Switching Costs in the Norwegian Banking Sector

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Acknowledgements

Abstract

An efficient, competitive, and stable banking sector is crucial for ensuring financial stability. The competitive situation in the Norwegian banking industry has been a topic of discussion for some time, and recent concerns regarding market concentration and increasing interest rate margins have garnered attention from the media. The Competition Authority evaluated the competition in the Norwegian mortgage market in 2015 and identified several potential limitations to effective competition. Among these, the customer mobility was found to be lower than in other markets, which is likely a result of switching costs.

This thesis explores the impact of switching costs on competition in the Norwegian banking sector by examining their influence on consumer behavior, market dynamics and the overall competitive landscape. This is done through a literature review of relevant reports, surveys, theoretical models and empirical studies.

The main findings in this thesis suggest that switching costs tend to reduce competition in a market and lead to consumers getting locked-in with their current supplier, which is a result that primarily emerges from Klemperer's model. The banking industry is generally characterized by high switching costs, and such costs are often associated with market power. Furthermore, switching costs in the Norwegian banking sector result in a significant share of consumers being locked-in with their current bank, even though there could be substantial savings associated with switching banks.

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1   Introduction

1.1   Background

Competition plays an important role in the banking sector when it comes to promoting efficiency and maximizing social welfare, as in other industries. However, the banking sector possesses some unique characteristics that distinguish it from other industries due to its roles and functions. Therefore, it is important to ensure both competitiveness and efficiency in the banking sector while maintaining stability (World Bank, 2020).

The Competition Authority (Konkurransetilsynet) evaluated the Norwegian mortgage market in a report from 2015 with the aim of identifying potential limitations to effective competition. They found that the banks´ lending margins and profitability had increased in the last years. The financing costs that banks face had been reduced while interest rates on mortgages had not been adjusted accordingly. The market conditions were assessed to facilitate for the opportunity for banks to coordinate prices. The report also found that barriers to establishment and expansion in the market limited the possibilities for new entrants and for smaller competitors to challenge the interest rates of larger banks. One of the most important expansion barriers was found to be low customer mobility, which in part is a result of switching costs. High search- and switching costs impact competition negatively due to customers getting locked in with their supplier. These locked-in customers are generally less price sensitive, which gives banks the opportunity to exploit market power and increase interest rates without losing market shares (Konkurransetilsynet, 2015).

Issues related to competition in the Norwegian banking sector have seen an increasing level of media attention in recent years. One example is DNB's acquisition of Sbanken, which was initially blocked by the Competition Authority, but later approved by the Competition Appeal Tribunal (Konkurranseklagenemnda). Another matter relates to banks increasing lending rates in line with the Norwegian Central Bank's increase in the policy rate, without adjusting deposit rates accordingly. This has led some prominent voices to call on Norwegian Authorities to strengthen competition in the banking sector (Meyer, 2023).

1.2   Problem statement

The purpose of this thesis is to investigate the effects switching costs have on competition in the Norwegian banking sector by examining their influence on consumer behavior, market dynamics and the overall competitive landscape. This will be done through a literature review. The problem statement of the thesis can thus be formulated as follows: *How do switching costs affect competition in the Norwegian banking industry?*

The thesis will focus on the various types of switching costs that are created by firms and subsequently borne by consumers. Consumer switching costs refer to the expenses, efforts, or obstacles faced by consumers in a market when they decide to switch from one supplier to another. The terms "banking sector" and "banking industry" are used interchangeably throughout the thesis to refer to the same field of financial institutions and activities related to banking services.

1.3   Structure

The remainder of the thesis is organized as follows: Chapter 2 provides an overview of the general structure and characteristics of the Norwegian banking sector, highlighting key aspects such as market concentration, the current competitive situation and consumer behavior. Chapter 3 presents a theoretical framework and models developed by Klemperer (1995) to examine the effects of switching costs on competition. In Chapter 4, a selection of empirical studies examining switching costs in the banking sector is reviewed. Finally, Chapter 5 provides a summary and concluding remarks.
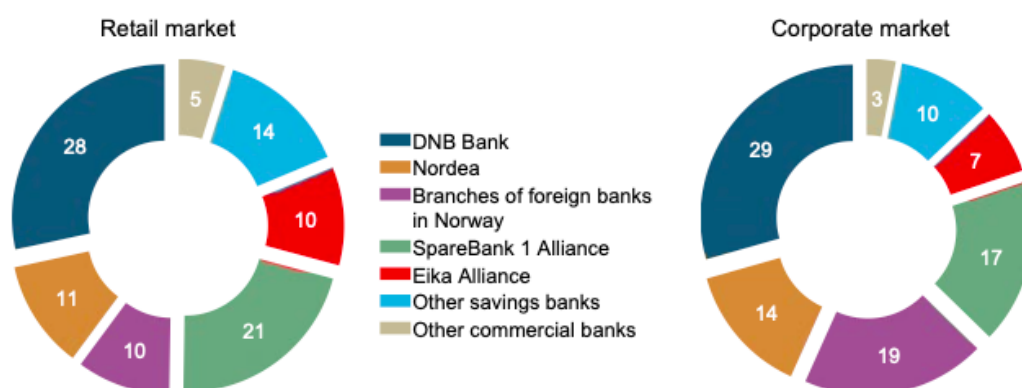
2   The Norwegian banking industry

The Norwegian banking industry plays a crucial role in Norway's financial system, providing credit and financial services to households, businesses, and the public sector. This chapter will provide an overview of the general characteristics of the Norwegian banking industry and its structure, highlighting key aspects such as market concentration and consumer behavior, and their implications for competition.

2.1   Characteristics and structure

The banking sector in Norway is characterized by consisting of many small banks and a few medium-sized and large banks. By the end of 2020, there were 118 banks, 31 credit institutions and 28 financing companies with a license to operate in Norway (Finanstilsynet, 2021). The Norwegian banking sector is relatively small in relation to total GDP compared to other European countries. The sector is dominated by banks and mortgage companies which account for approximately 80% of total domestic credit to households and businesses in Norway. This is a significantly higher share of total credit than in the US, for instance, where the bond market plays a more essential role. Norwegian households borrow almost exclusively from banks and mortgage companies, while Norwegian businesses mostly borrow from banks and to some extent in the bond market (Norges Bank, 2022).

Although the number of banks operating in the Norwegian banking sector is large, the degree of concentration is relatively high. In 2013, the 100 smallest banks had a combined market share of 9,5% (Konkurransetilsynet, 2015). The largest bank, DNB, held a total lending market share of approximately 30% in both the retail and corporate market in December 2021, which can be seen in Figure 1. In contrast, there are three large banks in Denmark and four large banks in Sweden with a combined market share comparable to DNB in Norway. Norwegian-owned banks dominate the banking market in Norway, with other banks being subsidiaries or branches of foreign banks. While the subsidiaries are owned by foreign banks, they are separate Norwegian legal entities and therefore regulated in the same manner as Norwegian banks. However, this does not apply to branches of foreign banks, which are regulated by their home state authorities. Nordic banks are the most common among foreign banks in Norway, but Santander Consumer Bank which is a subsidiary of a Spanish bank, also has a significant presence in the Norwegian banking market (Norges Bank, 2022).

Chart 2.3 Market shares of total lending
Percent. At 31 December 2021

Retail market

28
5
14
10
11
21
10

DNB Bank
Nordea
Branches of foreign banks in Norway
SpareBank 1 Alliance
Eika Alliance
Other savings banks
Other commercial banks

Corporate market

29
3
10
7
17
14
19

Source: Norges Bank

Figure 1: Market shares of total lending (Norges Bank, 2022)

2.2 Market concentration

The degree of concentration in a market can give an indication as to whether the competition in the market is strong or not. It might be intuitive to think that a market with few actors with large market shares is automatically characterized by a high degree of market power and reduced competition. However, this is not necessarily true. The relationship between concentration and market power depends on whether the firms in the market cooperate or compete. If two firms evenly divide an entire market between themselves and engage in Bertrand competition resulting in zero profit, the market can still be highly competitive (Cao, 2021). A firm is said to have market power if it can profitably increase prices or change other strategic variables away from what is present in a competitive market. It will however be easier to collaborate or exercise market power if the market it highly concentrated, which can lead to higher prices and lower quality for consumers (Berger et al., 2004). Therefore, studying the concentration in a market can serve as a starting point for an assessment of the competitive situation.

The Herfindahl-Hirschman Index (HHI) is a widely used method for measuring the degree of concentration in a market and is most useful when there is a gap in market share between significant competitors and smaller rivals. The index is calculated by summing the squares of each firms' market shares, and thus gives proportionately greater weight to large market

shares. It is given by: $HHI = \sum_{i=1}^{n} s_i^2 * 10\ 000$, where i denotes the number of firms in the market and s denotes the market share. The US Department of Justice has established various threshold values to differentiate the degree of concentration in a market, and these values are also used by the Norwegian Financial Supervisory Authority. According to these guidelines, markets are generally classified into three types based on HHI values (US Department of Justice, 2010):

- Unconcentrated markets: HHI below 1500
- Moderately concentrated markets: HHI between 1500 and 2500
- Highly concentrated markets: HHI above 2500

The Norwegian Competition Authority calculated the HHI in the mortgage loan market in Norway from 2007 – 2013 and found index values in the range between 1200 and 1300 during the period. Based on HHI values and the market shares held by the five largest banks, they concluded that the Norwegian mortgage loan market was moderately concentrated (Konkurransetilsynet, 2015). In the Financial Market Report from 2023, the Norwegian Ministry of Finance refers to more recent data which also indicates moderate concentration in the Norwegian banking sector. Figure 2 (below) shows the degree of concentration in the banking sector across various European countries in 2021, based on HHI-values. Norway had an index value of approximately 1550 which indicates moderate concentration, and therefore places itself in the upper middle range. The Norwegian banking sector is more concentrated than the banking sectors in similar countries like Denmark and Sweden, which have index values indicating unconcentrated markets (Finansdepartementet, 2023).
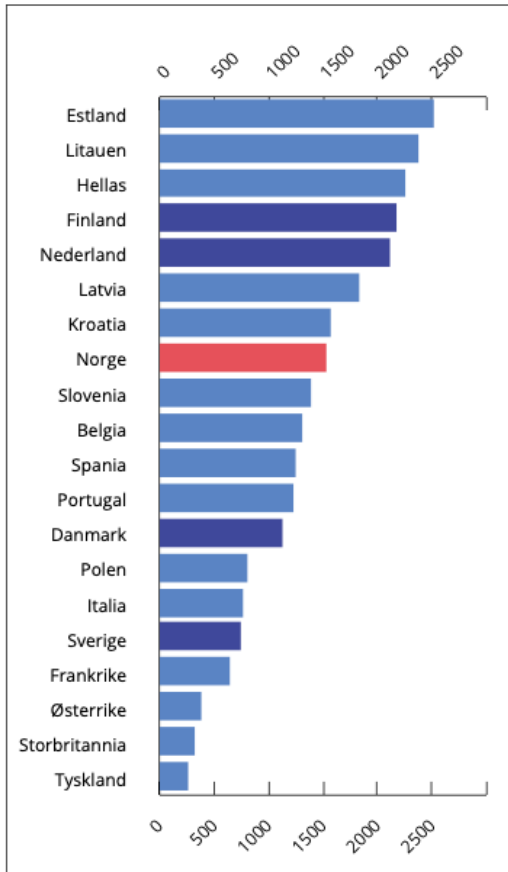
Figure 2: HHI-values for various European countries (Finansdepartementet, 2023)
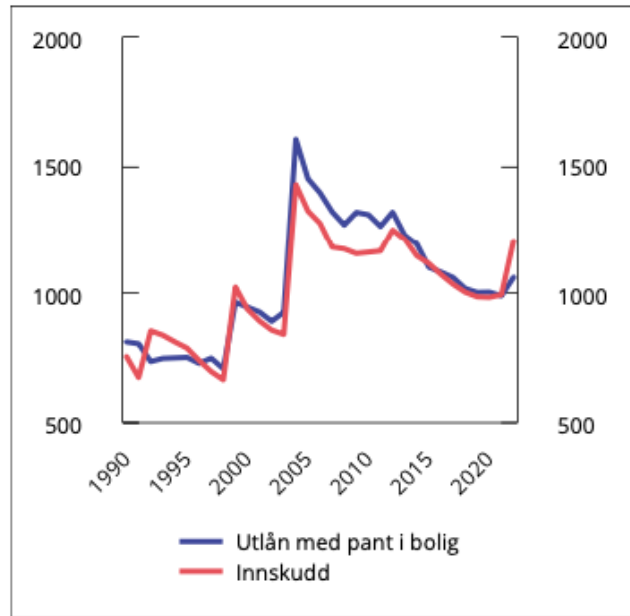
Figure 3: HHI-values in the Norwegian markets for mortgages and customer deposits (Finansdepartementet, 2023)

When using HHI as a measure of market concentration, it is important to be mindful of the specific markets being examined. Norwegian banks compete in various submarkets that differ in terms of factors like products and geography. Concentration metrics such as the HHI are most appropriately applied in the analysis of markets characterized by homogenous products within a well-defined geographical area. Figure 3 shows the development in HHI for two submarkets within the Norwegian retail customer segment over the period 1990 – 2022. Upon initial observation, the graphs suggest a relatively close correlation between the two submarkets, and show a peak in concentration for both markets around 2004 (Finansdepartementet, 2023). The index values in recent years are below 1500, which indicates low concentration. The increase in the last year is primarily attributed to DNB's acquisition of Sbanken in 2022 (Finansdepartementet, 2023; Konkurransetilsynet, 2022). Another way to measure market concentration is to sum the market shares of the five largest suppliers. In the market for mortgage lending, the five largest banks in Norway had a joint market share of around 55% in the retail segment in 2022, while the corresponding figure in the corporate segment is around 65%. These numbers indicate a bit higher concentration in

the corporate segment, which could be attributed to the fact that the largest banks have the capability to finance the largest projects (Finansdepartementet, 2023).

2.3   Current situation

Issues related to the competitive situation in the Norwegian banking industry have received an increasing level of media attention in recent years. One example is DNB's acquisition of the online-only bank Sbanken, which the Norwegian Competition Authority assessed would limit competition in the market for fund distribution, and therefore prohibited the acquisition in November 2021. The decision was based on an assessment that the acquisition would eliminate competition between the two banks, and remove the specific competitive pressure that Sbanken represented in the market (Konkurransetilsynet, 2022). DNB appealed the decision to the Competition Appeal Tribunal, which overturned the ban in March 2022. It has been estimated that the takeover will increase DNB's share of the Norwegian mortgage market from 24% to 27% while also strengthening its asset management, and some argue that the deal might lead to higher prices in the mutual fund market which may hurt consumers (Competition Policy International, 2022). According to former Competition Director Lars Sørgard, the experience from the US and Europe over the past 30 years is that a competition policy that is too lenient can lead to fewer firms, higher prices and inferior products (Støren & Knudsen, 2022).

Another matter is related to interest rate margins and profitability in the Norwegian banking sector. The interest rate margin represents the difference between the interest income earned by the bank and the interest expense it incurs (Statistics Norway, 2023). It reflects the bank's ability to generate income from the spread between interest earned and interest paid. When the Norwegian Central Bank started increasing the policy rate in 2021, the banking sector followed by increasing interest rates on loans without adjusting deposit rates accordingly. According to the Director of the Norwegian Consumer Council (Forbrukerrådet), when the policy rate is lowered, the banking industry historically takes significantly longer to adjust accordingly compared to when it is raised. This indicates that banks benefit from Norwegian consumers during times of high costs (Framnes, 2023). The Secretary General of the consumer organization Huseierne supported this view, saying that the banks' so-called "interest rate party" is fully paid by the consumers, and called for the government to strengthen competition in the Norwegian banking sector (Meyer, 2023). Figure 4 shows the

interest rate margin for all Norwegian banks in the period 2013 – 2023, with a sharp increase in 2021/2022.

10700: Loans- deposits- and interest rate margins (per cent), by sector and quarter. Banks, Interest rate margin (banks only), Margins.
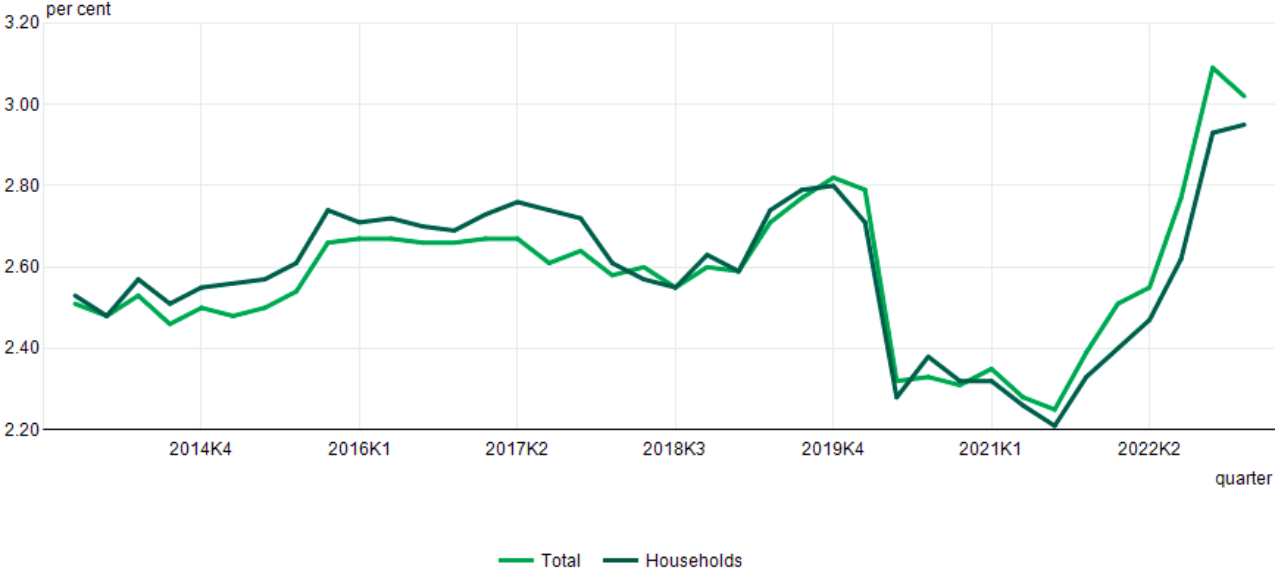
Figure 4: Interest rate margin for Norwegian banks in the period 2013-2023, shown for all sectors and households only (Statistics Norway, 2023)

2.4   Consumer behavior

Consumer behavior plays an important role in shaping the competitive dynamics within any market, including the Norwegian banking sector. Understanding how consumers behave, make choices, and interact with financial institutions is essential for comprehending the intricacies of banking competition. In the context of the Norwegian banking market, customer mobility, or the consumers' propensity to switch banks or renegotiate their financial services, is a key aspect that may influence the competitive landscape significantly. This section explores the various factors that may impact customer mobility and its implications for competition in the Norwegian banking sector. It also covers results from the Switching Survey 2023 (Bytteundersøkelsen 2023), which provides valuable insights into Norwegian customer's preferences and switching activities within the market for financial services. Lastly, it provides some information about the Finance portal (Finansportalen) and how this service helps consumers make informed choices in the market for financial services.

2.4.1 Customer mobility

Customer mobility can play an important role in shaping the competition within a market. Higher customer mobility, or the ease with which customers can switch between competing suppliers, tends to increase competition by encouraging innovation, competitive pricing, customer-focused strategies, and market dynamics that enable new entrants (Farrell & Klemperer, 2007). Surveys show that a small proportion of Norwegian bank customers switch banks each year. Factors such as customers being satisfied with their current bank, customer and loyalty programs, and the perception of switching being inconvenient and/or costly are possible explanations for low customer mobility (Konkurransetilsynet, 2015). The presence of switching costs in a market may reduce customer mobility by lowering consumers' propensity to switch to another supplier.

There are several measures that can be used to estimate customer mobility in the banking sector, such as the number of individuals who switch banks and the number of individuals moving different banking services to other suppliers. These measures do however have limitations seeing as they do not capture to what extent customers are actively seeking out better terms with other banks or renegotiating terms with their current bank. Furthermore, such estimates do not provide information on the proportion of customers who have switched banks or transferred banking services more than once. The Norwegian Competition Authority found that on average, around 5-10% of Norwegian bank customers switched banks each year in the period 2009-2014. This is lower than the share of customers who switched electricity provider, insurance company or telecommunications operator in the same period, which suggests a higher customer mobility in these markets than in the market for banking services (Konkurransetilsynet, 2015). It is worth mentioning that low customer mobility is not necessarily a sign of reduced competition in a market; a possible reason for customers staying with their current supplier could simply be that they are satisfied and do not feel the need to switch.

2.4.2 The Switching Survey 2023

Each year, Ipsos conducts a survey on behalf of the Consumer Council called the "Switching Survey - Norwegians' Switching Habits in Financial Services" (Bytteundersøkelsen 2023).

The purpose of the survey is to map consumers' bargaining and switching activities within banking, insurance, pensions, and investments. It examines the digital tools and services consumers use in the switching process, as well as the reasons why they do not switch providers or renegotiate agreements. The survey was conducted on a nationally representative sample of the adult population, that is, those over 18 years old. The sample was recruited from Ipsos' web panel, which consists of approximately 97,000 individuals who regularly participate in surveys. The panel is constructed in a manner that aims to make its members as representative of the Norwegian population as possible. The results have been weighted by gender, age, and geography according to official statistics (Forbrukerrådet, 2023). While the survey does not quantify switching costs in the Norwegian banking sector, it provides valuable insight into consumer behavior and other factors that affect mobility in the market.

The main findings from the survey show that almost all respondents use one or more banking services, and 25 percent switched or renegotiated banking services during 2022, while 63 percent did not switch or renegotiate. The main reasons for switching banks are shown in Figure 5, which indicates that 65 percent switched because of more favorable terms/interest rates, and 11 percent were dissatisfied with the service provided by their previous bank. The fact that such a large proportion of the respondents obtained better terms/interest rates by switching banks may suggest that there are substantial savings associated with doing so.
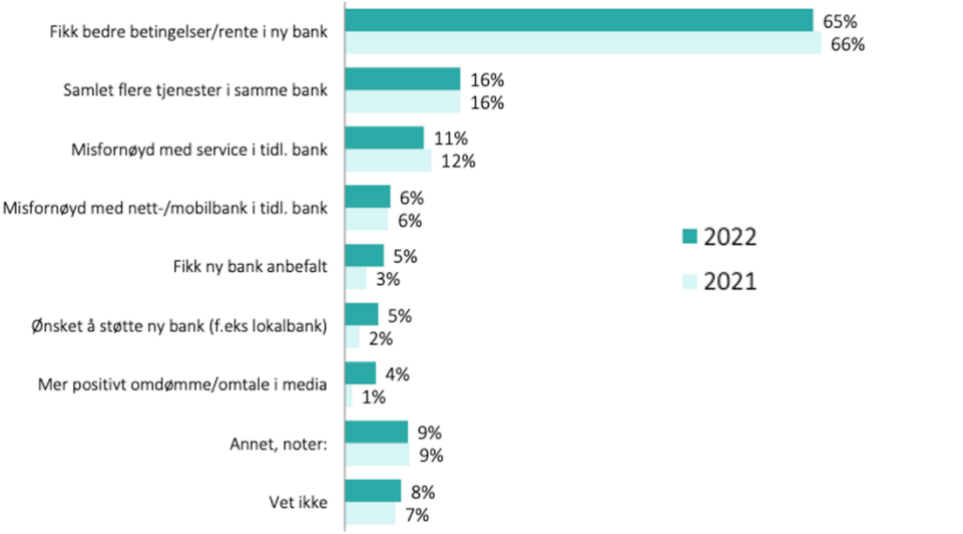
Figure 5: Main reasons for switching supplier of banking services in 2022 (Forbrukerrådet, 2023)

As seen in Figure 6, a significant share of the respondents who made the decision to switch banks or renegotiate their banking services in 2022 experienced significant financial benefits. Specifically, 36 percent reported annual savings exceeding 5000kr, while an additional 17 percent achieved even greater savings surpassing 10 000kr. These findings further reinforce the notion that substantial cost savings can be realized by switching banks.
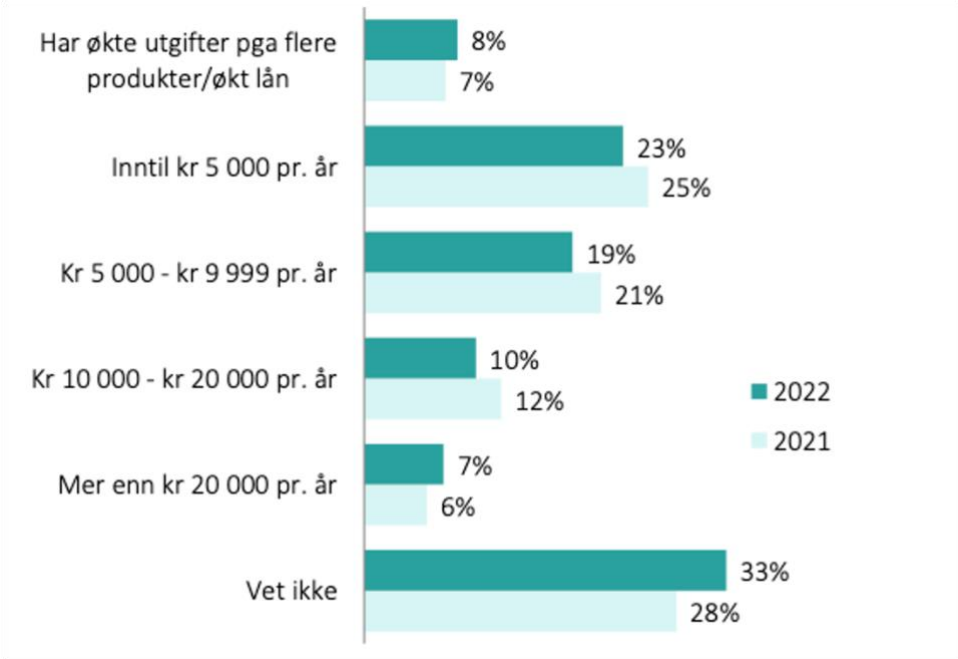
Figure 6: Annual savings after switching supplier of banking services (Forbrukerrådet, 2023)

Among those who did not switch banks or renegotiate terms, Figure 7 shows that 42 percent responded that they were satisfied with the terms and conditions offered at their current financial provider. The survey does not provide information on whether these consumers could obtain more favorable terms by switching provider. The results also reveal that 24 percent felt attached to their current bank due to a good customer relationship, and that 23 percent did not believe there was much to be saved by switching banks. Twelve percent responded that switching banks is too demanding and time-consuming, and ten percent did not switch because they were part of a customer program which includes a bundled package of multiple banking services. The latter two factors can be categorized as different types of switching costs, which will be further explored in the subsequent chapter.

Bar chart with the following reasons (2022 / 2021):

- Er fornøyd/ har gode betingelser — 42% / 44%
- Føler meg knyttet til min nåværende bank gjennom et godt kundeforhold — 24% / 22%
- Tror ikke det er så mye å spare — 23% / 22%
- Har ikke kommet så langt ennå, men vurderer å gjøre det — 15% / 12%
- Avtale gjennom arbeidsgiver/ forening — 14% / 9%
- Det er for krevende og tar for mye tid — 12% / 11%
- Har et kundeprogram som omfatter flere banktjenester — 10% / 15%
- Banken jeg benytter sier jeg har gode betingelser — 6% / 6%
- Andre grunner — 5% / 5%
- Vet ikke — 5% / 6%

Legend: 2022, 2021

Figure 7: Reasons for not switching banks or renegotiating terms in 2022 (Forbrukerrådet, 2023)

Many banks offer multiple financial services as part of a package called a "total-customer program" (totalkundeprogram). This is part of a strategy called "bundling" within relationship banking, and it typically involves offering products and services like banking accounts, loans, insurance, and investment products in one bundled package. Customers often must accept this bundle in order to obtain the most favorable terms and conditions the bank can offer. The purpose of this is to make it as simple as possible for the customers to manage their financial services by consolidating everything in one place, and often providing the customer with better terms and interest rates. It may however also make it more challenging for customers to switch to another bank since they would need to untangle and transfer multiple services. Figure 8 shows that 63 percent of the respondents stated so-called "total-customer programs" as the main reason when asked about the combinations of banking services that prevent them from switching banks. This indicates that a large share of customers in the Norwegian banking sector are locked-in with their current supplier due to a form of switching cost. While these types of customer programs might be beneficial for consumers through lower interest rates and more favorable terms, they might also contribute to lowering the customer mobility in the banking sector by making consumers perceive switching as more difficult or costly than it actually is.
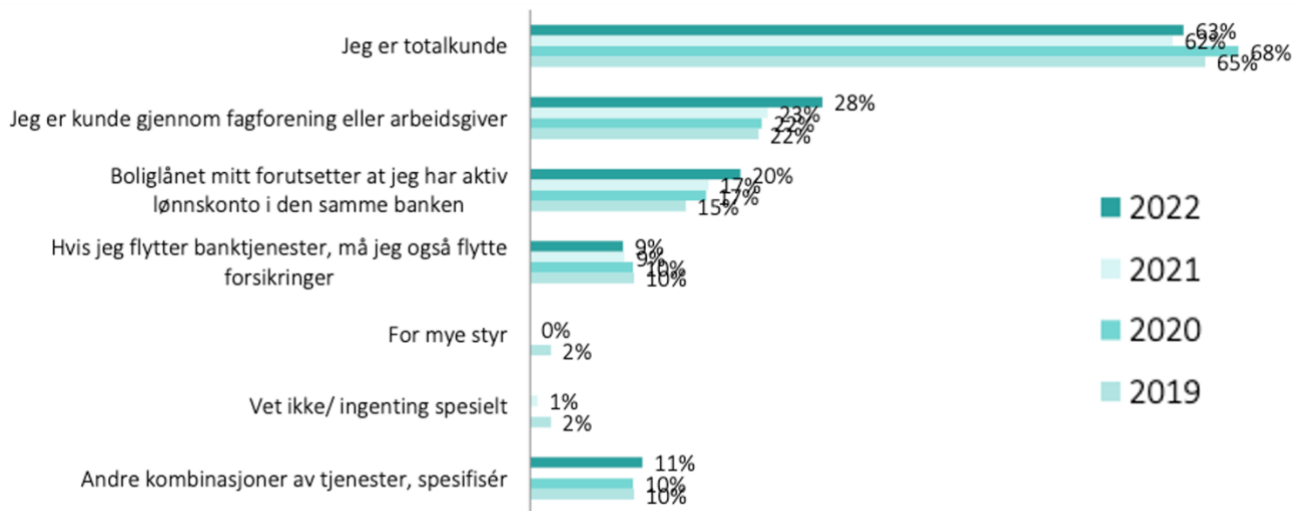
Figure 8: Combinations of financial services that prevent consumers from switching banks (Forbrukerrådet, 2023)

2.4.3 The Finance portal

The Finance portal (Finansportalen) is a service provided by the Norwegian Consumer Council in 2008, aimed at empowering consumers and enabling them to make informed choices in the market for financial services. The portal consists of digital tools that assist consumers in comparing banking, pension, insurance and investment products and services. Both banks and insurance companies are required to report price information to the Finance portal (Finansportalen, 2023). The service was established due to lack of transparency and low customer mobility in the market for financial services (Grimsby et al., 2018).

The Finance portal functions as a useful tool for consumers who wish to compare banking services in order to obtain better terms and conditions. By visiting the website, consumers can conduct searches and filter based on specific criteria such as interest rates, fees, and terms. The portal provides a clear overview of various banking products and services, allowing consumers to see which banks offer the best conditions for their needs. Consumers can also access detailed information about the products and any limitations. This way, the Finance portal aids consumers in making more informed decisions when choosing banking services.

Although the Finance portal has made it easier to compare and obtain banking offers, not many consumers are aware of the service or actually use it when switching banks. According to the previously mentioned Switching survey 2023, 41% of the respondents answered that they are familiar with the Finance portal. The share of consumers utilizing the portal for switching banking services, however, is significantly lower. Figure 9 shows that the most

common approach is for consumers to contact their bank or financial agent themselves when switching or renegotiating banking services. Only 12 percent used the services provided by the Finance portal.
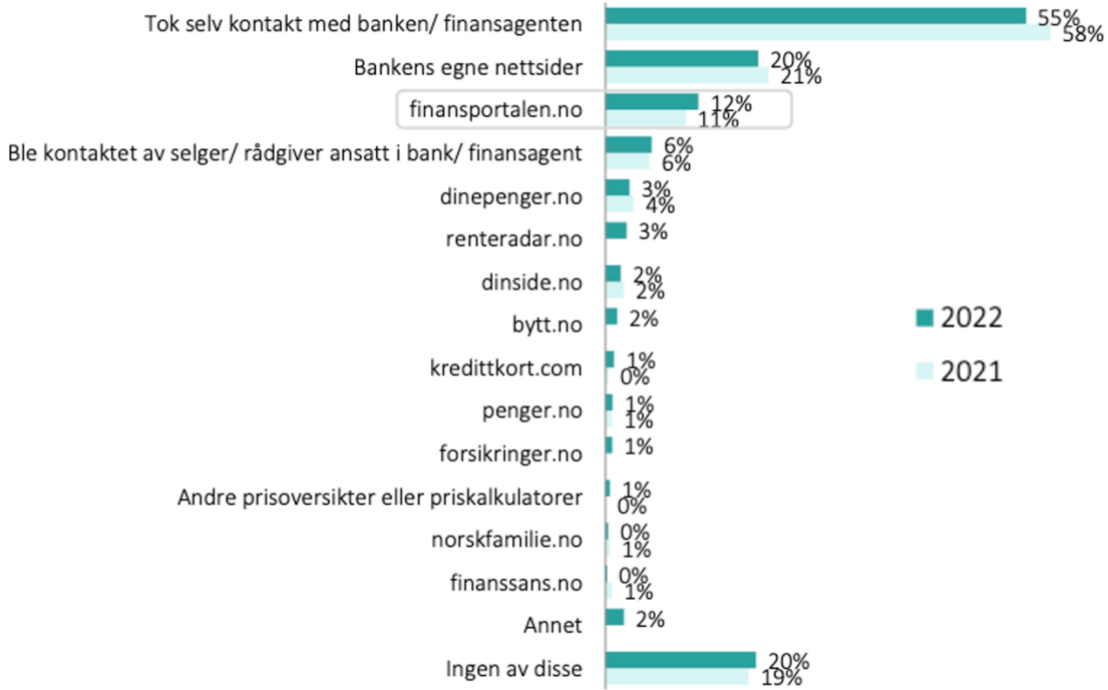
Figure 9: Methods or services utilized to switch or renegotiate banking services (Forbrukerrådet, 2023)

An evaluation of the Finance portal was conducted in 2018 on behalf of the Norwegian government to identify its effects on consumer knowledge, consumer behavior and competition in the market. Survey results showed that approximately 850 000 individuals annually enhance their knowledge about relevant market conditions through the Finance portal, which corresponds to an annual benefit of 2 000 000kr. These results suggest that the portal succeeds in making consumers more informed, and in reducing their searching costs.

The results also showed that there had been a slight increase in the share of consumers who use the portal for switching or renegotiating financial services. However, there was found no general increase in the share of consumers who switch or renegotiate after the portal was established. Lastly, the evaluation found some effects on competition in the mortgage market. Results from a time series analysis showed that a one percent increase in use of the Finance portal reduces the interest rate margin on mortgages by 0,012 percentage points on average.

Based on these findings, a recommendation was made to the Consumer Council to identify new ways to reach out to consumers with the Finance portal in order to increase consumer knowledge and strengthen competition (Grimsby et al., 2018).

3   Theory

A general assumption within economic theory is that consumers seek to maximize their utility, while businesses strive to maximize their profit. This pursuit leads to an efficient allocation of goods; however it requires perfect competition. Under perfect competition, customers have complete information about products and prices, which allows them to freely and instantaneously switch between suppliers. Therefore, customer mobility plays a crucial role in the pursuit of achieving efficient markets.

Switching costs can restrict customer mobility and lead to consumers getting locked-in with a supplier. According to the Office of Fair Trading:

> *Switching costs can be defined as the real or perceived costs that are incurred when changing supplier but which are not incurred by remaining with the current supplier. Switching costs arise in a variety of everyday situations ranging from early redemption penalties when changing mortgage suppliers, to the uncertainty cost faced with trying an untested brand that may or may not be suitable.*
> (Office of Fair Trading, 2003)

The following chapter presents a theoretical framework developed by Klemperer (1995) to show the implications switching costs can have on competition under different assumptions. Different types of switching costs are identified, and some are highlighted as particularly relevant to the banking sector. Furthermore, a model and its extensions are presented to shed light on the impact switching costs can have in the market for financial services. Finally, a selection of academic literature that highlights the positive effects of switching costs on competition is presented.

3.1 Switching costs

Switching costs are costs induced to consumers when they change between different suppliers, brands or products. These costs make ex-ante homogenous products become ex-post heterogenous. They originate from a host of different reasons and have important implications for competition. Paul Klemperer has written extensively about this topic, and he separates switching costs into unavoidable costs such as physical transaction costs of switching or psychological costs connected to brand loyalty, and costs created as a product of firm strategy such as reward programs and discounts. Furthermore, he divides them into four categories: physical, informational, artificially created and psychological. These costs, whether perceived or real, give firms a degree of market power over repeat-customers and imply that current market shares are important determinants of future profit. This leads to firms facing a trade-off between investing in market shares through low prices in the first period to attract new customers that will become important in the future, or harvesting profits by charging high prices that will run down the stock of market share. Switching costs can reduce welfare because they usually increase prices and create deadweight losses like the ones seen in closed oligopolies. They may also discourage new market entrants and reduce competition in the market. Switching costs can also lead to reduced product variety to consumers by giving firms less incentives to differentiate products as well as preventing switching between products (Klemperer, 1995).

3.1.1 Different types of switching costs

*A switching cost results from a consumer's desire for compatibility between his current purchase and a previous investment. That investment might be a **physical** investment in (a) equipment or in (b) setting up a relationship, an **informational** investment in finding out (c) how to use a product or (d) about its characteristics, (e) an **artificially-created** investment in buying a high-priced first unit that then allows one to buy subsequent units more cheaply, or even (f) a **psychological** investment.* (Klemperer, 1995)

Thus categories of switching costs include those caused by *need for compatibility with existing equipment, transaction costs of switching suppliers, costs of learning to use new brands, uncertainty about the quality of untested brands, discount coupons and similar devices* and *psychological costs of switching, or non-economic "brand loyalty".*

(a) Need for compatibility with existing equipment

Suppliers might intentionally differentiate themselves from each other in order to ensure that their products are incompatible with products from other suppliers, which in turn can make consumers reluctant to switch. The different components of a computer system must be compatible, and this also applies to cameras with their lenses, vacuum cleaners with their bags and cellphones with their chargers (Klemperer, 1995). In the case of mutually incompatible systems, the only possibility to switch supplier is by purchasing an entirely new system, which makes the initial purchase worthless. Markets for products with a need for compatibility with existing equipment share the common factor that there also exist aftermarkets for the initial purchase. The primary market consists of durable goods, whereas the aftermarket consists of non-durable products or services connected to the durable good. Insufficient competition in the aftermarket can create switching costs that lock consumers in with a supplier.

(b) Transaction costs of switching suppliers

Costs associated with switching suppliers can arise even though the suppliers offer identical products. Moving a mortgage from one bank to another might involve physical transaction costs such as establishment- and registration fees, as well as psychological costs such as the time and effort involved in the process of searching for a new supplier. There might also be contractual costs related to terminating a contract prior to the agreed-upon time. If switching costs are transactional, a consumer who switches from firm A to firm B would incur an additional switching cost if she switches back to firm A (Farrell & Klemperer, 2007).

(c) Costs of learning to use new brands

When switching suppliers, a consumer may need to invest time and effort in learning how to work with the product or service provided by the new supplier. For instance, a number of cellphone manufacturers may produce functionally identical phones. However, when a consumer has invested time and effort into learning how to use one firm's product line, she will have a strong incentive to continue to buy phones from

the same firm in the future (Klemperer, 1995). The same argument can be made about the products and services offered by banks. Switching between suppliers with products or services that require learning costs makes the investment made in learning the original product worthless. However, switching back to the original supplier at a later time will not generate new learning costs (Farrell & Klemperer, 2007).

(d) Uncertainty about the quality of untested brands

A central element from the theory of behavioral economics is that certainty is preferred to uncertainty, and a potential loss is emphasized more heavily than a potential benefit of the same magnitude (Kahneman & Tversky, 2013). Continuing to purchase a product of known quality entails less risk than purchasing a similar product of unknown quality from another supplier. Uncertainty regarding the quality of untested brands is a psychological switching cost which may affect how consumers make purchasing decisions and might make them less inclined to switch supplier. This type of switching cost is prominent in markets where the quality of a product or service is unknown before the purchase, which is the case in the market for experience goods. In these markets, consumers tend to behave as if they face a perceived switching cost equivalent to the maximum insurance premium they would be willing to pay to ensure the same value of the product previously purchased (Klemperer, 1995).

(e) Discount coupons and similar devices

This category of switching costs involves any type of discount a consumer receives by repeatedly purchasing from the same supplier. The market for airline travel is an example of a market where customer loyalty constitutes switching costs. Airlines enroll passengers in "frequent-flyer"-programs where customers receive reward points for repeated travel with the same airline. This is called a volume discount because the size of the discount increases with the number of purchases. These types of reward-programs create a lock-in effect, as the loss of accumulated bonus points increases the perceived cost of switching to other airlines (Klemperer, 1995). Loyalty discounts are also relevant in the retail banking market, where a bank might reward a customer with lower fees and interest rates for having all banking products and services with one

bank. These kinds of loyalty discounts make it expensive to switch to another bank, effectively locking the customers in with one supplier.

When assessing the impact of discount programs on competition between firms, the benefit received by consumers through obtained discounts must be compared to the cost associated with firms succeeding in maintaining higher prices. This type of discount program leads to reduced price competition, which is advantageous for firms and harmful for consumers (Klemperer, 1995).

(f) Psychological costs of switching, or non-economic "brand loyalty"

There may be psychological costs connected to switching brands even when there is no clearly identifiable economic reason for consumers to exhibit brand loyalty. According to Brehm (1956), consumers may revise their preferences to align with previously chosen products to reduce cognitive dissonance and may avoid seeking out new information that could reveal superior alternatives. Thus, if consumers have no clear preference among competing products, choosing one brand over another can alter their perception of the relative benefits of each product, resulting in a cost of switching brands (Klemperer, 1995).

Each of these types of switching cost is sufficient to make products that are ex-ante homogenous become ex-post heterogenous after the purchase. This can, for several reasons, lead to consumers being locked in with a supplier, allowing the supplier to exercise market power over repeat customers. A widely accepted view in the academic literature on the topic is that switching costs can have a negative effect on competition as they restrict the ability of customers to switch to other suppliers. This magnifies incumbency advantages by allowing firms to charge higher prices without losing market shares, and it also leads to direct efficiency losses and reduced competition (Farrell & Klemperer, 2007). It is also worth noting that a customer may face a start-up cost when purchasing a product for the first time, similar to the switching cost incurred when switching brands. Therefore, a consumer might face a "switching cost" when making a first-time purchase.

Many of the costs consumers incur when switching suppliers have parallels in the costs firms incur when serving new customers. Among the categories mentioned above, suppliers might

particularly face *(b) transaction costs* when opening a new customer account, *(c) costs of learning* to work with new customers, and *(d) uncertainty about the quality* of a new customer, which is especially relevant to suppliers in credit and insurance markets. Whether it is the consumer or the supplier that pays the initial switching cost, the relationship-specific investment is lost when the relation is terminated. As a result, the total prices (including switching costs) paid by consumers, and the implications switching costs may have for competition, are not much affected by whether it is firms or customers who actually bears the switching cost (Klemperer, 1995).

3.2   Model

By making demand less elastic, firms can exert stronger market power over their customers base when switching costs are present. The market power that results from switching costs creates two conflicting incentives for the firms. On one hand, switching costs allow for charging a higher price to existing customers. The customer will not be willing to switch unless another supplier can offer a price that is lower than the current supplier's price including the cost incurred by switching. This reluctance enables firms to increase prices without losing customers. Thus, firms have the incentive to set prices equal to the competitor's price plus the switching cost borne by the customer. This effect implies that firms have an incentive to exploit their existing customer base. On the other hand, switching costs may incentivize firms to charge a lower price to attract a larger customer base. A larger market share will be profitable in the future, since firms will be able to charge a higher price to a locked-in customer base. This results in firms lowering their current prices in order to harvest market share that can be exploited in the future (Office of Fair Trading, 2003).

There are various models that can be used to assess the effects switching costs can have on the competition in a market, and these are differentiated between one-period, two-period and multi-period models depending on the type of market being studied and the assumptions being made. The following section presents different versions of a model constructed by Klemperer (1995), to demonstrate the effects switching costs can have on competition in different markets with one, two and an infinite amount of time periods.

3.2.1 Single-period model: switching costs yield monopoly power

The way switching costs reduce customer mobility by locking customers in with a supplier allows firms to exercise market power over their customers. When a firm possesses market power, it also has the opportunity to generate monopoly profits. The simplest way to show how switching costs yield monopoly power is by considering a single-period duopoly where firm A and B produce homogenous goods and engage in price competition. A fraction of the consumers σ^A has previously purchased from firm A and a complementary fraction of the consumers $\sigma^B (= 1 - \sigma^A)$ purchased from firm B. All consumers incur a switching cost s for switching supplier. This is a "mature market" where consumers have already built up a switching cost and there is no influx of new consumers. If s is sufficiently large, the unique non-cooperative Nash-equilibrium leads to a profit-maximizing outcome for both firms. This is because none of the firms can attract any customers from the other firm without lowering prices at least s below the other firm's price. If the firms are constrained to uniform pricing, such a price reduction would lead to giving up a greater amount of profit through foregone revenue as a result of the lower price, outweighing the benefits from acquiring customers from the other firm. The result is that the firms take their market share for granted and determine prices based on the consumer switching costs. In a single-period model, the outcome is that firms behave as monopolists and set higher prices compared to a market where customers have no switching cost (Klemperer, 1995).

Klemperer (1995) demonstrates this intuition through the following example: there are N consumers, each having a reservation price R for one unit of the homogenous good produced by firms A and B at constant marginal costs c^A and c^B, respectively. Each consumer in fraction σ^A or $\sigma^B (= 1 - \sigma^A)$ must pay a switching cost s to purchase from the other firm than the one they previously purchased from. Let $s \geq R - c^A > 0$ and $s \geq R - c^B > 0$. Firms simultaneously and non-cooperatively choose prices p^A and p^B, respectively. In the unique, non-cooperative Nash-equilibrium, firms set monopolist prices $p^A = p^B = R$ and earn profits $\pi^A = \sigma^A N[R - c^A]$ and $\pi^B = \sigma^B N[R - c^B]$.

To what degree firms will act as monopolists towards their own market share depends on the details of the model. If there are many firms in the market or large differences in market shares, the strategic decision for a firm to act as a monopolist towards its own customer base becomes less viable. Nonetheless, the general result of the model is that switching costs

accumulated in earlier periods generate current profits contingent on previous market shares, and that the presence of switching costs makes market shares valuable due to the lock-in effect.

3.2.2 Two-period model: price wars for market share

Firms will compete for market shares if they are valuable, and in markets with switching costs, there will be competition among suppliers to lock consumers in with their product. Klemperer (1995) presents a two-period model where consumers face no switching costs in the first period, but rather develop such costs as a consequence of their purchase in the first period. Consequently, firms possess a degree of market power during the second and final period, similar to the single-period model. This triggers fierce competition to capture market shares in the first period as firms can harvest profits from a locked-in customer base in the second period.

The general approach to solving a two-period model is to first solve for firms' optimal strategic outcome in the second period, for any given market share in the first period. Given the magnitude of the switching cost and the competitive dynamics in the second period, we solve for firm F's profit in the second period as a function of market share in the first period. In period 1, each firm seeks to maximize total discounted future profits:

$$V^F = \pi_1^F + \delta \pi_2^F(\sigma_1^F) \tag{1}$$

Where π_1^F and π_2^F denote first- and second period profits respectively, σ_1^F is the first-period market share and $\delta \in (0,1)$ is the discount factor. Klemperer (1995) assumes for simplicity that firms choose prices in the first period. By maximizing with respect to first-period price, firm F's first-order condition for equilibrium will be:

$$0 = \frac{\partial \pi_1^F}{\partial p_1^F} + \delta \frac{\partial \pi_2^F}{\partial \sigma_1^F} \frac{\partial \sigma_1^F}{\partial p_1^F} \tag{2}$$

Given that first-period market share decreases with increased first-period price, the third term of equation (2) is negative, $\frac{\partial \sigma_1^F}{\partial p_1^F} < 0$. Under the assumption that second-period profits increase with first-period market share, the second term is positive, $\frac{\partial \pi_2^F}{\partial \sigma_1^F} > 0$. Since the discount rate δ

takes a value between 0 and 1, the last term in the equation is negative. For the first-order condition for equilibrium to hold, we have $\frac{\partial \pi_1^F}{\partial p_1^F} > 0$. If firms ignore the effect switching costs have on second-period profits, the first-order condition would be $\frac{\partial \pi_1^F}{\partial p_1^F} = 0$. This suggests that first-period prices are lower when switching costs are present, compared to when firms simply maximize profits in period 1. The intuition from the model indicates that firms' first-period prices are lower when they compete for market shares that generate future value, compared to when they solely focus on maximizing first-period profits. An example of this kind of fierce competition for market share before consumers have developed switching costs could be banks that offer sign-up bonuses such as gifts or low interest rates to encourage new customers to open accounts, only to raise interest rates later on.

The presence of switching costs in a market can explain why firms engage in "price wars" when new markets emerge or when new consumers enter a market and can be sold to separately from already existing consumers. The model can also be extended to show that price wars can occur when new firms enter the market. In such cases, a new firm is compelled to set a low price to attract consumers who are aware that they will face higher prices in the future, and the incumbent firm must reduce its price to avoid a significant price disparity. However, all firms will increase prices subsequently (Klemperer, 1995).

An alternative version of the model provides an explanation for how limit pricing can discourage new firms from entering the market. If only one firm serves the market during the initial period, the firms' ability to attract a significant customer base reduces the share of consumers available to a new entrant in the subsequent period. Consequently, if the first-period sales are substantial enough, entry may be completely deterred. Furthermore, even if entry in the second period is inevitable, larger sales in the first period generally increase profits in the second period. As a result, equation (2) (with σ_1^F re-interpreted as the incumbent firm's number of first-period sales in this version of the model) indicates that the first-period price is set below the price that maximizes short-term profits (Klemperer, 1987).

When assessing the effects of switching costs over two periods, it is necessary to consider the competitive dynamics in both the first and the second period. In period 1, firms set optimal prices to capture the largest possible market share, and subsequently increase prices in period 2 to harvest profits from the acquired customer base. As previously mentioned, the first-period price is set below the price level that would allow firms to maximize first-period

profits. This is a direct consequence of firms competing for market shares that will let them harvest larger profits in the next period. Thus, first-period competition for market share is triggered by second-period competition for profit. In markets characterized by these dynamics, firms seek to capture customers before they have developed switching costs, which may result in fierce price competition (Klemperer, 1995). Examples of such competition can be banks offering promotional interest rates, sign-up bonuses or bundled banking services to attract new customers in the first period, and then locking them in by creating switching costs.

3.2.3   More general two-period models

A reasonable assumption would be that firms choose second-period prices based on market share captured in the first period. This is not the case in the simple two-period "price war"-model presented above. However, more general two-period models that incorporate a subset of consumers who are not entirely locked-in during the second period typically result in the firm with the lower market share choosing a lower price, unless there are significant economies of scale. This is because a firm with fewer existing customers is relatively more inclined to set a lower price to attract new customers rather than setting a high price to exploit existing customers. In certain models, this effect can be significant to the extent that a firm would counterintuitively be made worse off by capturing a larger market share, because diminishing the competitor's market share escalates the competitive behavior. Typically, this occurs when the competitor's strategy discontinuously shifts from a high-price approach to exploit existing customers, to a low-price approach to attract new customers (Klemperer, 1995). In this scenario the second term of equation (2) would be negative, $\frac{\partial \pi_2^F}{\partial \sigma_1^F} < 0$, which means firms compete less aggressively in the first period than they otherwise would to avoid increasing market share. Prices and profits in period 1 are thus higher than they would be without the presence of switching costs in period 2. Similarly, an incumbent firm may "limit overprice", where it intentionally produces below the output level that would maximize short-term profits, in order to reduce its market share. This strategic choice may discourage new markets entrants, as the incumbent signals its commitment to intensify competition in the event of a competitor entering the market (Klemperer, 1987).

In the "price war"-model, the consumers' utilities in period 2 were independent of their choices in period 1. In more general two-period models, a consumer's first-period purchase

entails a certain commitment to buy the same product in the second period, which means she must consider her expected second-period utility when making first-period decisions. As a result, her decision-making process will be more influenced by any real (functional) differentiation between products that will remain relevant in the second period. Conversely, she will be less influenced by price reductions that are applicable only to the first period. This differs from a scenario where consumers could easily switch between suppliers without costs, enabling independent decision-making in each period. Moreover, consumers will recognize that a firm that offers a lower first-period price will secure a larger market share, which as previously discussed generally will lead to higher second-period prices. Due to these considerations, consumers will be less attracted by a price reduction in the first period compared to a scenario with no switching costs in the second period. Consequently, the presence of switching costs in the future tends to make first-period demand less elastic. Therefore, although equation (2) suggests that firms set lower first-period prices when considering the impact of switching costs on second-period profits, it is possible that first-period prices and profits may still be higher than in an otherwise identical market without switching costs in the second period (Klemperer, 1995).

Two-period switching cost models provide a clear and simple overview of the competitive implications switching costs can have in the first and second period. However, such models do not provide insights into the dynamics of competition over multiple periods when "old" locked-in consumers and "new" uncommitted consumers coexist and firms are unable to discriminate between these consumer groups. Furthermore, two-period models may not suffice in explaining how consumer switching costs can strengthen the position of a dominant firm or shield an incumbent from new entrants when a continuous influx of new and uncommitted consumers arrives and replaces a fraction of old consumers in the market. Moreover, these models may not provide the most adequate framework for analyzing the impact economic shocks like business-cycle fluctuations or changes in interest rates, due to the unique features of both the first and second periods in these models (Beggs & Klemperer, 1992).

3.2.4 Extension to a multi-period model

To overcome the challenges discussed above, the two-period model can be extended to analyze competition with switching costs over multiple periods, with consumers both entering

and exiting the market, and with firms being unable to discriminate between old and new consumers (Beggs & Klemperer, 1992). Therefore, a multi-period model is better suited for analyzing competition in the banking sector. In each period t, each firm seeks to maximize total future discounted profits starting from period t, giving firm F's value function:

$$V_t^F = \pi_t^F + \delta V_{t+1}^F(\sigma_t^F) \tag{3}$$

In which π_t^F is firm F's profits in period t, $\delta \in (0,1)$ is the discount factor in period t, V_{t+1}^F denotes the value function in the next period and σ_t^F denotes market share in period t. The discounted value function for period $t+1$ depends on period-t market share, given by the second term $\delta V_{t+1}^F(\sigma_t^F)$. Maximizing equation (3) with respect to period-t price, firm F's first-order condition is now:

$$0 = \frac{\partial \pi_t^F}{\partial p_t^F} + \delta \frac{\partial V_{t+1}^F}{\partial \sigma_t^F} \frac{\partial \sigma_t^F}{\partial p_t^F} \tag{4}$$

Which is similar to the result obtained in the two-period model. A lower current price will increase current market share, so the third term of the equation is negative, $\frac{\partial \sigma_t^F}{\partial p_t^F} < 0$. The firm's future total discounted profits are increasing in current market share, which makes the second term positive, $\frac{\partial V_{t+1}^F}{\partial \sigma_t^F} > 0$. For the first-order condition to hold, we have $\frac{\partial \pi_t^F}{\partial p_t^F} > 0$. The result from the two-period model is still valid in this case; the firm charges lower prices than it otherwise would if it ignored the fact that market share will generate future value. However, this does not provide information regarding whether the firm sets higher or lower prices compared to a scenario without switching costs. This is because the firm's current demand elasticity is reduced by the switching costs of old consumers who want to repeat purchase, assuming firms are unable to price discriminate between new and old customers. Consequently, the firm must therefore in every period weigh the incentive to charge a higher price to exploit locked-in consumers against the incentive to charge a low current price to attract new customers that increase current market share and thereby future profits. The next section will explain that the first incentive is generally expected to dominate, and prices will increase in the presence of switching costs.

To conduct a comparison of equilibrium prices between a market with switching costs and a similar market without switching costs, it is useful to reformulate firm F's value function, denoted as (3), in explicit terms of its own and its competitors' prices in both periods:

$$V_t^F = \pi_t^F(p_t^F, p_t^G) + \delta V_{t+1}^F(p_t^F, p_t^G, p_{t+1}^F, p_{t+1}^G) \tag{5}$$

Where p_t^G and p_{t+1}^G are vectors of the competitors' prices given that firm F has more than one competitor. However, for the sake of simplicity, we proceed as if there is only one competitor as it does not affect the results. This gives us firm F's first-order condition as an explicit function of its own and its competitor's prices:

$$0 = \frac{\partial \pi_t^F}{\partial p_t^F} + \delta \left(\frac{\partial V_{t+1}^F}{\partial p_t^F} + \frac{\partial V_{t+1}^F}{\partial p_{t+1}^G} \frac{\partial p_{t+1}^G}{\partial p_t^F} \right) \tag{6}$$

There are two primary effects on prices compared to a market with no switching costs. Firstly, consumers who previously purchased from a firm are somewhat committed to repeating their purchase from the same firm. Consequently, if firms were solely concerned with current profits, they would exploit these consumers by setting higher prices compared to if consumers had no switching costs. In other words, the firms' demand elasticities are reduced, leading to a larger $\frac{\partial \pi_t^F}{\partial p_t^F}$ at any given price within the relevant range. As a result, the firm needs to increase its price to restore equilibrium as described by equation (6). This is the effect observed in the second period of the two-period model presented above. Conversely, firms also realize that a lower current price will attract new consumers who will become repeat-purchasers and thereby increase future profits. This is the second price effect of switching costs, $\frac{\partial V_{t+1}^F}{\partial p_t^F} < 0$, so the firm lowers its price to bring equation (6) into balance, which turned out to be the dominating effect in the first period of the two-period model.

According to Klemperer (1995), there are additional effects that contribute to higher prices in a market with switching costs. Firstly, discounting future profits reduces firms' incentives to attract new consumers relative to exploiting the consumers that are already locked-in. Since the discount factor, $\delta < 1$, is multiplied with the second term in equation (6), firms emphasize current profits which implies higher prices in the presence of switching costs. Secondly, if one firm increases its price today, the competitor will gain market share and compete less fiercely tomorrow by also raising prices. Therefore, both firms will have incentives to increase current prices in order to reduce future competition, since a higher current price will increase the competitor's price in the next period, $\frac{\partial p_{t+1}^G}{\partial p_t^F} > 0$. Lastly, even new consumers' demand is less elastic in markets with switching costs. This is partly due to

consumers recognizing that a lower current price means a higher future price, and because they care more about permanent product characteristics than price in the first period, given that switching in a later period is costly. This makes $\frac{\partial \pi_t^F}{\partial p_t^F}$ more positive and $\frac{\partial V_{t+1}^F}{\partial p_t^F}$ less negative at any given price, therefore equation (6) implies a higher price in equilibrium.

These three additional effects suggest a strong inclination that switching costs lead to higher prices for both new and existing customers when firms are unable to discriminate between them. Given that oligopolists' prices typically fall below the price that maximizes joint profits, this indicates that switching costs enhance the profitability of oligopolistic firms (Klemperer, 1995).

3.2.5 Implications for competition

The literature review conducted above reveals that the presence of switching costs in a market generally results in higher prices than in a market without such costs. In markets with switching costs, firms have the incentive to leverage their existing customer base, aiming to both capitalize on current customers while also seeking to increase their market share to maximize future profits. Consequently, firms face a strategic choice between charging low prices to attract new customers and increase market share, thereby cultivating valuable repeat customers, or charging high prices to maximize current profits.

The general result from a single-period duopoly is that switching costs accumulated in earlier periods generate current profits that depend on previous market shares, and that the presence of switching costs enhances the value of market shares due to the lock-in effect. Generally speaking, this provides firms with an incentive to act as monopolists towards their own customer base. The results from a two-period model show that if the firm can differentiate between old and new customers and engage in price discrimination, the first-period price will be lower than the second-period price. However, the prices in both periods will be higher than in a market with no switching costs. Finally, in a multi-period model with a constant influx of new customers to the market where new and old customers purchase the same good, it is difficult for firms to price discriminate. The lock-in effect provides firms with an incentive to capitalize on existing customers, thus increasing prices.

According to Klemperer (1995), switching costs reduce customer mobility in a market. Consumers who nevertheless choose to switch suppliers, suffer direct welfare losses. Because switching costs tend to reduce competition, firms may dissipate more social surplus in costly activities to create them. Although there are deviations from these results, it is implied that counteracting activities that create switching costs and encouraging activities that reduce switching costs, will increase the total economic surplus.

3.2.6 Model validity & other effects

The effects of switching costs on competition are not completely consistent in academic literature. Though numerous studies on the topic, like Klemperer (1995), conclude that switching costs make markets less competitive, there is extensive research on the positive effects of switching costs on competition (Nie et al., 2018).

Dubé et al. (2009) challenge the presumptions made in some of the most renowned theoretical studies on switching costs by arguing that the conventional theoretical wisdom may not be applicable to empirically relevant models even with high switching costs. They propose an empirical model that captures the key elements of empirical environments in which switching cost behavior is typically observed. These key elements include markets with differentiated products, imperfect consumer lock-in, and suppliers that are not subject to a finite amount of trading periods. They find that in markets with intermediate levels of switching costs, the incentive for firms to lower prices and invest in market share acquisition outweighs the incentive to increase prices and harvest its existing market share. Therefore, for some levels of switching costs, equilibrium prices are lower in markets with switching costs than in markets without. However, the strategic effects are reduced for large enough levels of switching costs, which results in increased equilibrium prices. The results are therefore ambiguous and ultimately depend on the magnitude of switching costs (Dubé et al., 2009).

Doganoglu (2010) analyzes a dynamic duopoly with infinite time periods where consumers face switching costs and are uncertain about the degree of satisfaction they will receive from purchasing an experience good. The model assumes a population of consumers who expect to switch whenever it is beneficial. Contrary to many other studies with the common result that there is no switching in equilibrium, the author derives sufficient conditions required for the existence of a Markov Perfect Equilibrium where consumers switch between brands and in

both directions. Due to the nature of experience goods, some consumers prefer to switch when they are unsatisfied with their initial purchase and expect more utility from the alternate choice. The model also shows that if switching costs are sufficiently low, equilibrium prices are lower then they would be in a market without switching costs. Therefore, sufficiently low switching costs induce a higher degree of competition in the market (Doganoglu, 2010).

According to Rhodes (2014), the wisdom behind the well-known strategic trade-off between "investing" and "harvesting" that firms often face in markets with switching costs, typically comes from models that artificially separate these motives into different periods. It is argued that this is a drawback, and that firms in reality often compete over a long time horizon and are constantly attempting to both attract new customers while also selling to old customers. Therefore, Rhodes (2014) re-examines the effect of switching costs on prices, profits and consumer surplus. The model is a general model of dynamic competition which allows for analytical results for a wide range of empirically relevant set of switching costs, while also allowing firms and consumers to be forward-looking. Additionally, it permits studying both the long- and short-term effects of switching costs.

Generally, the results show that the long-term effect of switching costs is ambiguous and depends on the patience of both firms and consumers. If firms are more patient, long-term equilibrium prices are lower than in the absence of switching costs, because a firm's motivation to lock-in consumers outweigh any consumer's motivation to avoid getting locked-in. The model also shows that switching costs can act as a way of transferring surplus from old to young consumers, and thus sometimes increase consumer welfare (Rhodes, 2014).

4 Empirical research on switching costs

There is a substantial body of theoretical literature on switching costs and their effects. However, there are not as many empirical studies that estimate switching costs in markets, and even fewer that investigate their effects on competition. According to Shy (2002), this is due to a lack of theoretical knowledge on how to empirically estimate them, precisely because they are not observed by the researcher. Kim et al. (2003) support this claim, saying that empirical research on switching costs is generally silent regarding their magnitude and significance, possibly due to the necessary micro-level data rarely being available to researchers. The following chapter presents a selection of empirical studies on switching costs in the banking industry, as well as a report by the Norwegian Competition Authority.

4.1 The Competition Authority (2015)

In their 2015 report, The Norwegian Competition Authority highlights switching costs as a reason for low customer mobility in the Norwegian mortgage market, which again may function as a limitation to effective competition. The results indicate that many consumers fail to explore alternative options when applying for a mortgage, but still hold the belief that they have obtained the best possible terms and conditions (Konkurransetilsynet, 2015). This is in line with the results from The Switching Survey 2023 presented in chapter 2.4.2. The Competition Authority distinguishes between searching costs and switching costs in their report. However, this thesis follows the definition proposed by Klemperer (1995) in chapter 3.1.1, and therefore treats searching costs as a subcategory of switching costs. According to the report, consumers experience difficulty when attempting to compare financial products and services due to the complexity involved. This makes consumers more passive which in turn makes them less price sensitive. Suppliers may exploit passive customers by increasing prices without losing market share.

Bundled product packages and customer/loyalty programs were also found to increase consumer switching costs, because it becomes unclear what the price is for each individual product included in the bundle. These programs were found to contribute to creating "shopping costs" for consumers, because it becomes more expensive to purchase the same products from multiple suppliers. The report also highlights direct monetary switching costs in the Norwegian mortgage market like the fees related to moving a mortgage and the costs

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associated with determining the market value of the property. There were also indications of other types of switching costs, such as perceived time costs and psychological costs. Perceived time costs would be the time a customer thinks it will take to switch banks, which may be longer than the actual time and thus lead to stronger reluctance. Psychological costs can be exemplified as a customer having a good relationship with their advisor or not wanting to learn a new banking system, which may also amplify the reluctance to changing banks (Konkurransetilsynet, 2015).

4.2   Kim, Kliger & Vale (2003)

Kim et al. (2003) present an empirical model of firm behavior in the presence of switching costs. Customers´ transition probabilities, embedded in firms´ value maximization, are used in a multi-period model to derive estimable equations for a first-order condition, market share and supply equations. The model can give information about the magnitude and significance of switching costs, and customer transition probabilities, from aggregated data which does not contain customer-specific information. The model is applied to a data panel of Norwegian banks to assess the switching costs in the market for bank loans. The point estimate of the average switching cost is 4.1%, around one third of the average market loan interest rate. More than 25% of customer added value is attributed to the lock-in phenomenon created by switching costs. About one third of the average banks´ market share is due to its established bank-borrower relationship (Kim et al., 2003).

Their model examines an oligopoly of n firms competing in multiple stage price (Bertrand) competition. The good produced by the firms cannot be stored. Customers have inelastic demand to focus on their decisions regarding which firm to purchase the good from. Each customer purchases a single unit of the good at each one of infinitely many discrete periods. Customers maximize utility by deciding which firm to purchase the good from, given the prices charged. Customers keep switching costs in mind when comparing prices. This yields probabilities of switching between firms, called transition probabilities, which are functions of prices and switching costs. Aggregating these probabilities gives demand faced by each firm. They apply the model to a panel of annual observations for the Norwegian banking industry from 1988 to 1996, which covers all banks operating in the retail lending market in Norway within that time frame. The article concludes that switching costs in the Norwegian market for

bank loans are substantial and constitute a significant portion of the value of a marginal customer to the average bank.

4.3   Shy (2002)

Shy (2002) develops a method for calculating switching costs among brands in a given industry. The theory connects prices and market shares of observed brands to the switching costs that deter consumers from switching to competing brands. Shy proposes that the calculation method is applicable to estimating switching costs across a diverse range of industries and demonstrates this by using the Israeli cellular phone industry and the Finnish bank deposit market as examples. Several researchers have presented theoretical evidence to support the notion that consumer switching costs confer market power on firms. However, in terms of empirical research, there is limited theoretical knowledge on how to accurately estimate switching costs precisely because they are not observed by the economist. This is due to switching costs being partly consumer-specific (reflecting the consumer's human capital needed for switching) and are therefore treated as a utility loss which cannot be directly calculated from data (Shy, 2002).

Because prices and market shares are observable and relatively easy to measure, Shy develops a theory which links these two parameters with unobserved switching costs. This is done by creating a price competition model which makes it possible to solve for switching costs as a function of prices and market shares. Data from the Finnish bank deposit market is fitted to the model to get estimates of the corresponding consumers' switching costs. The data consists of the four major banks in Finland and contains the number of accounts and fees, including direct fees, transaction fees and foregone interest (Shy, 2002). The major finding is that customers at large banks generally face high switching costs, whereas customers at small banks face no switching costs. The data also indicates that consumers with a low value of time tend to choose the bank with the lowest fees, regardless of other factors. These consumers are able to switch banks easily and are not greatly impacted by switching costs. In contrast, consumers with a high value of time tend to remain with banks with high fees. For these consumers, switching to another bank with low fees would be very costly.

4.4   Egarius & Weill (2016)

Egarius and Weill (2016) measure switching costs on bank-level data from 2006 to 2012 in order to investigate the influence of switching costs in banking for the three largest Eurozone countries (Germany, France and Italy). They compare cooperative and commercial banks and find a positive relation between switching costs and market power. The specific switching costs related to banking include direct transactional costs like the costs associated with changing banks, as well as informational costs that often arise due to asymmetric information in the bank-borrower relation. These types of switching costs are suggested to be a major characteristic of the banking industry. The authors also seek to explain whether the degree of switching costs can help explain competition as well as differences in market power between cooperative and commercial banks. They use the approach proposed by Shy (2002) to estimate switching costs in banking because it is easily applicable on banking data to provide bank-level measurements on switching costs. The Lerner index is used to measure banks' market power in order to investigate the relationship between switching costs and market power.

The authors apply the method of Shy (2002) on a number of commercial, cooperative and savings banks from Italy, France and Germany to estimate switching costs while assuming all banks compete on their national markets. The main result is that cooperative banks in general have lower switching costs than commercial banks, even though there are differences across countries and years. This is explained by the difference in governance between cooperative and commercial banks: the fact that cooperative banks are owned by their clients reduces managers' incentives to implement switching costs. To examine whether switching costs affect market power, the authors performed random effects GLS regressions with the Lerner index for each bank and each year as the explained variable and switching costs as the key explaining variable. The results show that switching costs exert a positive and significant influence on the Lerner index, which is observed in all estimations. This suggests that banks that impose higher switching costs on their clients on average are more likely to exercise market power by charging higher prices relative to costs. This is in line with the hypothesis that greater switching costs enhance market power and reduce competition in the banking industry, which is supported by existing literature on the field (Egarius & Weill, 2016).

4.5   Sharpe (1997)

Sharpe (1997) builds upon the theory developed by Klemperer (1987); if households face a cost for switching among brands of a differentiated good, pricing is likely to be more competitive when more customers move into or around the market. The theory is applied to a scenario with arbitrary market structure and tested empirically with panel data on bank retail deposit interest rates. The hypothesis that the presence of household switching costs may reduce the competitiveness of pricing is tested, and the results show that the amount of household migration in a market positively affects the level of deposit rates, indicating a significant competitive influence on price markups. As a by-product, the analysis also provides evidence which suggests that the presence of market power may influence the relationship between switching costs and price competitiveness (Sharpe, 1997).

The model is essentially analogous to the second-period problem in Klemperer (1987), where the underlying model of competition is the standard two-firm spatial model of product differentiation. The key assumption is that consumers who purchase the good in both periods incur an additional cost should they choose to switch suppliers in the second period. Sharpe (1997) begins with a generalized version of the same spatial competition framework in order to construct an empirically operable model. The analytical framework developed by Perloff and Salop (1985) is used as a foundation, and consumer switching costs are added to the model. By allowing the model to consider market structure, it can be used to analyze not only the effect of switching costs on prices, but also the effect of market structure on price competition in markets with and without switching costs. The data used in the analysis is a panel of 222 banks located in 105 markets with monthly observations from 1983 to 1987. Interest rates for two types of retail deposit accounts are examined; the six-month certificate of deposit (CD) and the money market deposit account (MMDA). The explanatory variable of greatest interest is household movement, which is a proxy for the proportion of households compelled to search for a new bank due to exogenous factors. The Herfindahl Index is also applied to emphasize market concentration.

The results show that concentration has a significant negative effect on deposit interest rates for CDs, which is likely the result of entry barriers. The proportion of movers, who face relatively low switching costs, has a significant positive effect on CD interest rates. The results are similar for MMDA interest rates: concentration has a negative effect while the

proportion of movers has a positive effect. However, concentration appears to have a greater negative effect in markets with a large proportion of movers, and the proportion of movers has a significant positive effect on MMDA rates in less concentrated markets. Therefore, customer loyalty associated with switching costs and concentration act as substitute sources of market power.

5   Summary & concluding remarks

The aim of this thesis has been to investigate the effects of consumer switching costs on competition in the Norwegian banking sector by examining their influence on consumer behavior, market dynamics and the overall competitive landscape. This has been done by reviewing relevant reports, surveys, theoretical models and empirical studies.

The Norwegian banking industry plays a vital role in ensuring financial stability and accounts for a significant portion of domestic credit. The sector exhibits moderately high concentration levels, with DNB emerging as the dominant actor in the market. Recent issues related to the current competitive situation in the sector have garnered notable media attention, including the acquisition of Sbanken by DNB, and the increase in interest rate margins in line with the policy rate hike. Market concentration (market share) and interest rate margins (prices) are both topics that are associated with switching costs in theoretical and empirical literature.

Consumer behavior, particularly with regard to mobility in the market, is important in shaping the competitive landscape in the banking sector. Low customer mobility, which is attributed to the presence of switching costs, can have a negative impact on competition. Insights from the 2023 Switching survey provide valuable information on the factors that influence market mobility. The main findings suggest that many consumers do not switch banks even though there are indeed substantial savings associated with doing so, which in part is due to customers being locked-in with their current bank through loyalty programs and bundling. This indicates that switching costs result in lower customer mobility in the Norwegian banking industry, which might have a negative impact on competition.

The Finance portal was established by the Consumer Council due to lack of transparency and low customer mobility in the Norwegian banking sector. While the portal succeeds in making consumers more informed about relevant market conditions, it has had a seemingly limited impact on increasing the share of consumers who switch or renegotiate financial services. The portal had a minor positive effect on competition in the market for mortgages.

The models developed by Klemperer (1995) demonstrate that switching costs affect competition in multiple ways. In a single-period model, switching costs yield monopoly power and lead to higher equilibrium prices compared to a market without switching costs. In

a two-period model, firms compete fiercely for valuable market share in the first period to harvest profits from a locked-in customer base in the second period. Compared to a market with no switching costs, this generally leads to lower prices in the first period (depending on the details of the model) while second-period prices are higher. Lastly, a multi-period model where consumers can enter and exit the market and firms are unable to price discriminate is most compatible with competition in the banking sector. The result is initially the same as in the two-period model, however, it does not provide information on whether prices are different from a market with no switching costs. The firms must weigh the "investing" and "harvesting" incentives against each other in each period, and the incentive to "harvest" is generally expected to dominate, which leads to higher equilibrium prices compared to a market with no switching costs. Summarized, switching costs typically lock consumers in with their supplier and result in higher prices. They tend to reduce competition and social welfare surplus in a market. However, some studies suggest that under specific conditions, lower-than-normal prices can result from intermediate levels of switching costs.

Empirical research provides insights into the magnitude and significance of switching costs in the banking sector. Kim et al. (2003) show that switching costs in the Norwegian market for bank loans are substantial and constitute a considerable proportion of total expenses incurred by an average customer when switching banks. Shy (2002) develops a method for calculating switching costs in the Finnish bank deposit market, and finds that customers at large banks generally face high switching costs. Egarius and Weill (2016) measure switching costs on bank-level data for the three largest Eurozone countries. Their main findings suggest a positive correlation between switching costs and market power, with higher switching costs being associated with a greater likelihood of banks exercising market power. Finally, Sharpe (1997) examines whether high switching costs reduce the competitiveness of pricing in the banking industry. Results indicate that the degree of household migration in a market has a positive effect on the level of interest rates, and that the magnitude of this effect depends on the degree of market concentration.

5.1   Conclusion

In conclusion, the main findings from this thesis indicate that consumer switching costs result in a significant share of customers getting locked-in with their supplier in the Norwegian banking industry even though there are substantial savings associated with switching banks. The Finance portal, designed to address transparency and low mobility, has had seemingly limited success in increasing customer switching and competition between banks. Theoretical studies on switching costs demonstrate various effects on competition, including higher-than-normal prices and reduced social surplus, although some studies show positive effects for specific switching cost levels. Results from empirical studies generally indicate high switching costs in the banking sector, and that such costs are correlated with market concentration and market power.

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