).[3] The banks' public announcements about the future mortgage margins (see, e.g., Rintakoski, 2015) and their cooperation in the automatic teller machine market have also concerned the FCCA (see, e.g., Kopsakangas-Savolainen and Takalo, 2014).

However, the relationship between switching costs and competition in the banking industry is not straightforward (Gehrig and Stenbacka, 2007, Carbo-Valverde et al., 2011, Ciet and Verdier, 2019, and Stenbacka and Takalo, 2019). As suggested by Carbo-Valverde et al. (2011) and Stenbacka and Takalo (2019), an increase in switching costs in the deposit markets should weaken competition with inherited customers but intensify competition for new customers. Since the Finnish banks often compete for new customers via mortgage interest rates, this competition should become more intense with the increasing level of switching costs. In line with this prediction, a rough calculation suggests that the average mortgage margin in Finland decreased by 46% between December 1997 and December 2017.[4]

4.3 Robustness

My measurement exercise involves a number of strong assumptions. I have therefore conducted several robustness checks by using alternative shortcuts. For example, using a bank's mortgage market share instead of its deposit market share as a proxy for the bank's customer base would yield similar results but the fourth largest bank in terms of granted mortgages would be Aktia, just ahead of the Savings Banks Group.

I report here in more detail results from the robustness check where I use the fee information for Oma Säästöpankki from the VertaaEnsin.fi online comparison platform as a representative of savings banks fees instead of the hand-collected information for the fees of Nooa Säästöpankki (see Section 3.2).

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[3] *The OP Group's loyalty program case has also a link to the banks' cooperation within Finance Finland: As mentioned in the introduction, the case began after If P&C filed a complaint about the OP Group's loyalty program to the FCCA. The complaint prompted the OP Group to withdraw from Finance Finland but just prior to the FCCA's decision, it returned back to the association. According to the OP Financial Group's Chief Executive Timo Ritakallio, the main reason for the return was "the desire to increase the cooperation within the industry [translation from Finnish by the author]", https://twitter.com/ritakti/status/1009045585574400000, last accessed on June 10, 2020.*

[4] *I calculated this reduction from the Bank of Finland statistics, https://www.suomenpankki.fi/fi/Tilastot/rahalaitosten-tase-lainat-ja-talletukset-ja-korot/ (last accessed on June 25, 2020). The Bank of Finland readily calculates the average margin on new mortgages in Finland and it was 0.94 percentage points at the end of 2017. However, the Bank of Finland's average mortgage margin time series only begin from 2010. Following the Bank of Finland's method to calculate the average margin on new mortgages, I find that the average mortgage margin was between 1.69 and 1.76 percentage points in Finland at the end of 1997. Assuming that the average mortgage margin was 1.73 percentage points, the margin thus decreased by 0.79 percentage points or by 46% between December 1997 and December 2017.*

VertaaEnsin.fi gives only one the monthly fee for Oma Säästöpankki: five euros per month for a standard banking service package with a combined debit-credit card. Using the four percentage real interest rate, the corresponding life time fee is 1,560 euros. Using this euro amount instead of 1,599 for the savings banks life time fee implies that the switching costs for the customers of the OP, Nordea, Danske Bank and Savings Banks are in euros 1,397, 1,390, 1,120, and 160, respectively. In words, the switching costs of the Savings Banks Group's clients are slightly lower and those of the other banks' clients correspondingly slightly higher. Compared to the average account balance, there are no essential changes.

My estimates of switching costs and especially their increase from Shy (2002) may seem high. The estimated costs were lower (higher) if I assumed that customers would be disproportionately distributed on the lowest (highest) fee categories for each bank. However, since I do not know the distribution of customers across different service packages, the "average fee" assumption used in this study is a natural starting point. Furthermore, switching costs per account balance reported in this study are in line with the ones in Shy (2002) and lower than in Silva and Lucinda (2017), supporting the meaningfulness of the estimated costs. Also, it is comforting that the increase in switching costs appears to be matched by an equal reduction in the average mortgage margin.

5. Conclusion

I measure switching cost for the Finnish retail deposit market by using the approach developed by Shy (2002). In Section 5 of his article, Shy (2002) also uses the Finnish deposit market as an example of switching cost measurement. As the data in Shy (2002) comes from 1997 and here around the year 2017, the results also show how bank switching costs have changed over 20 years in Finland. In contrast to Shy (2002), I can use banks' real names, and market shares are based on accurate numbers.

I find that switching costs faced by customers of the largest banks exhibit large variation, ranging from 200 euros to nearly 1,400 euros. While the costs are calculated from the discounted lifetime banking fees assuming an once-in-a-lifetime switch, these estimated switching costs can be seen as high, especially at the top end. In relation to the average account balance of a customer, switching costs range from 2% to 15%. Comparing these numbers with those reported by Shy (2002) suggests that while switching costs have increased some 50% in real terms over 20 years, switching costs per average account balance have not essentially changed. The OP Group's customers appear to face the highest switching costs whereas the Savings Banks Group's customers the lowest – this finding together with the results reported in Egarus and Weil (2016) suggests that switching costs of stakeholder banks appear to be different than those of shareholder banks. Clearly, more research on the role of organizational structure for competition, performance and stability in banking would be warranted. Ferri et al. (2014a,b) provide advances towards this direction.

I conjecture that the differences in switching costs among the Finnish banks might be explained by differences in their loyalty programs. The spread of these loyalty programs could also explain the increase in the real switching costs over 20 years documented in this study. High switching costs could also indicate weak competition in the Finnish retail deposit market, although the relationship between switching costs and competition in the banking industry is complex (Gehrig and Stenbacka, 2007, Carbo-Valverde et al., 2011, Ciet and Verdier, 2011, and Stenbacka and Takalo, 2019). The theoretical results in Stenbacka and Takalo (2019) and the evidence documented in this study suggest a hypothesis according to which an increase in switching costs in the Finnish deposit markets is linked with more intense competition for mortgagors.

A future work should extend Shy's (2002) method to product versioning to accommodate different banking service packages and loyalty programs. The method should also be extended to allow for multiple switches by a customer over her lifetime.

The implications of customer loyalty programs and switching costs for competition and stability in the banking industry should also be evaluated carefully. On one hand, the Basel III liquidity regulations and the findings in Brown et al. (2020)

indicate that tighter depositor relationships consistent with higher switching costs are likely to make depositors less likely to run on a bank in a crisis. On the other hand, high switching costs may result in a fierce competition for new customers and increase bank failure rates (Stenbacka and Takalo, 2019). To make a comprehensive evaluation of the stability implications of switching costs, it would be valuable to build a bank run model with multiple banks in which depositors can switch deposits from one bank to another (see, e.g., Chen and Hasan, 2006, for a contribution to this direction).

High switching costs in the banking industry documented by this and earlier studies support the call by the Vickers report (ICB, 2011) for more regulatory attention to bank switching costs. Optimal regulation of these costs in practice is, however, challenging since bank switching costs can be affected by many regulatory policies and authorities such as those concerning competition, consumer protection, and financial stability. □

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