Cooperative banking and the competitive dynamics of an oligopolistic retail banking market

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The cooperative is an interesting business model that challenges many assumptions made in economic theory and policy. Cooperatives are not owned by external investors but by their members who democratically control their jointly owned enterprise. The *raison d'être* of a cooperative enterprise is to help its members meet their various needs and aspirations through economic activity. Thus, their objective is not to maximize their profits, but the welfare of their member communities.

The fact that cooperatives do not seek to maximize their profits affects their strategic behavior and, consequently, the balance and competitive dynamics of markets otherwise occupied by investor-owned profit-maximizers. Similar to what has been observed with state-owned enterprises, the presence of a sufficiently large and efficient cooperative enterprise is likely to increase competition in the market. This increased competitive pressure has even the potential of causing a crowding-out effect where some, if not all, of the investor-owned firms, are forced to exit the market. Such effects are important, especially in the banking sector, as there seem to be several links between the structure of the banking market and financial stability.

In this thesis, I discuss cooperative banks and the cooperative business model in general. I find that the most important feature of cooperative enterprises is their dual nature which differentiates them both from capitalistic profit-maximizers and state-owned welfare-maximizers or charities. Also, the dual nature of cooperative enterprises is dynamic, meaning that cooperatives constantly have to balance their primary purpose of maximizing the surplus of their members and the need to remain sufficiently profitable in the long run.

More importantly, I present the results of a game theoretical analysis of an oligopolistic retail banking market similar to the Finnish banking sector. In the two simple models presented in this thesis, I assume that two banks, one cooperative and one investor-owned, compete against each other by setting quantities. Following the example of most studies of mixed oligopolies, I assume that the investor-owned bank maximizes its profits. However, the cooperative bank maximizes either a combination of member surplus and its profits, or member surplus subject to a break-even constraint.

The results of my market analysis demonstrate how the presence of a cooperative bank increases the level of competition in a retail banking market. The intensity of this effect correlates positively with the extent to which the cooperative bank puts weight on maximizing the surplus of its members at the cost of its profits. Investor-owned banks can defend themselves by being more efficient than the cooperative bank or by increasing their customer loyalty by, for example, trying to differentiate their products or by appearing more trustworthy and solid.

I also discuss how the market behavior of cooperative banks and cooperative enterprises in general appears from the point-of-view of competition policy. I find that while cooperatives are in no way exempt from the rules of competition, authorities should be careful not to take their somewhat special market behavior as a signal of anti-competitive intent.

Keywords:
Cooperatives, cooperative banking, retail banking, financial stability, mixed oligopoly, competition policy

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This thesis is the product of a long process that began over ten years ago when I first began my studies at the Åbo Akademi University in 2005. After that, I have (for example) graduated as a lawyer from the University of Turku, met my wife, married and became the father of two lovely children. I am thankful for the support of my dear wife Nonna, who has held everything else together while I have been struggling to find time for my studies. I am also grateful for my two sons Noel and Eliel. While you have not exactly made this project easier, you have made it (and everything else) worth the effort.

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Finally, I would like to note for the record that I am currently employed by the cooperative OP Financial Group. However, all conclusions and opinions expressed in this thesis are mine alone and do not necessarily reflect those of OP Financial Group or its management.

Juho Kallio
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1. Introduction

The cooperative is an interesting business model that challenges many assumptions made in economic theory and policy. Although cooperative enterprises have a long history of being an important part of our economic system, different types of mostly investor-owned capitalistic firms[1] are still by far the most significant type of economic organization in our society[2], leaving cooperatives well behind both in number and acknowledgment. There have been those who find that cooperatives and other not-for-profit firms are only responses to niche markets and market failures, or who think that cooperatives are not adapted to the needs of the modern economy (Sanchez Bajo & Roelants, 2013, pp. 102-103). However, the long-lasting economic success of the cooperative movement all over the world, and especially the resilience of cooperative banks against the turmoil of the latest global financial crisis, have shown that the cooperative business model possesses qualities that make it a viable alternative to the more popular capitalistic business models even in the 21st century (Sanchez Bajo & Roelants, 2013, pp. 105-114).

The modern cooperative enterprise evolved in Central and Western Europe during the 19th century, and the movement reached Finland by the end of the century. Many early cooperatives were founded by people whose access to a particular market was somehow hindered or who sought better access to the market through cooperation. Especially in Finland, the cooperative movement also had nationalistic and educational purposes (Kuisma, et al., 1999, pp. 31-33). Today, cooperatives are vital contributors to the economy in many countries all around the world. In total, cooperatives provide roughly 5 % of the GDP in G10 countries and, according to a conservative estimate, around 450-650 million people around the world are members of one or several cooperatives (Sanchez Bajo & Roelants, 2013, pp. 105-109). In Finland, cooperatives hold strong market shares, especially in agriculture, banking, and retail. For example, most of Finnish milk products are produced and marketed by the dairy cooperative Valio, much of the retail market is in the hands of the cooperative S Group and the cooperative OP Financial Group ("OP") is the market leader in the Finnish retail banking market. Especially OP and the S Group have an important role in the Finnish economy. Together, these two cooperative giants have more than 3.5 million owner-members, which, despite apparent

[1] There are certainly several different types of capitalistic businesses. In this thesis, however, I will mostly compare the cooperative enterprise to larger capitalistic firms, usually owned by several external investors.

[2] For example, in 2014, almost 40 % of firms in Finland were joint-stock companies and these firms accounted for almost 90 % of total sales that year (Statistics Finland).

double-counting, is a respectable number in a country with just about 5.5 million inhabitants (OP Group, 2016; S Group, 2016b).

The cooperative business model has proven exceptionally suitable for banking, and cooperative banks have played a major role in the development of the European banking sector ever since the 19th century. Cooperative banks started out as small local institutions established to provide loans for those, in many cases farmers and artisans, left outside the financial market (Birchall, 2013, pp. 7-14). Hence, cooperative banks have grown and evolved with their members, and today European cooperative banks serve more than 200 million customers and account for about 20 % of the market of EU bank deposits and loans (ECAB, 2016). Of the approximately 8000 banks within the European banking system, some 4000 are local or regional cooperative banks (Schoenmaker, 2011). While most of these are still small or medium-sized institutions, many cooperative banks or cooperative banking groups are market leaders in their respective local or national retail banking markets. In Finland, for example, the cooperative OP Group holds more than a third of the national retail banking market (Finanssialan Keskusliitto, 2016). Some cooperative banks or banking groups even compete with the world's largest banks and are running substantial global operations. Of the top 30 European banks, the French Credit Agricole, Groupe BPCE and Credit Mutuel and the Dutch Rabobank are cooperatives (ECAB, 2016).

Our economy is based on a capitalistic view of the firm. It is widely accepted in our society that the primary objective of a privately-owned firm is to increase the wealth of its owners and any wider or altruistic objectives are reserved for associations, charities or state-owned firms. As put by the renowned economist Milton Friedman (1970) almost 50 years ago: "there is one and only one social resp [nsibility of business–to use it[sic] resources and engage in activities designed to increase its profits so long as it stays within the rules of the game, which is to say, engages in open and free competition without deception or fraud." Prevailing economic theory and policy thus depart from the assumption that most privately-owned firms are so-called profit maximizers, which means that their primary objective is to generate as much profit as possible to increase the value of the company and benefit its owners (Belleflamme & Peitz, 2010, p. 16). However, while many of the larger cooperative enterprises may be difficult to distinguish from their investor-owned competitors, cooperatives are not profit-maximizers.

In contrast to mostly investor-owned capitalistic firms, cooperatives are not owned by entrepreneurs or external investors but by their members who all have a stake in this jointly owned and democratically controlled enterprise, not only as its owners but more importantly as its workers, producers or customers. The *raison d'être* of a cooperative enterprise is not to generate profits to be issued for a group of *owner-investors* as dividends, but more generally

to help its members to meet their various needs and aspirations (Sanchez Bajo & Roelants, 2013, p. 116; ICA, 2016). In economic terms, this means that instead of maximizing their profits, cooperatives seek to maximize the welfare of their member community. However, it is important to bear in mind that this does not mean that cooperatives would or should avoid making a profit. On the contrary, in most cases their role as self-help institutions demands it. Nevertheless, generating profits is only a tool that cooperatives use to reach their true goals, and it should never be considered as the sole bottom-line objective of a cooperative enterprise (Ayadi, et al., 2012, p. 8).

The fact that cooperatives do not seek to maximize their profits affects their strategic behavior and, consequently, the balance and competitive dynamics of markets otherwise occupied by investor-owned profit maximizers. It can be assumed that a cooperative firm that seeks to maximize the welfare of its members, at the expense of its 44earnings, will sell its products or services cheaper or invest in the quality or quantity of its output more than would be economically optimal for the firm. Thus, the presence of a cooperative enterprise will most likely increase the level of competition in the market and might even lead to a *crowding out effect* where at least the weaker investor-owned firms are forced to exit the market (Cremer, et al., 1989; Willner, 2006).

For those used to view the economy from a capitalistic point-of-view, this welfare-maximizing behavior of cooperative enterprises might seem irrational or even anti-competitive, despite the fact that it might well be in line with the fundamental objectives and values of cooperative enterprises (Puusa, et al., 2013). This misperception regularly causes tensions between cooperatives, their competitors, and the competition authorities. From a competition policy perspective, the problem is that while cooperatives are in no way exempt from the rules of competition, competition rules and policy are based on the traditional notion of firms as profit-maximizers. Moreover, it might sometimes be difficult to distinguish the welfare maximizing objectives of cooperative enterprises from anti-competitive behavior (Willner, 2006).

The market effects caused by the presence of cooperative enterprises are important, especially in the banking sector, which is still recovering from the latest global financial crisis. While the crisis hit all banks hard, several empirical studies suggest that cooperative banks and especially cooperative banks with a close group structure survived the crisis well when compared with their competitors (Groeneveld & de Vries, 2009; Kalmi & Kerola, 2014). This relative success of cooperative banks has been beneficial for the economy in general, as cooperative banks were able to continue or even increase their lending during the crisis (Birchall, 2013, p. 94; Kalmi & Kerola, 2014). In addition, it has been found that the presence of less volatile cooperative banks has been found to increase the stability of an average bank in the same

banking system (Hesse & Čihák, 2007). More importantly, cooperative banks increase the organizational diversity of the banking sector (Ayaldi, et al., 2010, pp. 148-149), long marked by a homogenization favoring large investor-owned universal banks (Ayaldi, 2010; Morrison, 2010). Several benefits can be derived from organizational diversity within the banking sector, including heterogeneity in sources of funding, revenues, and risks. In general, diversity has a positive effect on the resilience of the banking ecosystem by ensuring that not all banks suffer equally in the face of exogenous changes in the economic climate. (Ayaldi, 2010; Goodhart & Wagner, 2012; Liikanen Report, 2012, p. 34)

However, the effects of cooperative banking on the stability of the banking sector are not necessarily entirely positive. While the presence of cooperative banks can add to the stability of the banking sector by increasing its diversity, one needs to remember that diversity is only increased if all institutional forms are sufficiently strong to compete with each other (Ayaldi, et al., 2009, p. 27; Liikanen Report, 2012, p. 34). As was pointed out above, the presence of cooperative enterprises on any market is likely to increase the level of competition, and it can be assumed that cooperative banks have the same effect in the banking sector (Ayaldi, et al., 2010, p. 148). While increased competition is in many ways beneficial both for individual businesses and consumers and for the economy in general, these changes in the competitive dynamics brought by cooperative banks might disrupt the balance of the retail banking market and, thus, compromise financial stability. As noted by Fontayne (2007, p. 5), "[C]ooperatives can use their low-cost and often abundant capital and the absence of a profit maximization constraint to pursue expansion plans that put competitive pressure on other financial institutions." Also, while Hesse and Čihák (2007) find that a higher share of cooperative banks increases the stability of an average bank in the same banking system, they also point out that a higher cooperative presence in the retail banking market seems to leave less space for weak commercial banks. In other words, the presence of cooperative banks can push some of their investor-owned competitors out of the market or towards a greater reliance on less stable sources of revenue and hence compromise financial stability. Also, if cooperative banks occupy the stable center of the banking market, they might push even healthier and more efficient investor-owned banks to seek higher profits from riskier forms of banking.

The purpose of this thesis is to discuss the original characteristics and the distinctive behavior of cooperative banks and their influence on modern retail banking markets. The main focus will be on examining how the presence of a cooperative bank affects the balance and competitive dynamics of an oligopolistic retail banking market, similar to the Finnish banking sector. I have chosen to use the Finnish banking sector as my reference market for several reasons, one of which is that it is the market most familiar to me. Moreover, the Finnish banking sector is also a good example of a developed but highly concentrated retail banking

market where cooperative banks compete side by side with investor-owned commercial banks under free market conditions. The analysis will be based on two simple mixed oligopoly models, where a profit-maximizing commercial bank competes against a cooperative bank by setting quantities (Cournot-oligopoly). I will present two separate models, both of which will emphasize different aspects of the identity and behavior of cooperative banks by using different objective functions[3]. Particular attention will be given to the dual nature of cooperative banks and to the way strategy choices related to their so-called balancing problem (see subsection 3.1.2) affect the market equilibrium. As usual, both models will only be simple caricatures of the complicated processes that affect competition in the retail banking market. However, I find that both models give valuable insights into the competitive dynamics of the market, and I hope that the results will help both the authorities and managers of cooperative and investor-owned banks to develop a better understanding of how the presence of cooperative banks affects competition in the retail banking. In addition to the banking sector, the results of this thesis are to some extent applicable to other markets where cooperatives, and especially consumer cooperatives, compete side by side with investor-owned firms.

The theoretical parts of this thesis are based on a long history of oligopoly studies and especially studies of so-called mixed oligopolies, that is, oligopolistic markets where not all firms pursue the same objectives (usually profit maximization). To name a few, especially the works of de Fraja (2009; 1990), Creamer et al. (1989) and Willner (2006) have been influential sources for this thesis. However, it is usually assumed in studies of mixed oligopolies that firms pursuing other objectives than profit maximization are owned by the state and, to my knowledge, there are no published studies examining the balance and dynamics of a mixed oligopoly where the firm that pursues some wider objectives is a cooperative. Changing the state-owned firm to a cooperative should not affect the results of a mixed oligopoly model too much. However, it will be demonstrated in this thesis how the dual nature of cooperative enterprises adds a dynamic layer to the behavior of cooperatives, which has not been taken into consideration in previous studies made from the point-of-view of state-owned firms.

The rest of this thesis builds upon previous literature concerning the identity and performance of cooperatives in general and cooperative banks in particular. Especially important sources of inspiration have been two IMF working papers released just before the global financial crisis (Fonteyne, 2007; Hesse & Čihák, 2007), a report published by the Centre for European Policy Studies (Ayaldi, et al., 2010) and a number of studies by Kalmi and his colleagues (as summarized in Kalmi & Kerola, 2014). In addition, literature concerning cooperative

[3] The mathematical expression of a firm's objectives.

enterprises (Birchall, 2013; Puusa, et al., 2013; Sanchez Bajo & Roelants, 2013), the link between competition and financial stability, and the economics of competition and competition law (Beck, 2008; Goodhart & Wagner, 2012; OECD, 2010) have been an important sources when writing this thesis.

Structurally, the latter part of this thesis is divided into five chapters. In chapter 2, I will briefly discuss banks and the retail banking market and how the structure of the banking sector affects financial stability. The chapter is concluded with a short presentation of the Finnish banking sector, with an emphasis on its history and current structure. Chapter 3 explores the identity, history, and characteristics of cooperative banks and cooperative enterprises in general. Particular attention will be given to the dual nature of the cooperative enterprise, which captures the cooperative's role both as a commercial enterprise and as an association of persons. All this leads to chapter 4 in which I will present the results of a game theoretical market analysis of an oligopolistic retail banking market where one of the firms is a cooperative bank. I will begin the chapter by explaining the methods used for those not entirely familiar with game theoretical oligopoly analysis and by demonstrating how they work with the help of a simple duopoly model. After that, I will present the two simple models of duopolistic interaction with a cooperative bank and an investor-owned bank. In the first model, I will focus on the dual nature of the cooperative bank and on how strategy decisions connected to this duality affect competition in the retail banking market. The second model is built around the premise that while cooperative banks seek to maximize the welfare of their members, they are always restrained by a break-even constraint. After this, chapter 5 will include a short discussion on how the market behavior of cooperative banks and cooperative enterprises in general appear from the point-of-view of competition policy. Finally, the thesis is concluded with some final words in chapter 6.

2. Banks and the banking sector

2.1. Modern banking

Banks and the banking sector are at the very heart of our modern economic system. Banks are an essential element in keeping the wheels of our economy turning, and disturbances in the banking sector are fast transferred into the real economy. While often deemed old and conservative, the entire industry has gone through a comprehensive transformation during the past thirty years, and it seems that there is no end to this process in sight. Deregulation, globalization, and digitalization have led to the emergence of both new financial innovations and large international financial conglomerates (Herring & Carmassi, 2010). Even smaller banks have diversified their operations, and many have evolved into so-called universal banks that combine traditional lending and payment services with a wider range of other financial services.

Despite this process, the core of retail banking still lies in banks acting as financial intermediaries. As financial intermediaries, banks take deposits from households and businesses in surplus and transform these relatively small and liquid deposits into larger and more illiquid credit for those in deficit (Berger, et al.) Due to their specialization and information advantage, banks have been efficient in allocating financial resources within the society, although their comparative advantages are becoming less clear (Kjellman, et al., pp. 66 & 70-71). The role of banks as financial intermediaries is important, especially in continental Europe, where the market for bank loans is significantly larger than the stock or the bond market. As a comparison, in the USA both the stock market and the bond market are larger than the market for bank-based loans, and in the UK the stock market is almost on par with bank lending. (Allen & Carletti)

Unlike with other types of firms, it is not entirely clear what the inputs and outputs of a bank are. As banks are still first and foremost financial intermediaries, which allocate resources from depositors to debtors, it would be compelling to regard deposits as an input and loans as an output. From this point-of-view, customer service and different types of additional services that banks provide for their depositors can be regarded as partial compensation for the funds provided by them. On the other hand, one can also argue that financial intermediation and all the other financial services provided by a bank should be seen as its output, while resources such as labor and capital invested should be considered as its input. (Van Hoose, 2010, pp. 27-29) Both of these views have their merits, although I will lean towards the latter view and consider banks first and foremost as enterprises that use their various resources to provide their customers, and the society in general, with different types of financial services, including financial intermediation.

While the revenues of a modern multi-product bank tend to come from a variety of sources, the main source of revenue for most retail banks is still the interest margin between the interest paid to the depositors and the interest charged from the debtors. During the calm decades after the Second World War, the interest margin was relatively constant, and banks could rely on generating safe and stable revenues by taking deposits and using them to provide loans to their customers. From this period originates the witty 3-6-3 -rule, according to which a banker should pay 3 % interest for depositors, charge 6 % interest from debtors and hit the golf course by 3 pm. Unfortunately for the bankers (and for producers of golfing equipment), this rule no longer applies, as the markets for both loans and deposits are nowadays subject to somewhat free and open competition. However, banks tend to enjoy some market power, which means that the decisions and the behavior of individual banks can potentially affect both the interest rates and the prices of financial products and services in general (Knoop, 2008). Consequently, the interest margin tends to be wider than it would be under perfect competition (Van Hoose, 2010, pp. 32-51).

The market power of individual banks can be explained partly by firm-specific factors, such as efficiency and innovativeness, but also by factors that are common for most banks. First of all, the structure of the banking market is often oligopolistic, and firms competing in oligopolistic conditions tend to hold some market power. In fact, it can be assumed that the more concentrated the market is, the more market power individual banks have. Secondly, the special, often long, relationship between banks and their customers is an important source of market power for banks. Most people are provided with a bank account when they are small, and many stay with their first bank for the rest of their lives. This low level of customer mobility is at least partly explained by different real or imaginary costs linked to changing from one bank to another and to the difficulty of comparing the prices and services of different banks. (The Nordic competition authorities, 2006, pp. 75-81) However, such traditional sources of market power might not be relevant for long, as recent innovations in internet and mobile banking and the emergence of new web-based service providers are rapidly changing the competitive landscape of retail banking and forcing banks to rethink their strategies (Mariotto & Verdier, 2015).

Banking stands out from other sectors as a particularly fragile industry. Individual banks must manage several types of risks and the failure to do so might not only lead to the fall of that individual bank but, due to contagion effects, to a severe crisis that could spread throughout the entire banking sector (Van Hoose, 2010, pp. 18-19). First of all, imperfect and often asymmetric information means that a bank can never be certain that its debtors are able, or willing, to pay back their loans. Banks can shield themselves from credit losses, for example, by carefully screening their loan applications and demanding different types of securities from

their debtors. However, this does not remove credit risk entirely, as unforeseen events or exogenous disturbances in the economy can relatively fast lead to credit losses, even for the better-managed banks. Secondly, banks are always faced with a liquidity risk, which has the potential of bringing down even solid and well-managed banks. In the process of financial intermediation, banks take relatively small but liquid deposits and transform them into larger but illiquid credits. As the maturity of the deposits taken by the bank is usually substantially shorter than the maturity of the loans given, there is a risk that the bank does not have sufficient liquid funds to satisfy desired depositor withdrawals. During normal times liquidity problems are rare. However, all banks need to prepare for the possibility of a so-called bank run, which might be triggered if their soundness is put into question. They also have to take into account that even banks with a strong balance sheet can fall victims to a bank run caused by macroeconomic events or just plain mass hysteria. (Allen & Carletti, 2010) In addition to credit and liquidity risks, banks are faced with, for example, market risks, different types of operational risks, and risks linked to the lack of compliance with rules and regulations, all of which can have catastrophic consequences both for individual banks and the entire banking system.

In normal times, banks are usually able to manage their risks and avoid catastrophic events such as bank runs or large scale credit risk events. However, history has shown that financial crises are, unfortunately, recurring events that not only affect the banking sector itself but the economy in general. The instability of the banking sector and the vulnerability of our economy for disturbances in the financial markets were once more exposed by the global financial crisis of 2007-2009[4]. What started as a national housing bubble in the USA, soon became a global banking crisis with banks in the USA, EU, and elsewhere experiencing significant losses. The way the crisis spread, both within and between national banking systems, demonstrated the interconnectedness of modern banks and the national financial markets, and how the failure of one bank can send shockwaves through the entire financial system. In order to save the entire financial system from collapsing, governments were forced to bail out several failing banks. In Europe, a total amount of 1.6 trillion euros, or 13 % of the EU's annual GDP, was committed between 2008 and 2011 (EU Commission, 2015).

Although the storm has calmed, for now, many of the problems that caused the crisis remain, and academics and politicians are struggling to find measures that would help to improve the stability of the banking sector and to prevent a crisis of this magnitude never from returning. For example, capital requirements have been made stricter to restrain the extensive use of

[4] The exact dates of the crisis are debatable. The crisis had several phases and which varied greatly from country to country.

leverage (EU Commission, 2013). In addition, in the USA regulations implementing the so-called Volker-rule has legally separated deposit institutions from certain particularly risky financial activities. (The Federal Reserve, 2016) Similar legislation has also been proposed in the EU by the so-called Liikanen group in 2012. (Liikanen Report, 2012, p. 100). The objective of such regulations is, in general, to make individual banks and the banking sector more resilient to adverse shocks. However, much still needs to be done to increase the stability of the banking sector, and some of the answers could be found by examining the structure and the competitive dynamics of the banking sector.

2.2. The structure of the banking sector and financial stability

Despite a global trend towards the homogenization of banking models and institutional forms (Ayaldi, 2010), the European banking sector is still a quite heterogeneous industry (Ayadi, et al., 2012, p. 7; Liikanen Report, 2012, p. 32). Although the top 30 European banks represent almost 50 % of the assets of the European banking system, there are some 8000 banks in the EU, ranging from local cooperative or savings banks to large multinational financial groups (Schoenmaker, 2011). After the latest financial crisis, several authors have argued that such diversity has a positive effect on the stability of the banking sector (Ayaldi, 2010; Goodhart & Wagner, 2012; Liikanen Report, 2012, p. 34). The idea is that, as in biology, diversity adds to the sustainability of the banking ecosystem by ensuring that not all banks suffer equally in the face of an exogenous change in the economic climate. As pointed out by Goodhart and Wagner (2012), the lack of diversity in the banking sector *per se* can be viewed as a systemic risk, as similar institutions are likely to encounter problems at the same time, and contagion effects in a homogeneous industry are likely to be more pronounced. Diversity can also promote competition by ensuring that new and different ideas and practices are constantly present in the financial markets (Ayaldi, 2010).

When the banking sector is sufficiently diverse, there are always some banks that remain operational, which helps to maintain the liquidity of the economic system. This was demonstrated during the latest financial crisis. Although the crisis was a disaster for most banks, and the stagnation of interbank lending affected all banks in some way, a closer look reveals that the crisis did not treat banks equally. Post-crisis studies have confirmed that it is possible to explain most bank failures by bank-specific elements, such as overreliance on short-term wholesale funding, excessive risk-taking or just bad lending decisions (Liikanen Report, p. 33). When comparing different types of banks, it has been found that more retail-oriented banks have generally outperformed their competitors in terms of cost efficiency and performance measures (Ayadi, et al., 2012, pp. 23-29). In general, banks with a strong deposit base, greater income diversification, and less trading activities were less affected by the crisis (Liikanen Report, p. 33). As mentioned in the introduction, especially cooperative banks, most

of which tend to be more retail oriented and less risk-inclined, survived the crisis relatively well (Groeneveld & de Vries, 2009; Kalmi & Kerola, 2014).

However, the effects of the structure of the banking sector on financial stability go beyond those connected to diversity. One important element that affects financial stability seems to be the level of competition in the banking market. The relationship between competition and the banking sector is somewhat complex, and competition among banks has often been perceived with suspicion or even been suppressed for extended periods (Vives, 2016, pp. 1-2). For example, some believe that excess competition contributed to the outbreak and severity of the latest financial crisis by inciting excessive risk taking, credit overexpansion and bank misconduct (Vives, 2016, pp. 1-4; The World Bank, 2012, p. 81). It is certainly true that contracting interest margins have forced banks to find new sources of income to compensate for their diminishing profits. Consequently, there is a risk that banks, especially those owned by external investors, might seek higher yields from riskier investments, thus compromising financial stability. (Finanssivalvonta, 2016)

Although there is most likely a link between competition and financial stability, the results are not clear. Proponents of the so-called competition-fragility view argue that a higher level of competition might decrease the stability of the banking system. They argue that banks operating in a more competitive environment have higher incentives to take more risk and lower incentives to screen their borrowers properly. In contrast, proponents of the so-called competition-stability view claim that more competitive financial markets are less fragile. The argument is that market power raises the interest rates banks charge from firms, which in turn induces firms to take more risks with their borrowed money. In addition, a more concentrated banking market tends to produce banks that receive implicit subsidies from the authorities by being regarded as too big to fail. Such indirect subsidies provide banks with an incentive to take more risk, as possible losses will, most likely, be covered by the taxpayers. (Beck, 2008) Recently, Martinez-Miera and Repullo (2010) have suggested a non-linear relationship between bank competition and financial stability. They have found that increased competition reduces bank risk on highly concentrated markets, but when the market is already highly competitive more competition might erode individual bank's franchise value and, hence, reduce financial stability.

Most studies on the link between competition and financial stability approach the subject from the point-of-view of investor-owned commercial banks or do not otherwise take into consideration the organizational diversity of the banking sector (Fiordelisi & Mare, 2014). However, cooperative banks are an important part of most banking markets, especially in Europe, and it is evident that the presence of cooperative banks affects the competitive

dynamics of the retail banking market. Therefore, one must assume that taking the cooperative element into consideration would give both important and interesting results.

2.3. The Finnish banking sector

Most retail banking markets are oligopolies, and the Finnish retail banking market is no exception. Measured by the Herfindahl-index, the Finnish banking sector is the most concentrated in the EU[5] (Savolainen & Vauhkonen, 2015, pp. 12-13, 40), with the five largest banks holding more than 80 % of the total banking sector assets[6] (Bank of Finland, 2015). The banking system plays a major role in financial intermediation within Finland and, thus, both the operational capacity and the strength of the banking system are of utmost importance for the Finnish Economy (Bank of Finland, 2015). However, the concentration of the Finnish banking sector has not translated into severe financial instability during or after the latest financial crisis (OECD, 2010, p. 115). Finnish banks have a rather strong capital adequacy and large loss buffers, making them quite resilient and stable. However, the high concentration level of the Finnish banking sector, together with its relatively large size and close ties with the equally concentrated Nordic banking sector causes some structural vulnerability (Bank of Finland, 2015).

At the end of the year 2015, as many as 281 credit institutions were operating in Finland. However, most of them were local cooperative or savings banks that operate from within larger banking groups. The most important of these amalgamations is the cooperative OP Group, which is comprised of some 180 local cooperative banks. The market leader is the aforementioned OP Group, with a market share of 35.1 % in loans to non-financial-institutions and 36.5 % in deposits. Almost on par with OP comes Nordea with a market share of 28.1 % in loans and 28.3 % in deposits. Third place is held by Danske Bank Ltd, whose respective market shares are 9.6 % and 13.7 %. The rest of the market is split between a number of smaller commercial banks, savings banks and cooperative banks from the smaller POP Group. (Finanssialan Keskusliitto, 2016) It should be noted that especially retail banking is very much a local or regional business; thus, local market shares can differ drastically from these national figures. For example, both Nordea and especially Danske Bank have mostly closed their branches outside larger centers of population, which inevitably affects their market shares in rural areas. In contrast, many local savings banks or cooperative banks enjoy almost monopoly positions in their communities.

[5] 31.12.2013
[6] 31.12.2013

The figures presented above demonstrate the high level of concentration in the Finnish banking sector. However, a high degree of concentration does not necessarily mean that the level of competition would be low, as the latter one is much dependent on the behavior of the banks present on the market (OECD, 2010, p. 111). For example, as will be explored in greater detail later, the presence of the cooperative OP Group might increase the level of competition in the Finnish banking sector over what would be considered normal given the current level of concentration. Empirical studies on the intensity of competition have given somewhat mixed results on the level of competition in Finland (OECD, 2010, pp. 111-112). Then again, while more competition could be beneficial for the consumers (The Nordic competition authorities, 2006, p. 25), there seems to be a reasonable amount of competition in the Finnish retail banking market.

The high concentration level of the Finnish banking sector can be traced to the Nordic banking crisis of the early 1990s. The crisis taught Finnish banks and banking authorities many important, although costly, lessons and reshaped the structure of the Finnish banking sector fundamentally. Similar to the banking sectors of many of its western neighbors, the Finnish banking sector was strictly regulated until the mid-1980s, and price competition between banks was all but impossible. In many cases, competition took the indirect form of increasing market shares, by attracting deposits with the help of extensive branch networks and investments in bank technologies, which led both to reduced efficiency and excess banking capacity (Nyberg & Vihriälä, 1994, p. 8). The relatively fast deregulation of the market during the 1980s, combined with the absence of sufficient control, led to an unhealthy expansion, especially in lending. Between 1982 and 1989, real asset growth in Finnish banks was 3.7 times faster than the real growth of the economy. At its peak in 1988, total lending by deposit banks grew by almost 25 %. (Koskenkylä & Vesala, 1994, p. 8)

In retrospect, it is clear that this rapid expansion was highly unhealthy, and neither the banks, their customers, nor the relevant authorities took sufficiently into account changes in the financial environment. For example, continued competition for market shares inevitably led to lower credit standards in most banks. (Nyberg & Vihriälä, 1994, pp. 12-13) However, it is worth noting that different banking groups adopted rather different strategies during the years of market liberalization. These differences in growth strategies were later reflected in the severity of the problems individual banks faced during the crisis. Throughout the late 1980s, savings banks and especially their central bank (Skopbank) adopted an aggressive growth strategy that made them the fastest growing banking group in Finland. At the same time, most cooperative banks maintained a more conservative strategy, although there were differences between individual cooperative banks. Also, the central bank for the cooperative banks (OKO) was growing almost as fast as Skopbank. Of the two largest commercial banks, KOP grew

faster during the whole period than its biggest rival UBF. (Koskenkylä & Vesala, 1994, pp. 10-11)

The bubble finally burst in the early 1990s, when the Finnish economy was plunged into a sharp downturn. Bankruptcies increased, unemployment rose rapidly up to 20 %, and the Finnish Markka was devalued. At the same time, interest rates were exceptionally high. This toxic mix drastically reduced the public's capacity to service its debt, and with real estate values simultaneously plummeting, banks started to report heavy credit losses. (Nyberg & Vihriälä, 1994, pp. 18-19) While all banks suffered from the crisis, it was the aforementioned Skopbank that became the first casualty of the crisis. In hindsight, one can say that the boom and bust of the Finnish banking sector were embodied in the rise and fall of Skopbank.

Skopbank had been under special surveillance by the Finnish bank supervisors since autumn 1989, and by the fall of 1990 authorities proposed a restructuring programme aimed at managing the bank's significant risk exposures and strengthening its capital base. It became, however, soon evident that Skopbank could not meet the goals of the restructuring programme, and in 1991 the Bank of Finland took over the bank. (Nyberg & Vihriälä, 1994, p. 21) The fall of Skopbank caused severe problems for the rest of the Savings Bank Group, and while many smaller local savings banks fared relatively well, combined losses of the group were mounting. The Finnish government decided in 1992 to support the ailing savings banks, on the condition that about half of them merged to form the new Savings Bank of Finland (SBS). The goal was to make SBS profitable by 1996, although this was never achieved, and in 1993 the sound parts of SBS were sold to its largest competitors, while the rest of it was transferred to Arsenal Ltd, a government sponsored asset-holding company. The sound parts of Skopbank were later bought by the Swedish Handelsbanken, which was seeking access to the Finnish retail banking market.

Before the crisis, the savings bank group was the largest banking group in Finland, but within two years it had almost disappeared. The fall of Skopbank, and especially the sale of SBF, significantly affected the market shares of Finnish retail banks (Nyberg & Vihriälä, 1994, p. 39). However, the fall of the savings bank group was not the only event in the early 1990s that altered the structure of the Finnish banking sector. In 1995, the two largest commercial banks in Finland, KOP and UBF, merged to form Merita Bank. The crisis had taken its toll on both banks, and especially KOP was in bad shape. This merger was soon followed by a cross-border merger with the Swedish Nordbanken, followed by subsequent mergers with smaller banks from Denmark and Norway, eventually forming the Nordic banking group Nordea. (Kjellman, et al., 2004, pp. 259-260 & 264-265) The state-owned postal savings bank Postipankki survived the crisis but was privatized soon after it. The bank was first merged with

the equally state-owned Suomen Vientiluotto and subsequently privatized and merged to the investor-owned insurance company Sampo. In 2007, the Danish Danske Bank bought Sampo's banking business and, thus, the Danes entered the Finnish banking markets (Danske Bank, 2016) To make matters somewhat more complicated, Sampo is today the largest shareholder of Nordea Bank, thus retaining a foothold in the Finnish banking sector.

Finnish cooperative banks were also affected by the crisis. Especially the larger city-based cooperative banks, which had ventured into risky corporate financing, suffered significant losses and were effectively rescued by the more risk averse rural cooperative banks. Although no cooperative bank went under during the crisis, many were merged into larger or more solid cooperative banks. Hence, the number of cooperative banks decreased considerably between 1990 and 1995. The crisis opened many old wounds inside the OP group, and while most of the group decided to increase their cooperation, a number of mostly small and solid rural banks decided to leave the group. These banks subsequently formed a loose network of local cooperative banks, which would be called the POP-group. (Kjellman, et al., 2004, pp. 264-266; Kuusterä, 2002, pp. 323-342) Thus, the rift created two competing cooperative banking groups and led to a situation where there are several local markets in Finland where two different cooperative banks are competing against each other. However, it should be noted that the POP Group has remained significantly smaller than the OP Group. At the end of the year 2015, the POP Group had 26 member banks with an aggregate balance of some 4 billion euros (POP Group, 2016), while the OP Group consisted of some 180 banks with an aggregate balance of over 125 billion euros[7] (OP Group, 2016).

[7] It is also wort noting that after the latest financial crisis and the changes made to banking regulation, several cooperative banks have left the smaller POP Group to rejoin the OP Group.

3. Cooperative banks and their identity

3.1. The cooperative business model

3.1.1. The cooperative identity

Prevalent economic theory and policy are much affected by the capitalistic view of the firm, according to which businesses have only one social responsibility: to increase the wealth of their owners by using their resources efficiently and by generating as much profit as possible (Friedman, 1970). However, it is recognized that there are firms and other organizations that pursue wider objectives than mere profit maximization (Belleflamme & Peitz, 2010, p. 16). In economic literature, such organizations are usually represented by welfare-maximizing charities or state-owned enterprises, the natural antithesis of the capitalistic firm. The cooperative business model is not easily accommodated in this bipolar view of firms either as privately-owned profit maximizers or as state-owned welfare maximizers. While several, especially larger, cooperative enterprises may have become difficult to separate from their mostly investor-owned competitors, there are several important differences between these business models. Cooperative firms have a unique identity, and their set of objectives and values is original (Puusa, et al., 2013). In order to properly understand how the presence of a cooperative bank affects the balance and the competitive dynamics of a retail banking market, one must first understand the identity and characteristics of cooperative banks, and how these affect the strategic decisions that cooperative banks make.

As it is with all business models, not all cooperatives are alike. The cooperative business model has been used as a form of organization in several industries all over the world, and there are successful cooperatives of all sizes. In addition, there are some significant differences between cooperatives that have to do with the nature of their member community. Thus, cooperatives have traditionally been categorized either as worker, consumer, or producer cooperatives. Despite this heterogeneity, there are some elements that are common to all cooperatives. These constitute the cooperative identity, best captured by the internationally accepted Statement of Cooperative Identity (see Annex 1 or http://ica.coop). The Statement was drafted by the International Cooperative Alliance's in 1995 and enshrined in full in Recommendation 193/2002 of the International Labour Organization (ILO) (Sanchez Bajo & Roelants, p. 116).

First of all, the statement defines the cooperative as,

> *"an autonomous association of persons united voluntarily to meet their common economic, social, and cultural needs and aspirations through a jointly owned and democratically-controlled enterprise."*

If we examine the definition more closely, we can find three essential elements that define the cooperative identity. First of all, cooperatives are defined as *associations of persons* that share a set of common needs and aspirations. This differentiates them from capitalistic business models, such as joint-stock companies, best described as *associations of capital* (Sanchez Bajo & Roelants, 2013, p. 116). In practice, this difference means that member rights in cooperatives are primarily based on the member and her transactions with the cooperative, and not on the amount of capital invested by her in the firm.

Secondly, the *raison d'être* of a cooperative enterprise is to help its members meet their common needs and aspirations. Therefore, the primary objective of a cooperative is to help their members to increase their welfare by providing them with affordable, good quality, goods or services. In contrast to capitalistic firms, cooperatives do not, thus, seek to maximize their profits, but the welfare of their members (Sanchez Bajo & Roelants, p. 117; Puusa, et al., 2013). However, cooperatives are not charities either, and even if they do not seek to maximize their profits, they must remain economically profitable in the long run. In practice, this means that while cooperatives do not pursue profit maximization to the same degree, or with the same intensity, as investor-owned firms, they need to generate sufficient profits in order to survive and grow (Ayaldi, et al., 2010, p. 8). While this might not always be beneficial for the members in the short run, it ensures the success of the cooperative enterprise and the fulfillment of its primary objectives in the long run.

Thirdly, cooperatives operate through a jointly-owned and democratically controlled business enterprise. As put by Sanchez Bajo and Roelants (2013, pp. 116-117), cooperatives are meant to further the needs and aspirations of their members "by means of entrepreneurial activity in the private sphere," which distinguishes them from most NGOs, clubs and other types of not-for-profit associations. In this respect, cooperatives resemble normal business enterprises, which explains, to some extent, why cooperatives are sometimes hard to distinguish from their competitors. However, being jointly-owned and democratically controlled differentiates cooperatives further from the capitalistic business models. For example, it is generally not allowed for one person to own a larger stake in the cooperative, and all decisions by the member community are made democratically according to a one-member-one-vote-principle (Sanchez Bajo & Roelants, p. 121).

In addition to the definition above, the Statement of Cooperative Identity manifests the underlying values of all cooperative enterprises, which are: self-help, self-responsibility, democracy, equality, equity, and solidarity. Moreover, the Statement also defines the following seven cooperative principles, guidelines by which cooperatives put their values into practice:

1. voluntary and open membership,
2. democratic member control,
3. member economic participation,
4. autonomy and independence,
5. education, training and information,
6. cooperation among cooperatives and
7. concern for community (ICA, 2016).

Most businesses today have some set of values that they claim to adhere to. However, for cooperatives, the above-mentioned values and principles are not just justifying ones, but underlying ones and they are a key element in understanding what cooperatives are and what they stand for (Sanchez Bajo & Roelants, 2013, p. 126). There are however differences in the importance of these principles. For example, while the needs of its members should be of primary concern for any cooperative, whereas concern for the community can be seen as a secondary objective, which guides, but does not define, the behavior of a cooperative. In general, one can describe the first four principles as core principles without which a cooperative would lose its identity, whereas the three latter ones are important guidelines, but not as crucial in defining the nature of a cooperative enterprise (Birchall & Ketilson, 2009).

According to the first cooperative principle, membership in a cooperative enterprise is both voluntary and open to anyone who shares the same needs and aspirations as the rest of the member community. Even though, there might be some legal or practical constraints that in practice limits membership geographically or to a particular group of people[8] (Sanchez Bajo & Roelants, 2013, p. 119). While membership in a cooperative is open to a large group of people, the cooperative itself is an autonomous and independent entity. Cooperatives are indeed full-fledged private enterprises enjoying complete autonomy and independence from any third party, including, in most cases, external investors. (Sanchez Bajo & Roelants, 2013, p. 119) As mentioned above, cooperatives are controlled democratically by their members. This distinguishes them from investor-owned firms where voting rights can be concentrated to a small minority of shareholders (Sanchez Bajo & Roelants, 2013, p. 121). In order to ensure that democratic member control can work, cooperatives not only employ professional managers, but also invest in the education and training of its members and especially those who participate in the management and governance of the cooperative enterprise (Sanchez Bajo & Roelants, 2013, p. 122).

[8] For example, membership in the Metsäliitto cooperative is limited to Finnish forest owners (Metsäliitto) and only individuals with a Finnish personal identity code and a permanent address in Finland can become members of a S Group cooperative (S Group)

Although there is no inherent need for a capital investment when founding a cooperative enterprise (Puusa, et al., 2013), members are in most cases required to contribute to the capital of their cooperative. This contribution is usually performed through a membership fee, which is collected by the cooperative from its members (Sanchez Bajo & Roelants, 2013, p. 125). Membership fees should not be seen only as capital investments, but more generally as an expression of the cooperative's nature as an autonomous self-help institution, which is not dependent on external investors or benefactors. In many cases, the membership fee is quite small[9], and it is generally refunded for its nominal value when the membership expires. On the other hand, members usually receive only limited, if any, compensation for the capital inscribed in the cooperative, and in most cases, membership shares cannot be traded, thus eliminating the possibility of the emergence of a secondary market, where the value of a member share could surpass its nominal value. (Sanchez Bajo & Roelants, p. 123)

An important feature of the cooperative enterprise is that a significant proportion of its assets are considered common property on which neither individual members nor the current member community together, have any legal claim[10] (Sanchez Bajo & Roelants, p. 124). These are the cooperative's capital reserves, profits left in the company and used to enable growth and to act as buffers during an economic downturn. They constitute an *intergenerational endowment* (Fonteyne, 2007), collected by previous member generations for the benefit of future generations. Current members and managers of the cooperative can be seen merely as custodians of this endowment. The members are allowed to use it for their own benefit indirectly via the cooperative, but they have no legal claim to it. On the contrary, they are expected to use it to develop the cooperative and to increase the size of the endowment for the benefit of future member generations (Sanchez Bajo & Roelants, 2013, p. 126).

The existence of an intergenerational endowment affects the behavior of cooperatives in many ways. First of all, it steers cooperatives towards an economic thinking based on generations, not on quarters, thus contributing to the stability of cooperative enterprises. Secondly, it means that older and successful cooperatives tend to have an abundance of capital earned by earlier generations of members, which makes it possible for cooperative enterprises to pursue other objectives than mere profit maximization. (Fonteyne, 2007, p. 20) On the other hand, large

[9] The membership fee of the two largest consumer cooperatives in Finland: S Group (retail) and Op Group (banking) is 100 euros each. The fee is returned after the membership expires.

[10] In many cases the legislation or the rules of the cooperative stipulate that if the cooperative would be dissolved, these funds will not go to the current members, but to another cooperative or that they should be used for charitable purposes. Although, it should be noted that there are several examples of cooperative demutualization, where a cooperative has been transformed into a joint-stock company. In such occasions the cooperative firm's current assets are de facto handed to its current members in the form of shares in the new company.

amounts of ownerless capital have the potential of making the cooperative susceptible for different types of undesirable managerial behavior, such as empire-building (Fonteyne, 2007, p. 37).

While cooperatives do not seek to maximize their profits, successful cooperatives tend to be profitable business enterprises. If a cooperative manages to generate some surplus, the third cooperative principle gives three possible uses for it. First of all, the surplus can be used for the development of the cooperative enterprise, for example, by increasing the cooperative's capital reserves. As will be discussed later, this is important, especially for cooperative banks that need to have sufficient capital reserves to fulfill their task while complying with ever-stricter capital requirements. Secondly, the surplus, or part of it, can be distributed to the members in proportion to their transactions with the cooperative. The rationale behind this is that surplus redistribution in a cooperative is primarily an adjustment system, where the members are compensated for the surcharge that they have been paying for the goods and services provided by the cooperative during the past year. However, it should be noted that it is not uncommon that a part of the surplus is returned to the members relative to the capital invested by them in the cooperative. Finally, parts of the surplus can be used for supporting other activities approved by the membership. In some countries, successful cooperatives have a legal obligation to provide funds for the development of the cooperative system, but mostly it is about sponsorship, charity and voluntary participation in different community projects (Sanchez Bajo & Roelants, 2013, pp. 123-126).

While cooperatives are primarily concerned about their member communities, the final cooperative principles also reflect a concern for the community in general. Through their members, cooperatives tend to be closely linked with the development of the surrounding community. This close connection is of particular importance for cooperative banks, whose relationship with their surrounding community is often quite symbiotic. Recent empirical studies have found that small and medium-sized firms perform better in countries with a large number of cooperative banks (Hasan, et al., 2014), and that small local banks, such as cooperative or savings banks, can improve local development and have a relatively high impact on economic growth, especially in poorer regions (Hakenes, et al., 2014). As mentioned above, cooperatives can use part of their surplus to sponsor local athletes, or youth organizations, or to participate in different community projects. In the past cooperatives also had an important task in educating and informing, not only their members but the surrounding community in general (Kuisma, et al., 1999, pp. 31-33). While the importance of such

education has reduced, especially in developed countries, cooperatives still try to keep their members informed about topics within their field of expertise.[11]

3.1.2. The dual nature of the cooperative enterprise

One of the most distinct features of the cooperative business model is its dual nature. As explained above, cooperatives are both associations of persons and business enterprises (Puusa, et al., 2013). This duality also extends to their members, who are not only owners of a cooperative, but also customers, workers or producers of a jointly-owned enterprise (Sanchez Bajo & Roelants, p. 118). While the Statement of Cooperative Identity defines the enterprise-character of a cooperative as subordinate to its character as an association of persons, both of these aspects are essential in defining the cooperative identity, and removing either of them would strip the cooperative of its unique identity.

As discussed above, the primary objective of a cooperative is to maximize the welfare of its member community by helping them to meet their various needs and aspirations. In theory, cooperatives could do this best by providing their members with the goods and services they need free of charge. However, cooperatives are not charities but autonomous self-help organizations, who mostly lack external investors or benefactors. This, combined with their role as a privately-owned business enterprise, requires them to remain sufficiently profitable while pursuing their primary objective. Remaining sufficiently profitable is important, especially for cooperative banks, as poor profitability could make people doubt their soundness and liquidity. Such mistrust is never good for a bank, let alone one whose possibilities to raise additional equity capital are limited (Fonteyne, 2007, p. 27), and could even expose it to a bank run. In addition, accumulating their capital reserves through retained profits is essential for cooperative banks wishing to increase their output. Ayaldi et al. (2010, p. 8) have, thus, described cooperative banks and other stakeholder banks as, "dual bottom line institutions." This means that in contrast to investor-owned profit maximizers, cooperative banks and cooperative enterprises in general have two bottom line objectives: the maximization of their members' welfare and sufficient profitability.

It should be noted that cooperatives are by no means alone in pursuing increased welfare, while constrained by a need to be economically profitable. For example, many state-owned enterprises and other not-for-profit firms are *de jure* required to survive without external funding. However, they are not dual bottom line institutions in the same meaning as cooperatives are, as most of them have *de facto* access to external funding, either in times of

[11] For example, banks within the OP Group still hold free-of-charge lectures for their members or people from their surrounding community that go beyond the needs of marketing.

crisis or when they are forced to make significant investments. In theory, cooperatives could turn to their members for additional equity funding. However, this possibility is in most cases only a very limited option. Due to this, cooperatives have a continuous, although variable, need to generate profits in order to grow their reserves and expand their business.

Unlike most firms, which only have one clear objective, cooperatives must constantly balance between their primary objective of increasing the welfare of their members and their secondary, albeit equally important, objective of being economically profitable in the long run. In practice, this balancing is incorporated into the strategy and budget of the cooperative enterprise. However, much of the balancing is also made at lower levels of organization, where the actions of individual employees can have a significant impact on the behavior of the cooperative.

The optimal solution for the balancing problem is found somewhere in between the poles of profit maximization and welfare maximization. If the cooperative puts too much weight on improving the welfare of its members, it might endanger its profitability. On the other hand, if the behavior of the cooperative approaches that of a profit-maximizer, it might alienate its members and end up losing its unique identity. As cooperatives are meant to endure over generations, the balancing problem also includes an intergenerational element. If the cooperative decides to increase the welfare of its current member community at the cost of its profitability, it ends up stealing from future member generations. On the other hand, being overly profit-oriented implies a transfer of wealth and welfare from the current member community to future member generations.

It is important to note that the nature of the balancing problem depends much on the type of the cooperative. For example, there are differences both in the amount of capital reserves needed by a cooperative and its ability to collect them from its members. Some cooperatives are, thus, more dependent internal financing and need to generate an extensive amount of profits in order to survive and grow. The exact purpose of the cooperative and the needs and aspirations of its members affect the nature of the balancing problem greatly. For example, in some worker or producer cooperatives welfare maximization and profit maximization can be positively correlated to each other, whereas the correlation between these two objectives is negative in most customer cooperatives. However, one should remember that, despite these differences, all cooperatives are dual bottom line institutions. The primary objective of a worker or producer cooperative is not to maximize its profits, but to increase the welfare of its members by giving them a chance to practice their vocation or by helping them to refine and sell their products. Selling the cooperative's products on the market, according to a strategy that maximizes the cooperative's profits, is in many cases beneficial for the cooperative's both

objectives. However, increasing the cooperative's profits by cutting the salaries or the producer prices, which the cooperative pays its members, means shifting the balance from welfare maximization towards profit maximization.

In cooperative banks and other consumer cooperatives, the balancing problem is more straightforward, because their members are also their primary source of revenues. For example, raising the prices that a cooperative bank charges its members directly decreases their welfare. Conversely, if the cooperative desires to increase the welfare of its current member community, it can lower its prices or raise the quality of its products or services (Juvin, 2005). Increasing the efficiency of the cooperative enterprise could allow it to increase both its own profits and the welfare of its members, or one of them without hurting the other. However, if this is not an option, any movement towards one of the objectives takes the cooperative further from the other.

Defining the cooperative as a dual bottom line institution, places it somewhere in-between the profit-maximizing investor-owned firms and the welfare-maximizing organizations, such as charities and certain state-owned enterprises. The exact status of the cooperative enterprise varies from time to time and depends on its strategic choices. This can be illustrated by drawing a line, which starts from the profit-maximizers and ends with the at the pure welfare maximizers. The cooperative is then placed somewhere on this line, depending on its current strategy and behavior. When a cooperative emphasizes its profitability objective, it will move closer to the investor-owned profit maximizers, and when it concentrates more on its primary objective, it moves closer to the charities and the state-owned firms with welfare maximizing objectives, at the other end of the line. However, it is important to note that a cooperative should reach neither end of the line, as this would mean that it has lost its original identity and become either a profit maximizer or a true welfare maximizer.

3.1.3. Decision-making in a cooperative enterprise

As mentioned above, cooperatives are not only jointly owned but also democratically controlled enterprises. This means that ultimately cooperatives are controlled by their members according to a one-person-one-vote principle, which is a significant difference vis-à-vis investor-owned firms, where the ultimate authority lies in the hands of their shareholders, who vote based on a one-share-one-vote principle. A further difference between investor-owned firms and cooperatives is that shareholders are usually free to sell their shares and, thus, transfer their investment to another company, whereas members of a cooperative are more bound to their cooperative, as they cannot change their identity or socioeconomic stakes overnight. This should steer cooperatives towards more long-term business strategies, based

more on stability and sustainability than quick profits and relatively high risk. (Sanchez Bajo & Roelants, 2013, p. 121)

One important aspect of democratic member control is that it makes it more difficult for a single entity to control a cooperative enterprise and effectively prevents takeovers of cooperatives (Sanchez Bajo & Roelants, 2013, p. 121). However, the downside is that the decision-making procedure of a cooperative can be, if not properly managed, quite slow and costly (Hansmann, 1996, p. 89). Therefore, in larger cooperatives, where direct member control would be downright impossible, it is common to use democratically elected representatives to whom these powers are transferred to. In addition, several larger and more complex cooperatives, such as most cooperative banks, trust the responsibility of operative management to professional managers. In this respect, cooperatives are no different from their investor-owned competitors who often use professional managers as agents for their shareholders. The use of professional managers most likely increases the efficiency and professionalism of a cooperative, but also exposes it to similar principal-agent-problems that investor-owned firms are faced with.

These principal-agent-problems can be even more likely and more profound in cooperatives than in investor-owned firms. Particularly in larger cooperatives, members tend to be less in touch with the management of their cooperative. From a cost-benefit point-of-view, it is difficult to rationalize why an individual member should use her time and effort to monitor the managers of the cooperative if her personal stake in the firm is relatively small (Fonteyne, 2007, pp. 35-36; Hansmann, 1996). The problem is somewhat remedied through the use of elected representatives. However, even if these elected representatives are motivated and sufficiently educated or trained, their ability to supervise the professional managers of the cooperative are limited. This is a problem, especially in cooperative banks and other cooperatives operating in highly complex and regulated industries where managers have an informational advantage over the representatives of the member community. In addition, the dual nature of the cooperative enterprise makes it even more difficult for the members and their representatives to supervise their agents. It is harder to measure and monitor management performance in a cooperative with two somewhat contradictory objectives than in firms that have only one clear objective (Fonteyne, 2007, p. 31).

Managers of a cooperative enterprise can be considered as custodians of the cooperative's intergenerational endowment. In this role, they should act much like the board of a foundation, thus, taking into account not only the needs and aspirations of the current member generation, but also the potential future generations of members (Fonteyne, 2007, p. 27). There is a risk that insufficient monitoring by current members might allow the management to use the

intergenerational endowment to further their own personal ambitions, for example, by engaging in empire-building or by putting unnecessary weight on the cooperative's financial profitability when competing against their colleagues in the cooperative's investor-owned competitors. However, while there are certainly some real problems relating to the governance of cooperative enterprises, most established cooperatives have been managed well, and their built-in checks and balances have been proven sufficiently efficient. In the rest of this thesis, I will mostly bypass any agent problems and assume that the management acts in accordance with the wishes of the cooperative's member community.

However, it is not always easy to recognize what the members wish of their cooperative. In fact, the member community of a larger cooperative is only rarely homogeneous, and individual members tend to have different expectations towards their jointly-owned enterprise. This heterogeneity is especially apparent in cooperative banks because they are associations that bring together young and old, rich and poor, depositors and borrowers -people with entirely different needs and aspirations. Considering this heterogeneity, it is evident that a cooperative cannot always make strategic decisions that would be in the interest of all its members. For example, closing a quiet branch might make perfect sense for the majority of the member community, as it would reduce the bank's costs without significantly affecting the welfare of most of its member community. However, for the welfare of those actively using the services of said branch, such decision might appear highly costly.

The democratic decision-making process used in cooperatives tends to produce results that satisfy the needs of the median member (Fonteyne, 2007, p. 10; Hansmann, 1996, p. 31). When using the above-mentioned balancing problem as an example, this means that half of the member community will think that the cooperative puts too much weight on its economic performance while the other half thinks that it should put more weight on it. However, one should bear in mind that this applies only if all of the members participate in the decision-making process. In reality, member participation, especially in larger cooperatives, tends to be very limited (Fonteyne, p. 30). This means that, in practice, a decision made by a cooperative reflects more the needs and aspirations of its active members than the needs and aspirations of its entire membership. In addition, there are inevitably groups of members who have more influence in the cooperative than their member share would allow. This might, if not properly managed, distort the decision-making process of a cooperative with possibly severe consequences.

3.2. Cooperative banking

3.2.1.150 years of cooperative banking

Cooperative banks are financial institutions that are owned by their customers, and that adhere to the cooperative principles presented above. The *raison d'être* of a cooperative bank is to help its members meet their various needs and aspirations by providing them with safe and affordable financial services. In contrast to their mostly investor-owned competitors, cooperative banks are not profit maximizers, and the rate of return on capital is not their principal business objective (Ayaldi, et al., 2010, p. 13), although it is still an important performance indicator and strategic tool even for cooperative banks.

Since cooperative banks lack external shareholders, any surplus created by the cooperative bank belongs solely to the cooperative bank itself or its members. Much of the value added by a cooperative bank is, thus, already incorporated in the price or of its products and services (Ayaldi, et al., 2010, p. 11; Juvin, 2005, pp. 11-12). However, being sufficiently profitable is crucial for cooperative banks and, therefore, cooperative banks tend to generate a profit that can be used to increase its capital reserves. As with cooperatives in general, the capital base of the cooperative bank does not directly belong to its current member community, but is essentially an intergenerational endowment, managed by the cooperative bank for the benefit of both present and future members.

If we consider that a bank is essentially an institution that sells financial services to its customers, we can categorize cooperative banks as consumer cooperatives (Fonteyne, 2007, p. 6). However, the member community of a modern cooperative bank can be quite heterogeneous, and the needs and aspirations of individual members tend to be rather diverse (Birchall & Ketilson, 2009). In addition, most cooperative banks also have customers that are not members of the cooperative, which further increases the heterogeneity of the community that they serve. [12] These non-member customers are in most cases served in the same way as the bank's proper members, but they are left outside any discounts or benefits reserved for members only, which means that the profit margins for services provided for non-member customers are generally higher.

The history of cooperative banking is over 150 years old, with the first cooperative banks appearing as part of a larger cooperative movement during the second half of the 19th century. The first cooperative banks were founded in Germany, during the 1850s, by the initiative of

[12] The ratio between customers that are members and customers that are not members varies greatly between different cooperative banks. For a summary of statistics from different European cooperative banks, see Brichall (2013), p. 20.

Hermann Schulze-Delitzsch and *Friedrich Raiffeisen*. The principal motivation behind the creation of the first cooperative banks was to fight usury and to provide credit and other financial services to those left outside conventional financial markets. As Ayaldi et al. (2010, p. 1) put it, "the financially excluded had to become self-reliant."

Both banks founded and inspired by Schulze-Delitzsch and Raiffeisen were self-administering financial self-help institutions that relied on solidarity among their members (Ayaldi, et al., 2010, p. 28). Yet, there were important differences between these two types of cooperative banks that had to do both with the ideas of their founders and the communities in which they were situated. While Schulze-Delitzsch's banks were mostly situated in towns where they helped artisans and small businesses to acquire much-needed capital, banks founded by Raiffeisen were mostly found in rural areas where they helped farmers and other rural dwellers to become financially self-reliant (Birchall, 2013, pp. 8-14). In addition, banks founded by Schulze-Delitzsch usually demanded their members to buy a membership share, the price of which could be quite substantial. In return, a significant part of the surplus generated was paid back to the members as a dividend for their membership share. On the other hand, cooperative banks in the Raiffeisen system required only the payment of a nominal membership fee, or in some cases no payment at all. The lack of a mandatory capital investment was countered in the Raiffeisen system by a more stringent approach to the unlimited liability of the bank's members. Also, all surplus generated by the Raiffeisen-banks was used to grow their capital reserves. (Birchall, 2013, pp. 14-16).

The cooperative business model soon proved suitable for banking and, thus, cooperative banks spread all over Europe, reaching Finland by the end of the 19th century. Here, cooperative banks were founded according to the Raiffeisen-system and, thus, the system was based on the idea of local independent credit societies tied together by a strong central organization. Local cooperative banks or credit societies were meant to be so small that their members would know each other and have the ability to monitor each other efficiently. The credit societies were to finance themselves primary through deposits collected from their members, and they would operate under full joint liability. Unlike in many other countries, the Finnish cooperative banking sector was set up in a top-down process, with support from the Finnish government (Fonteyne, 2007, p. 8). OKO, the central credit fund for the local credit societies was founded in 1902 and given the task to acquire capital for the credit societies that were being founded throughout the country. OKO was largely funded by credits from the state, but also by some of the country's largest commercial banks[13], whose owners and managers embraced the idea

[13] In 1915, when the equity capital was raised from 0.3 million marks to 1.0 million marks, the commercial banks actually acquired 73 % of the new shares.

of financially educating and elevating their rural compatriots, and who did not see the small credit societies as their rivals (Kuusterä, 2002, pp. 22-23).

Despite their modest origins, cooperative banks have become an important part of the European banking sector, and cooperative banks hold significant market shares in many European countries (Birchall, 2013, pp. 16-32). In fact, some of the largest banks in Europe are cooperatives (ECAB, 2016). As Fontayne (2007, p. 14) points out, most European cooperative banks have by now reached an advanced level of maturity, where their original *raison d'être* of improving the life quality of rural dwellers, artisans or small businesses has reduced in relevance.

The resilience of European cooperative banks was put to the test during the latest financial crisis. While many cooperative banks suffered heavy losses during the crisis and its long aftermath, several empirical studies have suggested that cooperative banks and especially cooperative banks with a close group structure survived the crisis relatively well (Groeneveld & de Vries, 2009; Kalmi & Kerola, 2014). The profitability of the average cooperative bank was improved, especially when compared to investor-owned commercial banks, and cooperative banks were not forced to cut their lending as much as banks in general. Also, the Tier 1 capital ratios and credit ratings of cooperative banks remained relatively high throughout the crisis (Groeneveld & de Vries, 2009; Kalmi & Kerola, 2014; Birchall, 2013, pp. 102-108). These empirical findings confirm pre-crisis results suggesting that cooperative banks are more stable than investor-owned commercial banks (Hesse & Čihák, 2007). All in all, the crisis demonstrated that cooperative banks are still a viable alternative for investor-owned banks and might even help to increase financial stability in general (Ayaldi, 2010).

There are several reasons for why cooperative banks survived the crisis better than their competitors and why they appear to be more stable. First of all, although many cooperative banks have turned into full-fledged modern universal banks, they are still more focused on serving their local or regional clients, and they tend to be more retail-oriented than the investor-owned commercial and investment banks (Köhler, 2015). This strategy was proven successful during the crisis, which was characterized by substantial losses from global trading activities. Secondly, a key strength of many cooperative banks is their ability to mobilize and retain deposits, which typically leads to healthy levels of liquidity, high deposit-to-loan ratios and less reliance on the interbank markets as a funding source (Fonteyne, 2007, p. 12). Thirdly, as was explained by Hesse and Čihák (2007) in their pre-crisis study, cooperative banks are more stable than commercial banks due to a much lower volatility in their returns. Hesse and Čihák suggested that this might be caused by the fact that cooperative banks pass on most of their returns to their members in normal times, but can recoup that surplus in weaker periods. An

alternative explanation to this lower volatility could be that, due to the lack of external investors, cooperative banks have lower incentives to take on risks (Fonteyne, 2007, p. 41; López-Puertas Lamy, 2012). Finally, as customer-owned enterprises, cooperative banks may have an edge in portraying trustworthiness (Fonteyne, p. 14). This was definitely a beneficial trait during a crisis that eroded the image of the banks and the banking industry in general and could in part explain why cooperative banks did not suffer as much as their competitors.

3.2.2. The comparative advantages of cooperative banks

As implied above, cooperatives enjoy a number of comparative advantages that helped them to survive the latest financial crisis better than their investor-owned competitors. These advantages do not only increase the resilience of cooperative banks during a crisis, but more generally, give them an advantage in their competition against investor-owned banks. While many of the comparative advantages that early cooperative banks enjoyed have been eroded, new ones have emerged to replace them, which has ensured the success of cooperative banks through all these years (Fonteyne, 2007, p. 9).

One of the explanations for the success of the first cooperative banks was their ability to overcome the opportunistic behavior by borrowers. The small size of the early cooperative banks allowed the banks and their members to screen and monitor borrowers more efficiently. In addition, the social pressure to honor one's credit was also an important factor in the close-knit communities where cooperative banks were often situated. (Fonteyne, 2007, p. 9) As cooperative banks evolved, the idea of joint liability among members was dropped and replaced, in most cooperative banking groups, with some level of joint liability within the group. With joint liability gone, and the size of cooperative banks growing, the collective screening and monitoring efforts performed by the members also lost most of its importance, and members have mostly handed this task to paid clerks and managers (Ayaldi, et al., p. 2).

Although cooperative banks might have lost most of their comparative advantage in overcoming opportunistic behavior by borrowers (Fonteyne, 2007, p. 9), the relatively close connection that they have with their customers may still provide them with an informational advantage that gives them an edge in identifying both the needs and the risk profiles of their customers (Fonteyne, 2007, p. 10). This connection is further enhanced by the fact that cooperative banks tend to have relatively extensive branch networks[14] (Birchall, 2013, pp. 9-11; Fonteyne, 2007, p. 11). In general, the fact that cooperative banks are owned by their customers, and that their primary purpose is to increase the welfare of their members, makes

[14] Although one can argue that the significance of physical presence is declining in the age of internet and mobile services.

the relationship between cooperative banks and their customers special. Thus, it can be expected that the customer-owners of cooperative banks are generally more loyal to their bank than customers of other types of banks are[15]. Being owned by their customers, and stating to the public that they seek to further the welfare of their members, also helps cooperative banks to establish trust, an essential feature for all banks, especially during and after a severe financial crisis. Customers might even be willing to pay a premium for the products and services provided by the cooperative bank, if the presumed risks and monitoring costs involved are lower (Fonteyne, 2007, p. 14).

However, this does not mean that cooperative banks can count on their members to stay with the bank under all circumstances or even to purchase all of their financial services from it (Fonteyne, 2007, p. 11). Instead, cooperative banks are somewhat tied both to their local market and their core customers, which might become a problem, if the community is declining either economically or demographically (Fonteyne, 2007, p. 11). This problem is somewhat alleviated by the fact that cooperative banks, particularly in Europe, have organized into regional or nationwide networks. The properties and the level of integration of these groups vary from voluntary and decentralized to highly integrated, centralized systems, although the trend has been towards increasing integration and the concentration of power to the central organizations. Being part of a larger network might help cooperative banks trapped in a declining community, for example, by helping them to continue to serve customers that have moved away from the bank's vicinity. (Fonteyne, 2007, p. 16)

Having no external owners holds several advantages for cooperative banks. Most importantly, it significantly lowers their cost of capital. Whereas investor-owned banks must pay a substantial part of their profits as a dividend for their shareholder, most cooperative banks do not remunerate their member shares very generously. In addition, a significant part of the equity capital of an established cooperative bank is composed of a so-called intergenerational endowment to which the current member generation has no direct claim. This means that although the cooperative bank would remunerate its member shares to some degree, a substantial part of its equity capital does not need to be remunerated at all. This lower cost of capital gives cooperative banks a comparative advantage vis-à-vis their investor-owned competitors and enables them to further the needs and aspirations of their members more freely (Birchall, 2013, pp. 120-121; Fonteyne, 2007, p. 10). For example, if an investor-owned bank and a cooperative bank are equally efficient and have access to the same production

[15] In a Finnish study conducted in 2016 by Asiakkuusmarkkinointiliitto ASML and Avaus Marketing Innovations both cooperative banking groups operating in Finland were amongst the five firms having the best customer experience and customer loyalty. (www.asiakkuusindeksi.fi)

technologies, the cooperative bank, which is not required to service externally-held capital, can charge its members a smaller interest margin (Ayaldi, et al., 2010, pp. 9-11). In addition, cooperative banks can use the surplus normally returned to their members as a buffer during economic hardship, which greatly increases the resilience of cooperative banks during an economic crisis (Birchall, 2013, pp. 95-98; Hesse & Čihák, 2007).

However, comparing the overall efficiency of cooperative and investor-owned banks is not a simple task due to the differences in their objectives (Fonteyne, 2007, p. 19). For example, higher personnel costs do not necessarily imply that a cooperative bank would be less efficient than its investor-owned competitor. Instead, these higher costs might be explained as an investment into the quality of the cooperative bank's services, which is an important component in increasing the welfare of its members[16]. Nevertheless, when comparing the returns and cost-to-income ratios of cooperative banks and their competitors during a period just before the financial crisis, Ayaldi et al. (2010, pp. 126-128) found that cooperative banks, despite some national differences, are not consistently different from their competitors. In some European countries, cooperative banks are even more profitable or more efficient than other types of banks.

The lack of external owners also protects cooperative banks from a potential conflict of interest that could arise between the owners of the bank and its customers (Birchall, 2013, pp. 119-120). This, in theory, makes the cooperative bank more stable and less conflicted in its strategy choices. In addition, the fact that the ownership stakes in cooperative banks are generally not marketable, shields cooperative banks from the threat of hostile takeovers, which might be damaging to the bank (Ayaldi, et al., 2010, p. 13). This also protects the locality of cooperative banks, which is a major factor in promoting customer loyalty. However, having no external owners does not entirely remove the prospect of conflicts of interest from within the bank itself. As discussed earlier, the member community of a modern cooperative bank can be quite heterogeneous, and the needs and aspirations of its individual members might be incoherent or even contradictory. Moreover, only a minority of the members takes actively part in the governance of their cooperative bank, which might concentrate power in the hands of certain member groups. In addition, the low incentives for the members to monitor the managers of the cooperative bank, and the temptations associated with the intergenerational endowment, could increase the risk for different agent problems. All this might, if not properly managed,

[16] This is not to say that cooperative banks cannot be inefficient. Yes, they can and they often are. However, the point is that when measuring the efficiency of cooperative and investor-owned banks, one has to take into account the different bottom-line objectives of the banks.

cause significant tensions within the cooperative bank or at least increase the costs of governance for the bank.

4. The competitive dynamics of a mixed retail banking oligopoly

4.1. Oligopoly theory and the retail banking market

4.1.1. In general

The purpose of this chapter is to examine how the presence of a cooperative bank affects the balance and competitive dynamics of an oligopolistic retail banking market similar to the banking sector in Finland. The analysis will be conducted with the help of established mathematical tools used by economists to study oligopolies for over 150 years.

It is typical for the retail banking market that the number of banks is relatively small, especially when compared to the number of customers. Hence, most retail banking markets can be described as oligopolies. The Finnish banking sector, where only two or three large banks dominate the market, is a highly concentrated oligopoly, and in some rural areas, the market can even be described as a duopoly or a local monopoly. As mentioned earlier, banking is a somewhat special industry, because it combines two separate markets: the deposit market where banks act as buyers and the loan market where banks act as sellers. However, for the purposes of this thesis, it is sufficient to consider banks as producers of financial products and services, and the retail banking market as a market where banks provide their customers with different types of financial products and services in exchange for monetary compensation.

Firms competing in oligopolistic conditions are not true price takers but enjoy some degree of market power in respect to their customers. However, they cannot ignore the behavior of their competitors, as the market price is determined by the combined decisions of all the firms on the market. This means that in order to be successful, firms need to observe and anticipate the decisions made by their competitors and then react accordingly. For example, banks operating in concentrated markets, such as the Finnish retail banking market, can secure an interest rate margin that more than covers their non-interest costs, but they cannot afford to raise it much above their competitors in fear of losing their market share. This interaction between the oligopolists can be described as a game where firms adopt different strategies in order to reach their objectives (usually profit-maximization). The market is eventually drawn towards an equilibrium where all the strategies adopted by the individual firm are best responses to the strategies of all the other firms. In other words, at the equilibrium, no firm wants to change their strategy after observing those of their competitors. (Belleflamme & Peitz, 2010, p. 41)

Due to their prevalence, oligopolies have attracted a fair amount of economic research since the advent of economics as a distinct field of research. The French philosopher and mathematician *August Cournot*, active during the second trimester of the 19th century, and his colleague and compatriot *Joseph Bertrand*, active towards the end of the 19th century, are often

considered the founding fathers of oligopoly studies. During the second half of the 20th century, the development of game theory and especially the concept of Nash equilibrium has given economists more sophisticated tools to examine the dynamics of oligopolistic markets. (Vives, 1999, pp. 1-9) This long academic process has introduced us to several ways to model the strategic interaction between firms. What is common for most models, is that firms are seen as strategic actors that pursue their objectives by choosing the best possible strategy given the assumed strategies of their competitors. The objectives of individual firms are represented by so-called objective functions, which are best defined as mathematical descriptions of a firm's objectives. Because these models concentrate on the behavior of the firms, consumers are typically assumed to be passive actors, represented only by an aggregate, usually downward-sloping, demand function.

There are two main lines of models, distinguished by the nature of the strategic variable. Models inspired by Cournot assume that firms compete by choosing the quantity of products or services they bring to the market, whereas in models inspired by Bertrand the strategic variable is the price charged for the product or service provided by the firms. Typically, firms are assumed to set their strategies simultaneously, or at least unaware of the decisions of their competitors. However, models inspired by the German economist *Heinrich von Stackelberg* also include a time factor. Further diversity can be added to the models through assumptions regarding the number of firms, the vertical or horizontal heterogeneity of the product, the qualities of the demand side, and so on. This diversity amongst the different models mirrors the heterogeneity of the economy (Belleflamme & Peitz, pp. 41-43; Vives, 1999, pp. 75, 93). However, in this thesis, I will settle for a simple Cournot model where it is assumed that the banks set their strategies simultaneously and that their products are homogeneous.

The Cournot version oligopolistic competition has been criticized for its somewhat unrealistic choice of output as a strategic variable (Vives, 2016, p. 2). Despite this, models inspired by Cournot are widely used in oligopoly studies, and they have been proven to give a reasonably realistic picture of the competition in an oligopolistic market. Moreover, it can be demonstrated that even a simple Cournot model results in the same equilibrium as those more sophisticated and perhaps more realistic models, where firms first choose the amount of their output and subsequently their price (Belleflamme & Peitz, p. 63). In contrast, the problem with Bertrand competition is that in the absence of information asymmetries or product diversification, they tend to result in an outright price war, where markups are evaporated, and the equilibrium market price is settled at marginal costs (Belleflamme & Peitz, 2010, p. 46). However, even the simplest Cournot models allow firms to enjoy some market power and tend to produce a more realistic market price set somewhat above marginal costs (Belleflamme & Peitz, p. 59).

4.1.2. How does it work? A standard Cournot-oligopoly

Augustin Cournot presented his concept for oligopolistic interaction as early as in 1838. In his work *Reserches sur les principles mathématiques de la théorie des richesses* (Cournot, 1838/1960), Cournot envisioned a group of French mineral water producers that would compete by choosing the amount of water they would bring to the market. The Cournot-model of oligopolistic competition is based on the premise of a small number of firms that independently select the amount of output that they will bring to the market. These firms do not independently decide the price that they will charge for their products. Instead, the market price is determined by the process of supply and demand. The market reaches an equilibrium when the output of each firm is the best possible response to the output levels of all the other firms. Thus, at the equilibrium, each firm has maximized its profits given the strategies of its competitors. The solution for a Cournot-oligopoly is an example of a Nash equilibrium, a central concept of game theory, although expressed over 100 years before John Nash (Belleflamme & Peitz, p. 54; Vives, p. 93).

For example, consider a market of homogeneous products where a number (n) of profit maximizing firms compete by setting quantities. The output of firm i ($i = 1,2, \dots, n$) is q_i and its production costs are determined by the upward-sloping linear cost function $C_i(q_i) = c_i q_i$. Total output (Q) is the combined output of all n firms ($Q = q_1 + \cdots + q_n$). The firms face a downward-sloping inverse linear demand function $P(Q) = 1 - Q$ where maximum demand is normalized to 1. This means that changes in total output negatively correlate with the market price.

As all firms are profit maximizers, the objective function of firm i is

$$max\ \pi_i = P(Q)q_i - C_i(q_i), \tag{1}$$

where π_i are the profits, $P(Q)q_i$ the revenues and $C_i(q_i)$ the total costs of firm i. As $P(Q) = 1 - q_i - q_{-i}$, where q_{-i} is the aggregate output of all other firms except i, we can express the same objective function as

$$max\ \pi_i = (1 - q_i - q_{-i})q_i - c_i q_i. \tag{2}$$

The objective function of firm i is maximized when the value of its first order derivative with respect to q_i is zero. This first order condition of profit maximization can, thus, be expressed as

$$\frac{\partial \pi}{\partial q_i} = 1 - 2q_i - q_{-i} - c_i = 0. \tag{3}$$

Consequently, the optimal amount for firm i to produce is

$$q_i^* = \frac{1}{2}(1 - q_{-i} - c_i). \quad (4)$$

Equation 4 is called firm i's best reaction function, and it expresses mathematically the best possible reaction for firm i, given its own objectives, to all possible strategies of its competitors. A solution, which satisfies the best reaction functions of all n firms in a Cournot-oligopoly, is called a Cournot-Nash equilibrium. At the equilibrium, the output level of each firm is optimal, and no firm has an incentive to deviate from it. As we can see, the optimal output level for firm i (q_i^*) is determined by the aggregated output of its competitors (q_{-i}) and its own marginal costs (c_i). For example, if the level of competition increases (q_{-i} increases) or firm i becomes less efficient (c_i increases), the optimal output level (q_i^*) of the firm will become smaller.

Now, consider a market of homogeneous products where two profit-maximizing firms compete by setting quantities. The output of both firms is q_i ($i = 1,2$), and their individual production costs are determined by the linear cost function $C_i(q_i) = c_i q_i$. Total market output is the combined output of both firms $Q = q_1 + q_2$. Both firms face an inverse linear demand function $P(Q) = 1 - Q$, and their common objective function is

$$max\ \pi_i = P(Q)q_i - C_i(q_i) = (1 - q_i - q_{-i})q_i - c_i q_i. \quad (4)$$

Here q_i is the output of firm i and q_{-i} the output of its competitor. The first order condition of profit maximization is, thus,

$$\frac{\partial \pi}{\partial q_i} = 1 - 2q_i - q_{-i} - c_i = 0 \quad (5)$$

and the best reaction function for both firms:

$$q_i^* = \frac{1}{2}(1 - q_{-i} - c_i). \quad (6)$$

As we are working with a simple duopoly, equilibrium outputs are easy to compute by solving the following system of reaction functions:

$$\begin{cases} q_1^* = \frac{1}{2}(1 - q_2 - c_1) \\ q_2^* = \frac{1}{2}(1 - q_1 - c_2) \end{cases}. \quad (7)$$

Hence the Cournot-Nash equilibrium outputs are:

$$q_1^* = \frac{1-2q_2+c_2}{3} \quad \text{and} \quad q_2^* = \frac{1-2q_1+c_1}{3}. \quad (8,9)$$

The equilibrium is illustrated graphically in figure 1 where q_1^* is represented by the red line and q_2^* by the blue line. We can see that the reaction functions for both firms are downward-sloping, as the optimal output levels are negatively correlated to the output level of the competitor. The Cournot-Nash equilibrium is located at the point where the two functions cross. At the equilibrium, neither of the firms has an incentive to alter its output, as it would lead to a suboptimal outcome. The eventual market shares are dependent on the value of c_i. If both firms are equally efficient, then both their optimal output levels and market shares will be equal. However, if there is a difference between the marginal costs of the firms, the more efficient firm will have an advantage over its competitor. Thus, it will be able to increase its production and capture a larger share of the market.

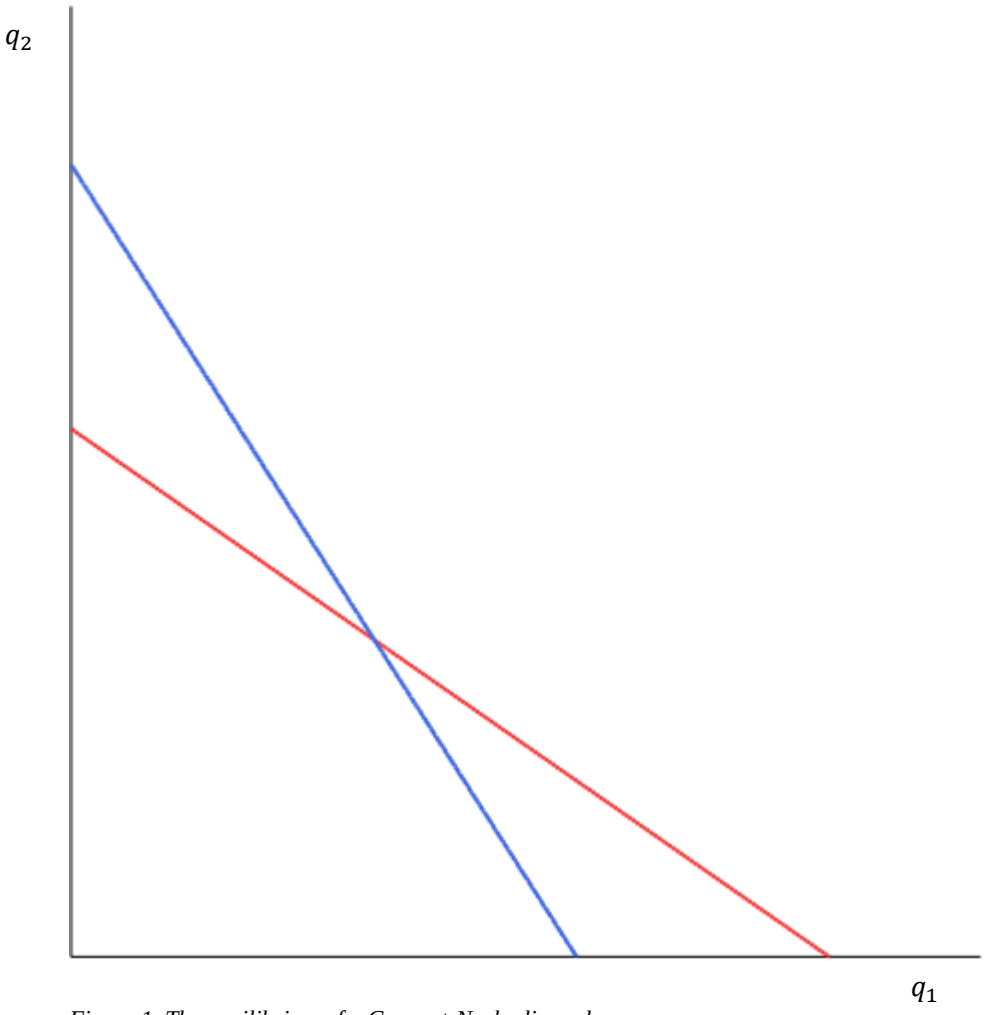

Figure 1. The equilibrium of a Cournot-Nash oligopoly.

Explanation: *q_1 on the x-axis and q_2 on the y-axis*
The red line represents the equilibrium quantities of firm 1 (q_1^*)
The blue line represents the equilibrium quantities of firm 2 (q_2^*)

It is worth noting that if we know the value of c, it is quite simple to calculate both the market price and the profits of each firm at the equilibrium. This can be done by inserting the equilibrium outputs of both firms into the demand function (for the market price) and into the objective function (for profits). However, it is unnecessary to demonstrate the process here, as studying the equilibrium output levels will give us sufficient information on the market shares of both the cooperative bank and its competitors.

4.1.3. The case of a mixed oligopoly

Studies of oligopolistic competition were at first focused on markets where all firms were assumed to be profit-maximizers. However, during the latter part of the 20th-century economists developed an interest to so-called mixed oligopolies where not all firms share the same objective function. The first ones to study the dynamics of a mixed oligopoly were Merrill and Schneider in 1966 (Merrill & Schneider, 1966), although their paper did not receive much attention before the 1980s when studies of mixed oligopolies gained popularity. Following their example, most contributions have examined the dynamics of a market where a number of privately-owned firms and at least one state-owned ("public") firm[17] compete in a free market environment by setting quantities. The privately-owned firms are assumed to be profit maximizers, whereas the public firm is assumed to have wider objectives. In Merrill and Schneider (1966) the public firm was assumed to maximize industry output, which is the combined output of both the public and the private firms. However, it has later become common to assume that the public firm seeks to maximize some combination of consumer surplus and producer surplus (de Fraja & Delbono, 1989; de Fraja & Delbono, 1990; Willner, 2006). In some cases, the public firm is even subject to a strict break-even constraint (Cremer, et al., 1989).

First, we can take a look at the objective function of a firm maximizing consumer surplus (CS). Consumer surplus is a utilitarian concept of welfare that can be explained as the aggregate difference between the price consumers are willing to pay for some product and the price they are charged for it. Consumer surplus can be expressed graphically as the area left inside the consumer demand curve, the horizontal line that goes through the equilibrium point and the vertical y-axis, and its amount can be measured by calculating the size this area. (Belleflamme & Peitz, p. 24) If we assume that the firms are faced with the linear inverse demand function ($P(Q) = 1 - Q$), then consumer surplus forms a right-angled triangle, the area of which can simply be expressed as:

[17] The terms state-owned or public refer here to all kinds of firms controlled by the state or some other level of government.

$$CS = \frac{Q^2}{2} = \frac{(q_s+q_p)^2}{2}. \quad (10)$$

Thus, the objective function for a firm maximizing consumer surplus is

$$max\ CS = \frac{(q_s+q_p)^2}{2}. \quad (11)$$

Next, we can take a look at the objective function of a state-owned firm that seeks to maximize the general welfare in the society (W). The welfare of the society is often represented in economics by the concept of total surplus (TS). There are several ways of expressing total surplus, but one method is, to sum the revenues of the privately-owned profit maximizers ($P(Q)q_p$), the revenues of the state-owned firm ($P(Q)q_s$), and consumer surplus (CS) (de Fraja, 2009). Thus, the objective function of the state-owned welfare maximizer becomes:

$$\max W = P(Q)q_s + P(Q)q_p + CS \quad (12)$$

or

$$\max W = (1 - q_s - q_p)q_s + (1 - q_s - q_p)q_p + \frac{(q_s+q_p)^2}{2}. \quad (13)$$

Finally, if we assume that the state-owned firm will seek to maximize general welfare only as long as it can do so without public funding, we can express its objective function in the form of a Lagrangian function, where the state-owned firm seeks to maximize TS, subject to a break-even constraint (Cremer, et al., 1989):

$$\max TS = \pi_s + \pi_p + CS \qquad \text{s.t.} \quad \pi_s = q_s P(q) - C \geq 0\ . \quad (14)$$

In this example, π_s represents the profits of the state-owned firm, π_p the combined profits of the privately-owned firms, and CS consumer surplus. The presence of the break-even constraint means that the profits (revenues – costs) of the state-owned firm must remain positive.

Models used in studies of mixed oligopolies are mostly based on the Cournot model of oligopolistic interaction. While the choice of output as a strategic variable can be criticized for being somewhat unrealistic, even simple models of Cournot-competition tend to give a sufficiently accurate description of the strategic interaction between the different oligopolists. More importantly, the use of Cournot-competition avoids the above-explained problems connected to simple Bertrand -models. (de Fraja & Delbono, 1990)

However, most models of mixed oligopolies that assume homogeneous products and constant and equal marginal costs for all firms are somewhat problematic, because the presence of a

state-owned firm that does not seek to maximize its profits, will inevitably cause the privately-owned firms to exit the market (Cremer, et al., 1989; Willner, 2006). This crowding out effect is in stark contradiction with the reality that firms with different types of objectives can often coexist rather peacefully. Thus, it has been called the Cournot-paradox (Nett, 1993; Willner, 2006). It is possible to avoid this paradox by modifying some of the fundamental assumptions made in the model (Willner, 2006). First of all, one can assume that the goods are differentiated, which allows firms to have some additional market power thanks to the differences in the preferences of individual consumers (Cremer, et al., 1991; Willner, 2006). Secondly, one can make changes in the cost functions either by assuming increasing marginal costs, which allows the private firms to survive by reducing their production (de Fraja & Delbono, 1989; Willner, 2006), or by making the state-owned firm less efficient than its privately-owned competitors (Cremer, et al., 1989). Then again, all of these assumptions are somewhat problematic. For example, it is not always realistic to assume that there are significant differences in the goods or services provided by the competing firms, and several studies are implying that public firms are as efficient as privately-owned firms (Willner, 2006).

The results of studies of mixed oligopolies are somewhat conflicting. On the other hand, the presence of firms that do not seek to maximize their profits seems to increase competition in the market, which in most cases is beneficial for the society. Thus, it has been suggested that the public firm might be a useful instrument in regulating oligopolistic markets (Cremer, et al., 1989; Willner, 2006; de Fraja, 2009). However, these positive effects might be lost if the entry of a state-owned firm causes a crowding out effect, which substantially increases the concentration of the market or even leaves the state-owned firm in a monopoly position. While there is no reliable evidence on state-owned firms being less efficient than privately-owned firms, one it might be that the efficiency of the public firm would be reduced in a monopoly position, thus making such outcome undesirable (Willner, 2006). However, as was mentioned above, real-life experience shows that privately-owned firms tend to be sufficiently competitive to survive the presence of public firms, thus reducing the risk of a large-scale crowding out effect.

Previous studies on mixed oligopolies have mostly considered markets where privately-owned profit maximizers compete with one or several state-owned enterprises. However, it can be assumed that the results will not alter much if we replace the state-owned firm with a cooperative. It is well established that the presence of a firm that does not seek to maximize its profits will have an effect on the equilibrium and the competitive dynamics of an oligopoly by increasing the level of competition and, thus, narrowing the profit margins of the privately-owned profit-maximizers. Nevertheless, the level of this competitive pressure, and whether

the privately-owned firms can survive it, depends on several factors, including differences in efficiency or the exact formulation of the objective function of the cooperative enterprise.

As mentioned above, state-owned firms are usually assumed to maximize either consumer surplus or some expression of general welfare (de Fraja & Delbono, 1989; de Fraja & Delbono, 1990; Willner, 2006). In contrast to this, cooperatives are mostly concerned about the welfare of their members, although a broader concern for the community is also one of the seven cooperative principles. In addition, as was explained above, the dual identity of cooperative enterprises, and their role as autonomous self-help institutions mean that while cooperatives do seek to maximize the welfare of their members, they are equally concerned about their profitability. Thus, in order to properly examine the strategic interaction between investor-owned and cooperative banks, it is important to construct a proper objective function for the cooperative bank. One that captures the dual nature of cooperative banks, and the role of cooperatives as organizations operating somewhere between the extreme poles of profit maximization and welfare maximization.

4.2. Two models of a mixed retail banking oligopoly

4.2.1. General assumptions

In this section, I will present two models of oligopolistic interaction between a cooperative bank and its investor-owned competitors. The purpose is to examine how the presence of a cooperative bank might affect the balance and competitive dynamics of a highly concentrated retail banking market similar to the Finnish banking sector. In order to keep the models sufficiently simple, both of them will be based on a Cournot-duopoly with homogeneous products and no threat of entry. In both models, one investor-owned bank (denoted with p as in "profit maximizer") and one cooperative bank (denoted with c as in "cooperative bank") will compete in free market conditions by setting quantities. I will assume that the banks face a downward sloping linear inverse demand function ($P(Q) = 1 - Q$) and that their marginal costs are equal and normalized to 0 ($c_c = c_p = c = 0$), although I will also experiment with how differences in efficiency might affect the market outcome. One could argue that some of these assumptions are not realistic, however, I find that the models give a sufficiently accurate picture of the retail banking market for us to discover some of the most important effects brought by the presence of a cooperative bank.

I will assume in both models that the investor-owned bank is a profit-maximizer, meaning that its objective function will be the same as in the standard oligopoly model presented above (equation 1). In contrast, the cooperative bank's primary objective will be to increase the welfare of its members, albeit not at the expense of its profitability. The goal is to capture the dual nature of cooperative enterprises as accurately as possible, without making it

unnecessarily complicated. I am well aware that in real life cooperative banks do not always follow the cooperative principles by the letter. However, I will bypass any problems relating to this, and assume that the cooperative bank operates according to the cooperative values and principles presented above. Most importantly, this means that the cooperative bank is to remain faithful to its role as a dual bottom line institution.

In the first model, presented in subsection 4.2.2., I will use an objective function where the cooperative bank maximizes a combination of its members' welfare and its own profits. The weight that it puts on these two very different objectives can be adjusted with the help of a special weight coefficient. The purpose of this is to capture the need of the cooperative bank to adapt its strategies to the present economic situation or the needs of its members. In the second model, presented in subsection 4.2.3., the cooperative bank will maximize the welfare of its member community, subject to a break-even constraint. The purpose is to emphasize how cooperative banks are required to remain profitable while increasing the welfare of their members. As cooperative banks also need to generate profits to increase their capital reserves, the constraint will include a variable that represents the amount of profit the managers of the cooperative bank have budgeted for their bank. In a way, this replaces the weight coefficient used in the first model as the element that captures the dynamic nature of the balancing problem.

The welfare of the cooperative bank's members will be represented in both models by the concept of member surplus (MS). Member surplus is a development from the concept of consumer surplus, which was presented above in subsection 4.1.3. In our banking example, member surplus can be described as the aggregate supplementary utility that the members of the cooperative bank receive by being offered more or better quality financial services by their cooperative bank than they expected for the price they paid. Member surplus can be measured in the same manner as consumer surplus was measured in subsection 4.1.3., except it will only encompass the surplus of the members of the cooperative bank, not every consumer in the economy[18]. Hence, member surplus only takes into account the output of the cooperative bank and can be expressed as

$$MS = \frac{q_c^2}{2}. \tag{15}$$

Member surplus is a utilitarian concept that does not take into account how the surplus is divided amongst the different members of the cooperative bank. For example, member surplus

[18] To be more exact, MS not only includes the surplus of the cooperative bank's members, but the surplus of all of its customers.

will increase in a situation where a decision by the cooperative bank increases the surplus received by one member by four units but decreases the surplus of three members by one unit each. As has been discussed above, members of a cooperative bank can have different needs and aspirations that they wish their cooperative bank would help them to meet. In addition, these needs and aspirations are not static but tend to change depending on the life situation of the individual member. However, to avoid making it overly complicated, I will assume that the members of the cooperative bank are a homogeneous group with similar needs and aspirations and, thus, bypass any problems arising from the distribution of member surplus.

It is important to note that in this description of member surplus, there is a direct positive link between the output of the cooperative bank and member surplus. Thus, in order to increase member surplus, the cooperative bank needs to increase its output. This can be done either by providing its current members with more, affordable, financial services. However, the absolute amount of member surplus can further be increased, if the cooperative bank is able to attract new members for whom to offer its services. Therefore, the cooperative bank will have an increase the size of its member community. It is important to note that output should not be taken only as a quantitative element. The quality of the financial services provided by the cooperative bank is also a major element of member surplus and should be considered as included in q_c .

4.2.2. Model I: The dual nature of the cooperative bank

Consider a duopoly where a cooperative bank and an investor-owned bank that offer a set of homogeneous financial services (e.g. housing loans[19]) compete against each other by setting quantities. Both banks face the inverse demand function $P(Q) = 1 - Q$, where P is the market price for the services provided when the combined output of the two banks is $Q = q_p + q_c$ (subscript p stands for private or profit-maximizer and c for cooperative). I will assume that there are no fixed costs and that, for the moment, both banks are equally efficient with constant average and marginal costs normalized to 0.

The investor-owned bank is a profit maximizer whose objective function can be expressed as

$$\max_{q_p} \pi_p = P(Q)q_p = \big(1 - q_p - q_c\big)q_p. \tag{16}$$

[19] There is some diversity in all financial products or services, but in my experience, regular housing loans can be considered quite a homogeneous product, at least in Finland.

In contrast, the cooperative bank does not seek to maximize its profits, but the sum of member surplus (MS) and its own profits (π_c). Thus, the objective function of the cooperative bank can be expressed as

$$\max_{q_c} \gamma MS + \pi_c = \gamma MS + P(Q)q_c = \gamma \frac{q_c^2}{2} + (1 - q_p - q_c)q_c, \tag{17}$$

where γ is a weight coefficient that expresses how much weight the cooperative bank puts on maximizing member surplus. Variable γ can take any positive value, including 0, which would mean that the cooperative bank would act as a regular profit-maximizer. However, as the value of γ increases, the weight that it puts on member surplus increases. At $\gamma = 1$ the cooperative bank puts equal weight to member surplus and its economic profitability, and as $\gamma \to \infty$, the relative weight it puts on economic profitability diminishes (although it never completely disappears).

In order to find the Cournot-Nash equilibrium for our model, we need to differentiate the two objective functions and then rearrange the solutions. This will give us the reaction functions, which express mathematically how the banks will react to each other's strategy choices. These two reaction functions can then be arranged as the following system of equations:

$$\begin{cases} q_p = \frac{1-q_c}{2} \\ q_c = \frac{1-q_p}{2-\gamma}, \end{cases} \tag{18}$$

the solution to which gives us the equilibrium.

We can already see that although similar, the reaction function of the cooperative bank has the variable γ in the divisor. This implies that q_c will increase with γ, but also that q_p must decrease if the value of γ increases. This can be confirmed by solving the system of equations, which gives us the equilibrium levels of output for both banks. For the investor-owned bank equilibrium output is

$$q_p^* = \frac{1-\gamma}{3-2\gamma}, \tag{19}$$

and for the cooperative bank, it is

$$q_c^* = \frac{1}{3-2\gamma}. \tag{20}$$

As we can see, both q_p^* and q_c^* are determined entirely by the value of γ. An increase in γ will increase the output of the cooperative bank and decrease the output of the investor-owned bank. This is presented graphically in figure 2, which presents output as a function of γ. In the

figure, q_c^* is represented by the red and q_p^* by the green line while the blue line represents Q, the combined industry output ($q = \sum q_i$).

As expected, at $\gamma = 0$ the outputs of both banks are equal, and the market outcome is the same as in a standard Cournot-oligopoly. However, as mentioned above, an increase in γ has a positive effect on the output of the cooperative bank (q_c^*) and a negative effect on the output of the investor-owned bank (q_p^*). At $\gamma = 1$, or when the cooperative bank puts equal weight to both member surplus and its own economic profits, q_c^* reaches 1 while q_p^* drops to 0, meaning that the investor-owned bank has been forced to exit the market, leaving the cooperative bank alone to provide financial services for the consumers.

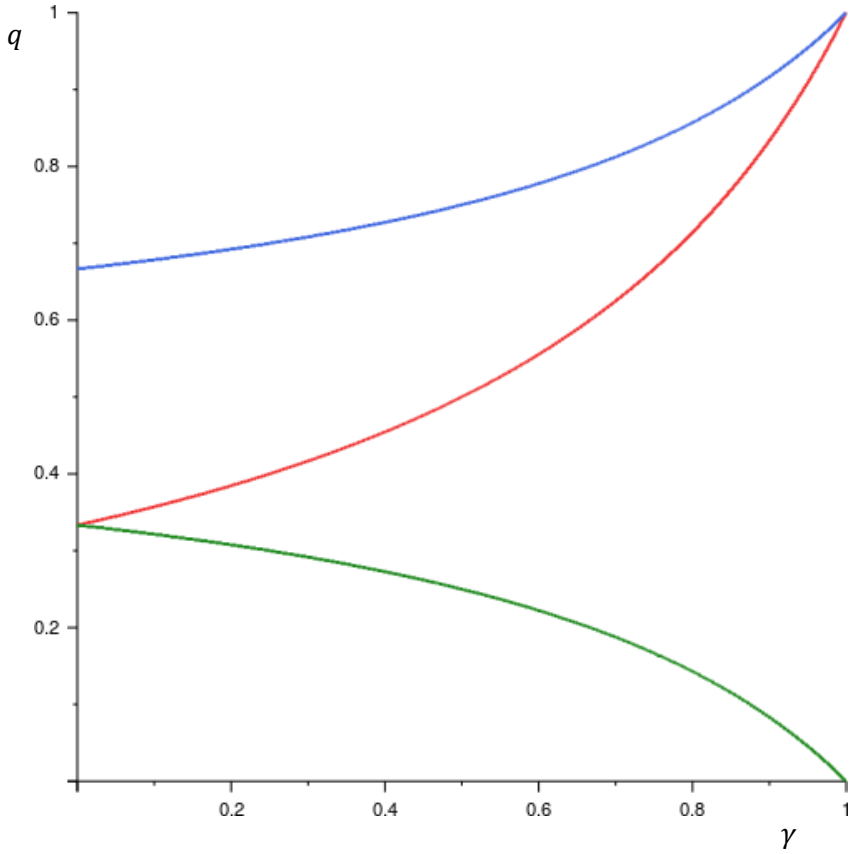

Figure 2. Output in a mixed Cournot-duopoly with equal marginal costs.

Explanation: *γ on the x-axis and q on the y-axis*
The red line represents the equilibrium output of the cooperative bank (q_c^*)
The green line represents the equilibrium output of the investor-owned bank (q_p^*)
The blue line represents the combined equilibrium outputs of the two banks (Q)

It is worth noting that industry output (Q) also increases with γ. This is because any decreases in q_p^* are more than compensated by a simultaneous increase in q_c^*. This is evident when we compare the derivatives of $q_p^*(\gamma)$ and $q_c^*(\gamma)$:

$$\frac{\partial q_p^*}{\partial \gamma} = -\frac{1}{(3-2\gamma)^2}, \tag{21}$$

$$\frac{\partial q_c^*}{\partial \gamma} = \frac{2}{(3-2\gamma)^2}. \tag{22}$$

These equations show that q_c^* is twice as sensitive to changes in γ than q_p^*, meaning that any change in γ will always affect q_c^* twice as much as q_p^*.

In light with what was discussed above in chapter 3, we can assume that there are no significant differences between the efficiency of a cooperative bank and an investor-owned bank. However, in order to allow some differences in the cost structures of individual banks and to allow banks to compete in efficiency, I will now add the possibility of different cost structures into the model. This is done by inserting a cost function with constant average and marginal costs $C(q_c) = cq_c$ into the objective function of the cooperative bank, giving us the following updated objective function:

$$\max_{q_c} \gamma MS + \pi_c = \gamma MS + P(Q)q_c - C(q_c) \tag{23}$$

or

$$\max_{q_c} \gamma MS + \pi_c = \gamma \frac{q_c^2}{2} + \big(1 - q_p - q_c\big)q_c - cq_c. \tag{24}$$

Both the average and the marginal costs of the investor-owned bank remain normalized to 0, which means that c merely represents the cost difference between the two banks. Consequently, it is possible for c to assume both negative and positive values, depending on which of the banks is deemed more efficient. When $c > 0$ the cooperative bank is deemed less efficient than the investor-owned bank, and when $c < 0$ the cooperative bank is more efficient. When $c = 0$, we are back with the original model, where both banks were equally efficient.

When the possibility of an efficiency difference is taken into account, the equilibrium levels of output for the two banks become

$$q_p^* = \frac{1-\gamma+c}{3-2\gamma} \tag{25}$$

and

$$q_c^* = \frac{1-2c}{3-2\gamma}. \quad (26)$$

It is clear that an increase in c will benefit the investor-owned bank, as it means that the investor-owned bank will be better equipped to compete against the cooperative bank. If $c > 0$, then q_c^* will be lower and q_p^* higher, when compared to a situation where both banks are equally efficient. Conversely, if $c < 0$, it will have a positive effect on q_c^* and a negative effect on q_p^*. For example, if we assume that $c = 0.1$, it is simple to calculate that for all values of γ the output of the cooperative bank will be 20 % lower than if both banks were equally efficient. Conversely, the output of the investor-owned bank will be at least 10 % higher, the exact difference being dependent on the value of γ.

The output levels given the value of γ for this example are plotted in figure 3. Again, q_c^* is represented by the red, q_p^* by the green and Q by the blue line. Comparing this figure to the previous figure confirms what was already evident when examining the output functions. For all positive values of γ, q_p^* is higher and q_c^* lower than if the banks were to have equal cost functions. In short, this means *ceteris paribus* that increased relative efficiency helps the investor-owned bank to better withstand the competitive pressure caused by the presence of the cooperative bank. However, it is worth noting that if the cooperative bank raises γ high enough, the results will be unavoidable, and the investor-owned bank will be forced to exit the market. However, whereas in the previous example the investor-owned exited the market at $\gamma = 1$, now the cooperative bank is required to raise γ all the way up to 1,1. Not a significant change, but one that could potentially be too expensive for the cooperative bank to accomplish.

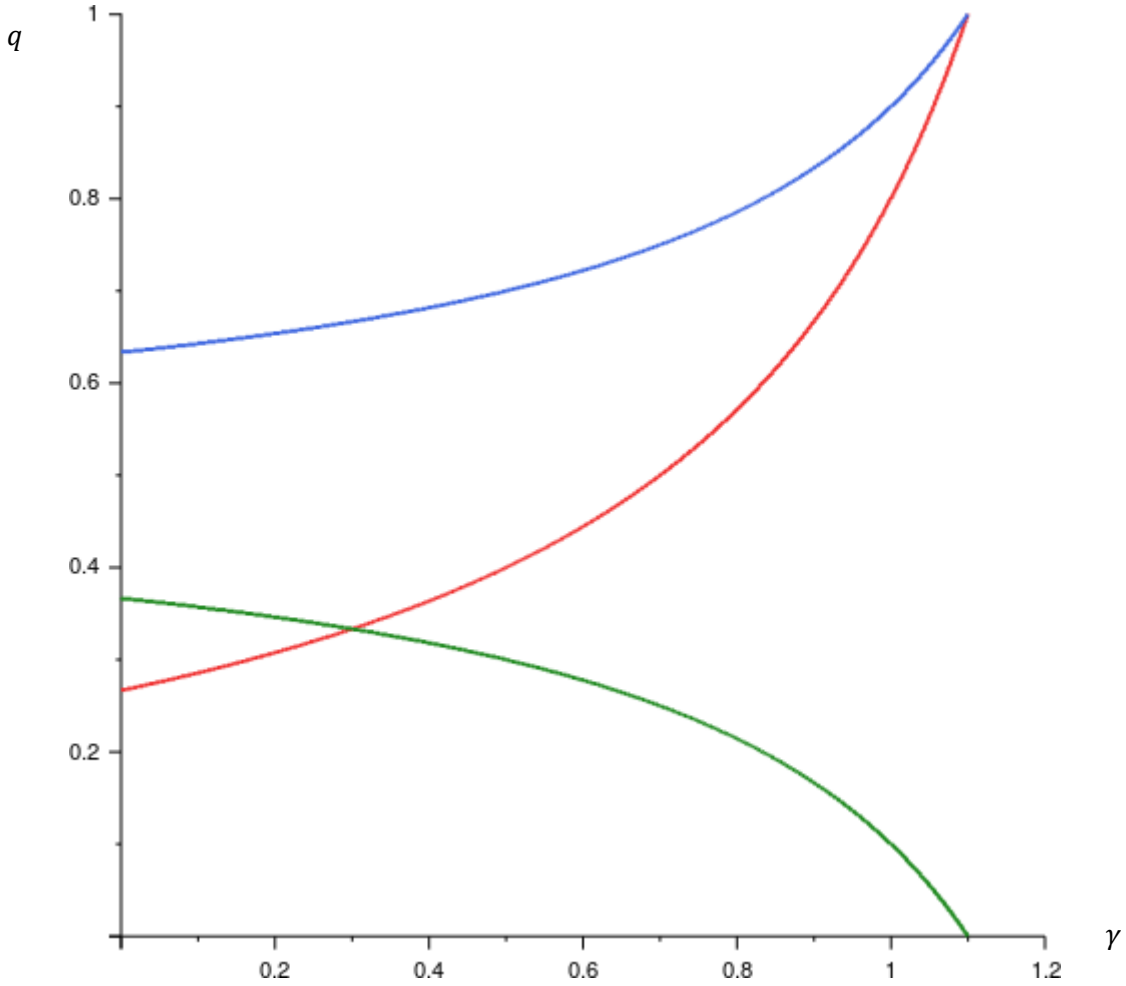

Figure 3. Output in a mixed Cournot-duopoly when the cooperative bank is less efficient (c=0.1)

Explanation: *γ on the x-axis and q on the y-axis*
The red line represents the equilibrium output of the cooperative bank (q_c^*)
The green line represents the equilibrium output of the investor-owned bank (q_p^*)
The blue line represents the combined equilibrium outputs of the two banks (Q)

4.2.3. Model II: Welfare maximization restrained by a break-even constraint

The model presented in the previous chapter demonstrated how the presence of a cooperative bank will most likely increase competition in a retail banking market and how the cooperative bank's strategy choices affect the market outcome. In short, the model implied that the more the cooperative bank puts weight on the welfare of its members, the more it will gain market shares from its competitor. However, it is not possible to determine which level of γ would be sustainable for the cooperative bank. In order to better take into account the importance of economic profitability as a constraining factor for the strategic decisions made by cooperative banks, the next model, inspired by Cremer et al. (1989), introduces a break-even constraint for the cooperative bank.

Consider a similar duopoly as the one above, where a cooperative bank and an investor-owned bank compete in a market for a homogeneous good by setting quantities. The banks face the inverse demand function $P(Q) = 1 - Q$ where P is the market price for the goods and services produced when the combined output of the two banks is $Q = q_p + q_c$. The marginal and average costs for the investor-owned bank are normalized to 0, whereas the cooperative bank's cost function is given by $C(q_c) = cq_c$, where c captures the difference in efficiency between the two banks and can, thus, take up either a positive or negative value.

Similar to the previous model, the investor-owned bank is a profit maximizer whose objective function is

$$\max_{q_p} \pi_p = P(Q)q_p = (1 - q_p - q_c)q_p. \tag{27}$$

The cooperative bank is assumed to maximize member surplus (MS) subject to a break-even constraint. In other words, it will seek to maximize the welfare of its member community, as long as it can do so while remaining profitable. Consequently, the objective function of the cooperative bank can be expressed as:

$$\max_{q_c} MS = \frac{q_c^2}{2} \qquad \text{s.t.} \quad \big(1 - q_c - q_p\big)q_c - cq_c - \pi_0 \geq 0. \tag{28}$$

Note that the constraint does not only include the revenues ($\big(1 - q_c - q_p\big)q_c$) and costs ($cq_c$) of the cooperative bank, but also the variable π_0, which represents the amount of profit the managers of the cooperative bank have considered necessary for the bank to generate. In practice, π_0 can be seen both as a long-term strategic objective and a short-term target set by the managers when making the cooperative bank's budget for the upcoming year. Variable π_0 replaces the weight coefficient γ used in the previous model as the element that captures the strategy choices of the cooperative bank that are related to the bank balancing between the two poles of its dual nature. A higher value of π_0 means that the cooperative bank will put more weight on its economic performance, at the cost of member surplus, whereas a low value of π_0 means that the bank is willing to forego more of its economic profits in order to maximize the welfare of its members.

The best reaction function for the investor-owned bank is the same as in the previous model:

$$q_p = \frac{1 - q_c}{2}. \tag{29}$$

In order to solve the reaction function for the cooperative bank, we have to solve the Lagrangian function

$$\mathcal{L}(q_p, q_c) = \frac{q_c^2}{2} - \lambda((a - q_c - q_p)q_c - cq_c - \pi_0), \tag{30}$$

where λ is the so-called Lagrange multiplier, which captures the sensitivity of MS to changes in the break-even constraint. As MS is a strictly increasing function of the cooperative bank's output (q_c), the constraint is always binding at the solution. This means that the solution is given directly by the partial derivate

$$\frac{d\mathcal{L}}{d\lambda} = (1 - q_c - q_p)q_c - cq_c - \pi_0 = 0 \tag{31}$$

or

$$q_c^2 + (1 - q_p - c)q_c - \pi_0 = 0. \tag{32}$$

As equation 32 is quadratic in q_c, it will have two solutions. However, as the cooperative bank seeks to maximize MS and, thus, its output, the cooperative bank's reaction function will be given by the larger root of this equation (Cremer, et al., 1989):

$$q_c = \frac{1 - q_p - c + \sqrt{(1 - q_p - c)^2 - 4\pi_0}}{2}. \tag{33}$$

It is important to acknowledge that q_c will be positive only if $(1 - c - q_p)^2 - 4\pi_0 \geq 0$, because otherwise the function will lack real roots. As will be discussed in more detail later, this implies that there are limits to the amount of profits a cooperative bank can make.

With the help of the two reaction functions above, we can now solve the Nash equilibrium of the model. By using the substitution method, we obtain the following equilibrium levels of output:

$$q_p^* = \frac{1 + 2c - \sqrt{(1 - 2c)^2 - 8\pi_0}}{4} \tag{34}$$

and

$$q_c^* = \frac{1 - 2c + \sqrt{(1 - 2c)^2 - 8\pi_0}}{2}. \tag{35}$$

Examining these equations reveals that the output levels of both banks are dependent on two variables: c and π_0. If we assume that c is constant, we can examine the relationship between the strategy choices of the cooperative bank, represented by π_0, and the output levels of the two banks: q_p^* and q_c^*. This relationship is displayed graphically in figure 4, where it is assumed that both banks are equally efficient ($c = 0$). The red line represents again the output

q

of the cooperative bank (q_c^*), the green line the output of the investor-owned bank (q_p^*) and the blue line the combined industry output (Q).

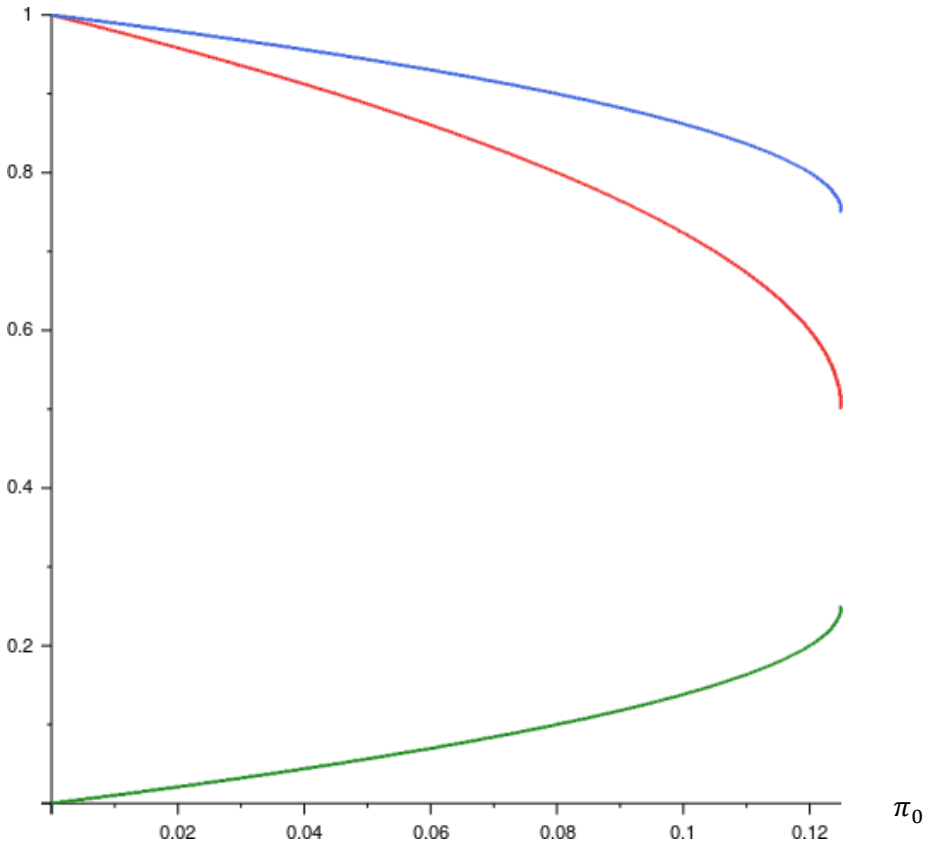

Figure 4. Output in a mixed Cournot-oligopoly with equal marginal costs where the cooperative bank follows a break-even constraint.

Explanation: π_0 *on the x-axis and q on the y-axis*
The red line represents the equilibrium output of the cooperative bank (q_c^*)
The green line represents the equilibrium output of the investor-owned bank (q_p^*)
The blue line represents the combined equilibrium outputs of the two banks (Q)

Studying the figure, we can see that if the cooperative bank decides to put more weight on its economic profitability, by choosing to pursue a higher π_0, its ouput and, hence, the welfare of its members will decrease. In contrast, the investor-owned bank's output will increase with π_0. Thus, we are again faced with the result that the more the cooperative bank puts weight to its economic profitability, the more it gives room for the investor-owned bank to operate. It is worth noting that, since the increase in q_p^* is not enough to compensate for the decrease in q_c^*, total industry output (Q) will decrease when the cooperative chooses a higher π_0.

As it was in the previous example, changing c will shift the output curves for the benefit of the more efficient bank. An increase in c reduces the competitiveness of the cooperative bank. Thus, the output curves of both banks are pushed inwards, which decreases the output of the

cooperative bank and increases the output of the investor-owned bank. Conversely, a decrease in c will push both curves outwards, increasing the output of the cooperative bank and decreasing the output of the investor-owned bank. As q_c^* is more sensitive to changes in c, Q will shift out when c becomes lower and vice versa.

It is worth noting that both output functions have a real root only if $(1-2c)^2 - 8\pi_0 \geq 0$. Hence the following condition must be fulfilled under all circumstances:

$$\pi_0 \leq \frac{(1-2c)^2}{8}. \tag{36}$$

It is important to note that c cannot assume values above 0.5 or under -0.5 since more extreme values would force an exit by the less efficient bank. Hence, we can express the maximum value of π_0 as the following function of c:

$$\pi_0 = \frac{(1-2c)^2}{8}. \tag{37}$$

This means that the maximum amount of profit a cooperative bank can aspire to is dependent on its efficiency. If the cooperative bank is more efficient than its competitors ($-0.5 \leq c \leq 0$), then its managers will have the option of setting a more comfortable profit target without sacrificing more of their members' surplus. However, if the cooperative bank is less efficient than its competitors ($0 \leq c \leq 0.5$), it will have less of a chance to generate profits while maximizing the welfare of its members. The relationship between c and π_0 is presented in figure 5, which shows π_0 on the y-axis and c on the x-axis. This is of course all very intuitive: a more efficient bank will be able to make more profits. However, the observation shows us that the model is able to capture this relationship between efficiency and profits, making the model more reliable. In addition, it demonstrates how important efficiency is even for a cooperative bank whose ability to both increase member surplus and generate profits are directly linked to its efficiency.

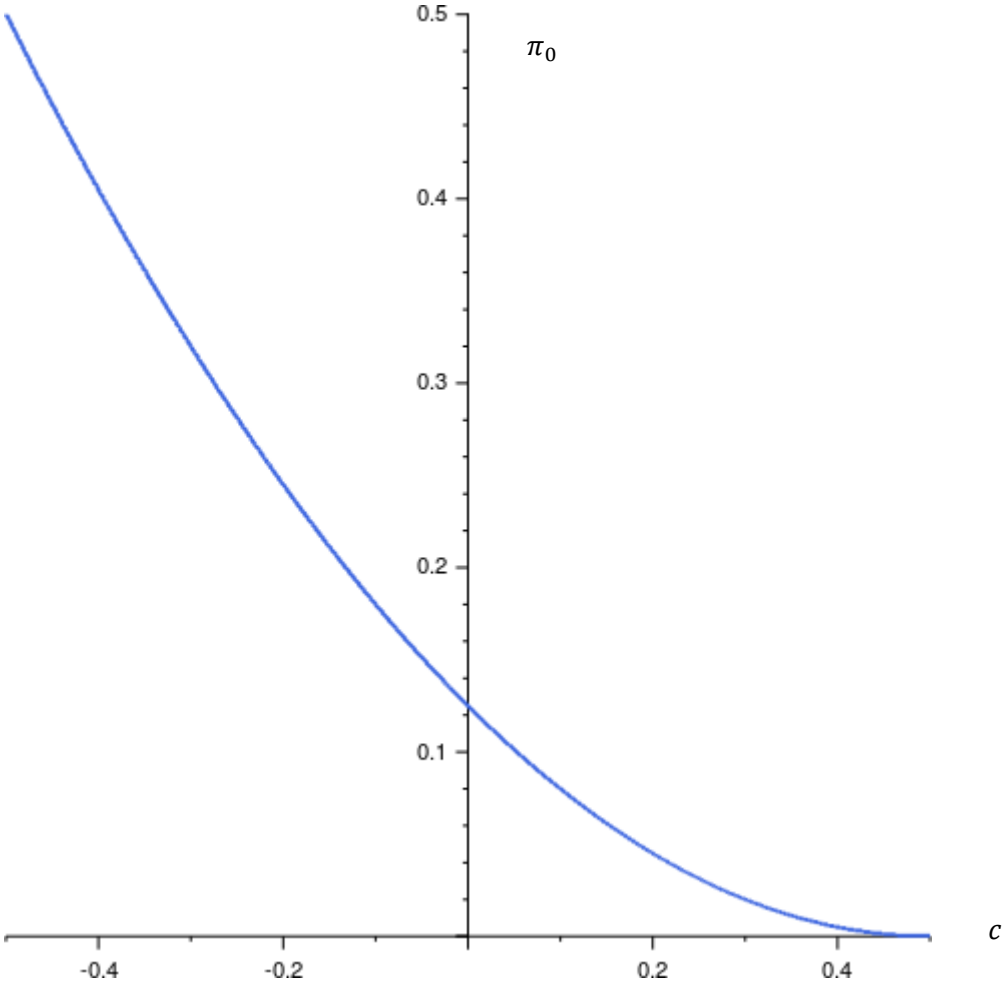

Figure 5. The relationship between efficiency and the largest possible amount of budgeted profits for a cooperative bank.

Explanation: *c on the x-axis and π_0 on the y-axis*
Positive values for c mean that the cooperative bank is less efficient than its competitor
The blue line represents the largest possible budgeted profits for the cooperative bank (π_0)

4.3. Interpreting the results

The results from the models presented above are somewhat intuitive, but clearly, display the effects that the presence of a cooperative bank has on the balance and the competitive dynamics of a retail banking market. As anticipated, the presence of a cooperative bank that does not pursue profit maximization increases competition in the market by increasing output above normal equilibrium levels. While it was not calculated in either of the models, this increased output will cut the market price and, thus, reduce the profit margins of both banks on the market.

In addition, both models demonstrate how the way the cooperative bank balances between its dual objectives of welfare maximization and sufficient profitability affects competition in the market. Especially the first model clearly shows that even a little emphasis on member surplus

will increase competition in the market and help the cooperative bank to gain market shares from its investor-owned competitor. It is notable that even small changes in γ (the weight coefficient) affect the competitive pressure significantly. The same effect can be seen in the second model where γ is replaced with π_0 as the variable representing the cooperative bank's choice between member surplus and its own profits. Raising π_0 increases the cooperative bank's profits, at the expense of limiting its ability to increase the welfare of its members. As in the first model, the cooperative bank will be able to stay ahead its competitor even if π_0 is set close to its maximum level.

Both models show that the cooperative bank is able to force its investor-owned competitor to exit the market by choosing a strategy that sufficiently emphasizes member surplus. This will raise the cooperative bank's output to a level which the investor-owned bank cannot compete with. If we assume that both banks are equally efficient, giving equal weight to member surplus and the profitability of the cooperative bank itself (γ =1) is sufficient to force the investor-owned bank to exit the market in the first model. In the second model, the investor-owned bank exits the market only if the cooperative bank completely forgoes its own profits and sets $\pi_0 = 0$. As mentioned above, this was to be expected, as some sort of crowding out effect is a central outcome of similar studies of mixed oligopolies. However, it is interesting to see how the strategy decisions of the cooperative bank trigger the exit. This confirms that the way in which cooperative banks and similar cooperative enterprises treat the dual nature of their objectives is not only important for the cooperative itself, but also for its competitors and the society in general.

Both models demonstrate that efficiency is important for a bank, no matter its business model. Being more efficient gives both the cooperative and the investor-owned bank a significant comparative advantage over its competitor. Hence, the relative efficiencies of the two banks have a considerable impact on the market equilibrium. This means, for example, that investor-owned banks are able to defend themselves from competition from cooperative banks by being more efficient. In the first model, we saw that raising the marginal costs of the cooperative bank from 0 to 0.1 decreased the output of the cooperative bank by 20 % and increased the output of the investor-owned bank by at least 10 %. On the other hand, a more efficient cooperative bank could potentially make life tough for the investor-owned bank. In addition, results from the second model demonstrated that being sufficiently efficient also affects the maximum amount of profits cooperative banks are able to generate, while still maximizing member surplus. The interpretation of this could be that highly efficient cooperative banks can generate healthy amounts of profit without compromising their primary objective of maximizing the welfare of their members.

It is important to acknowledge that several factors that affect the interaction between the banks and their customers are not included in either of the two simple models presented above. These include, for example, product differentiation and advertising, but also elements such as customer loyalty or individual preferences that might add some customer inertia to the market. As discussed above in section 2.2, customer mobility in retail banking markets is still at a relatively low level, which increases the market power of individual banks and helps them repel some of the competitive pressure caused by cooperative banks. In the context of the two models represented, this means that in practice the changes in market shares anticipated by the models will not happen instantly and some of the changes might not materialize at all. This inertia gives investor-owned banks time to react to shifts in the strategy of their cooperative competitor, which might in some cases help them survive the increased competition. Also, this inertia makes it more difficult for cooperative banks or the authorities monitoring the retail banking market to analyze the effects or react to the changes brought by adjustments in the cooperative bank's strategy.

Another important factor that is absent from the models is that the ability of cooperative banks and banks in general to increase their output is restricted. In addition to restrictions common to all industries, banks are faced with increasing capital requirements that limit their ability to increase their output, especially in the loan market. Capital requirements require banks to set aside enough capital to survive unexpected losses and to keep them solvent even during a major financial crisis. In practice, this means that before issuing a new loan, banks need to check if they have enough capital to cover the risks involved with it. Consequently, banks desiring to increase their lending first need to grow their capital reserves to match the anticipated growth in its capital requirements. For example, consider a cooperative bank with a credit portfolio of one billion euros that faces a capital requirement of 10 %. If the bank wishes to increase the size of its credit portfolio by 5 % (or 50 million euros), it must make a profit of 5 million euros to keep its capital reserves at the same level as before the credit expansion. In the context of the models presented above, this means that without a sudden injection of equity capital, the cooperative bank cannot increase its output instantly. In most cases, cooperative banks can increase their output only after patiently and carefully growing their capital reserves through profits retained within the bank. This increases the complexity of the balancing problem introduced in subsection 3.1.2. and reduces the short-term competitive pressure brought by the presence of cooperative banking.

One more aspect that needs to be considered when discussing the ability of a cooperative bank to increase its output, especially in the loan market, is that not all demand is worth satisfying. Many of the individual projects proposed for a bank are not viable or worth funding due to the risks they pose both for the bank and the individual customer. In addition, banks and especially

cooperative banks should take into consideration the repercussions that loose lending might have for its member community and the society in general. The latest global financial crisis was partly caused by so-called sub-prime mortgages that American banks gave to people with insufficient capabilities to pay back their loans. This ill-advised behavior inevitably led to a crash that caused not only great disturbances in the financial system, but also great suffering for individual debtors, for many of whom it would have been better never to have been given the mortgage in the first place. If the primary objective of a cooperative bank is to maximize the surplus of its members, it should restrict its lending only to projects that are likely to increase that surplus. Thus, while the models imply that the cooperative bank would be willing to satisfy market demand in full, this should be restricted only to that part of the market demand that has the potential of increasing welfare in the society.

All in all, both models demonstrate that the presence of cooperative banks will increase competition in the retail banking market, which will have a positive effect on the market output and a negative effect on the market price. The presence of cooperative banks probably also increases the welfare of both the members and other customers of the cooperative bank and the customers of the investor-owned bank. All this implies that cooperative banks, and cooperatives in general, could be a feasible alternative to be considered when seeking to regulate an oligopolistic market such as the Finnish retail banking market (Cremer, et al., 1989). Investor-owned banks can defend themselves from this surge in competition by increasing their efficiency or by increasing their customer loyalty by various means. In addition, issues such as general consumer inertia or capital requirements make changes in market shares slower. However, the models do suggest that if a cooperative bank is well managed and sufficiently efficient, it will be able to capture a significant market share from its investor-owned competitors. In the process, it might even drive some of the weaker investor-owned banks to exit the market.

5. Cooperatives and competition policy

Our economy is based on a system where goods and services are produced by presumably profit maximizing firms competing against each other under free market conditions. The benefits of free and open competition include lower prices, better products, wider choice and greater efficiency than would be obtained under monopoly. According to economic theory, social welfare is maximized in conditions of perfect competition, and removing any unwanted restrictions on free and open competition has become a goal for economic policy at least in the modern market economies. (Wish & Bailey, 2015, pp. 1-5) One important source of market restrictions are the firms themselves, whose drive to maximize their profits might act as an incentive to increase their market power by restricting competition. Firms might, for example, be tempted to enter anti-competitive agreements or mergers or to use their market power to restrict competition for their own benefit (Wish & Bailey, 2015, p. 3). In order to protect competition from such actions, a number of rules banning unwanted market behavior have been passed, and there are powerful authorities ensuring the compliance of them.

Cooperatives are not profit maximizers, and their primary objective is to increase the welfare of their members. However, the results of the models presented in the previous chapter raise the question whether the behavior of cooperative banks and cooperative enterprises in general could be seen as anti-competitive behavior. After all, both models show that a cooperative bank that seeks to maximize the surplus of its members has the potential of forcing its investor-owned competitors to exit the market, leaving it alone to serve the market as a monopolist.

It is certainly not unthinkable that the behavior of a cooperative firm could be found anti-competitive, and cooperatives are by no means exempt from the rules of competition. In fact, there are several examples from Finland, where cooperative firms have been investigated for or found guilty of anti-competitive behavior. For example, in 2009 Metsäliitto, a producer cooperative of Finnish forest owners was found guilty of participating in a cartel that aimed, inter *alia*, *to* control the purchase prices of wood (MAO:614/09, 2009). In another case from 2014, the dairy producer cooperative Valio was found guilty of predatory pricing aimed to scare the Danish cooperative Arla away from the Finnish dairy markets. More precisely, the Market Court found that Valio had lowered its prices below production costs in order to protect its monopolistic position in Finland (MAO:467-468/14, 2014). This type of predatory pricing is regarded illegal by both Finnish and European competition law.

However, it should be noted that both Valio and Metsäliitto are producer cooperatives, whose fundamental objectives differ somewhat from those of cooperative banks and other consumer cooperatives. As mentioned in subsection 3.1.2., while the primary objective of a producer cooperative is not profit maximization but to increase the welfare of its members, acting as a

profit maximizer towards the market is often beneficial for the cooperative and its members. Therefore, one could claim that Valio was actually acting somewhat in accordance with its objectives, as its members would have benefitted from the larger monopoly prices that Valio could have charged from the consumers after a successful operation.[20] The Metsäliitto-case, however, is more complicated, as the cartel led Metsäliitto to pay lower prices for the wood it bought from its own members, hence reducing their surplus at least in the short run. However, it should be noted that it seems that Metsäliitto was a somewhat passive participant in the cartel. (MAO:614/09, 2009) Due to these observations, I find that the risk of anti-competitive behavior is greater in producer cooperatives and worker cooperatives than in consumer cooperatives, although one cannot exclude the possibility of anti-competitive behavior by a consumer cooperative. Such behavior could be triggered, for example, by a desire to increase the cooperative's market share and hence its potential to produce member surplus faster than compliance with competition rules would allow.

However, due to their fundamentally different objectives and values, assessing the market behavior of cooperative enterprises with the same methods and standards as the behavior of investor-owned firms is somewhat problematic. For example, if a consumer cooperative lowers its prices or increases its production, it does not necessarily mean that the cooperative is trying to increase its profits by gaining new or defending existing market shares. Instead, the cooperative might decide to transfer some of its surplus to its members, due to a decrease in its need for internal financing. The problem is that it can be difficult to distinguish the welfare-maximizing behavior of a cooperative enterprise from predatory pricing or other anti-competitive behavior (Willner, 2006). This can cause some tensions between cooperative enterprises and their competitors and sometimes even the competition authorities might become involved.

In Finland, where cooperatives hold important markets shares in several important markets, these tensions tend to surface from time to time. For example, when the cooperative S-Group, a market leader in the Finnish retail sector, announced in January 2015 that it will gradually cut the prices of many of its products, the announcement sparked a lively public debate. According to S-Group, the decision to cut its prices was an ideological choice arising from its cooperative identity (S Group, 2015a), whereas its competitors and much of the media were calling it a marketing trick or even an act of price war (www.mtv.fi, 2015; www.ksml.fi, 2015). While it is probable that the actions of the S-Group were at least partially inspired by traditional competitive reasons (S Group, 2015b), it is also entirely rational to explain them

[20] Although one can question whether the prospective monopsony position of Valio in relation to the dairy farmers in Finland would have been in the best interest of the latter ones.

with the cooperative identity of the S-Group. As the primary objective of a customer cooperative is not to maximize its profits (often collected from its members), it is entirely rational for a cooperative to cut its prices, if its need for internal financing has decreased.

More recently, in December 2015, the cooperative OP Group announced that it had received a request for clarification from the Finnish Competition and Consumer Authority relating to its customer benefits programme and operations in the retail banking services and the non-life insurance market (OP Group, 2015). The entity behind the request was OP's competitor from the insurance market If P&C Insurance Company Ltd (If). According to OP, If claims that OP holds a dominant market position in the retail banking market and accuses OP of abusing this position by tying up retail banking services and non-life insurance services and offering non-life products below cost. According to OP, one of the main arguments of If is that OP is using its customer benefits programme to sell insurances to its retail banking customers below market prices. OP has reacted strongly to the accusations and has seen it as an assault against the cooperative business model and defends its right to choose its strategies on the basis of its cooperative identity (www.yle.fi, 2016).

It will be interesting to see how the competition authorities will decide in this case, as it will *inter alia* test how the authorities relate to the original nature of the cooperative enterprise and the dual nature of its objectives. Some foresight to this decision was offered recently when the Finnish competition authorities released their investigation into the S Group's discount scheme where they found that in its current form, the scheme does not have a considerable anti-competitive impact on consumer goods trade in Finland (Kilpailuvirasto, 2016). One of the problems that the authorities are faced with is that large cooperative enterprises such as the S Group or the OP Group tend to resemble much their investor-owned competitors. Both firms compete fiercely in their respective markets and are making profits easily comparable with their profit-maximizing competitors. Hence, it is not always entirely possible to recognize the true motives behind the strategic choices made by a cooperative (Willner, 2006). However, considering the nature of the cooperative enterprise, perhaps the competition authorities should, if possible, give more weight to anti-competitive intent in contrast to anti-competitive behavior (de Fraja, 2009). Otherwise, they might end up restricting behavior beneficial for the consumers and the economy in general.

6. Conclusions

Cooperative banks are financial institutions that are owned by their customers, and that adhere to the cooperative principles presented earlier in this thesis. They are an important part of the retail banking market of many European countries, and they have proven to be capable of operating in the highly competitive and risky environment of modern finance. Most notably, several empirical studies have suggested that the often more retail-oriented and less risk-inclined cooperative banks were able to survive the latest financial crisis relatively well.

In contrast to most of their competitors, cooperative banks are not profit-maximizers. Instead, their primary objective is to maximize the welfare of their member community. However, cooperative banks, similar to most other cooperative enterprises, can be described as dual bottom line institutions (Ayaldi, et al., 2010), which means that in addition to maximizing the surplus of their members, they need to take care of their profitability. Profitability is important, especially for cooperative banks that need to remain sufficiently profitable under all circumstances and, if possible, generate additional profits to accumulate their capital reserves. This dual nature of cooperative banks and other cooperative enterprises sets them apart, not only from their investor-owned competitors, but also from charities or public institutions that seek to maximize the welfare of the society with the support of external funding.

The two simple oligopoly models presented in this thesis demonstrate how the presence of a cooperative bank increases the level of competition in an oligopolistic retail banking market, similar to the Finnish banking sector. This increased competition is beneficial not only for the members of the cooperative banks, but also for the customers of other banks, as increased competition should increase the quality and decrease the market price of financial services. However, this increase in the level of competition is also likely to affect the stability of the entire banking sector. If we believe that Martinez-Miera and Repullo (2010) were right, increased competition brought by a cooperative bank will have a positive effect on highly concentrated banking markets such as the Finnish banking sector. However, if the level of competition is already high or if the competitive pressure becomes too intensive, the presence and behavior of cooperative banks might end up hurting financial stability. For example, it is possible that the presence of a solid and efficient cooperative bank might force most investor-owned commercial banks to seek profits from the perilous fringes of finance (Hesse & Čihák, 2007; Fonteyne, 2007). In this case, it might just be that Goodhart was right when he claimed that a large presence of cooperative or other non-profit-maximizing banks could make the banking system more fragile (Goodhart, 2004).

Both models demonstrate that the final market outcome depends on how much the cooperative bank puts weight on creating surplus for its members. This means that the strategy decisions

of cooperative banks have a significant impact, not only for their own success but also on the structure and stability of the banking sector and the economy in general. In addition, the market outcome is affected by the relative efficiency of the cooperative bank and the investor-owned banks. Consequently, an investor-owned bank can shield itself from the competitive pressure brought by the cooperative bank by being more efficient. While it is not captured by the models presented in this thesis, one should remember that investor-owned banks can also defend their market shares, for example by increasing the loyalty of their customers or the attractiveness of their products by means of product differentiation or advertisement.

Both models presented in Chapter 4 implied that a cooperative bank could force all of its competitors to exit the market, leaving the cooperative bank to serve the market as a monopolist. Although one can argue that there are several reasons why it would be better to have a cooperative monopolist than an investor-owned profit maximizer, this outcome would hardly be optimal. As mentioned above, organizational diversity in the banking sector seems to be beneficial for financial stability (Liikanen Report, 2012; Ayaldi, 2010; Goodhart & Wagner, 2012). This does not only mean that the investor-owned banks need cooperative banks to cover for their drawbacks, but also that cooperative banks need investor-owned banks to compensate for the apparent weaknesses caused by the cooperative business model. Thus, having only one or several cooperative banks maintaining the financial system would probably decrease financial stability. In addition, it might be that the efficiency of a cooperative bank would be reduced by the lack of competition, thus also reducing the surplus generated by the cooperative bank (Willner, 2006).

While there is a risk that cooperative banks could force even stronger and more efficient investor-owned banks to exit the market or to seek better profits from the more perilous fringes of finance, competition authorities should be careful not to treat cooperative banks as a threat to competition. Such an interpretation could easily lead to restrictions that could force cooperative banks to abandon many of their original approaches to banking and make them shift their behavior towards that of their investor-owned competitors. This also applies to politicians and banking authorities, who should take into account the unique characteristics of the cooperative business model, when drafting and implementing new banking regulations. However, I am not saying that the authorities should favor cooperative banks because that could destabilize the fragile balance currently maintaining the diversity of the banking sector. All that is needed is a level playing field where the distinctive features of all models of banking are appreciated.

Finally, I find it crucial that the cooperative banks themselves appreciate their cooperative identity and recognize that, if appropriately managed, it gives them several comparative

advantages that can be utilized in the fiercely competitive environment of modern finance. Sadly, many cooperative banks and other cooperative enterprises have lost much of their cooperative identity (Puusa, et al., 2013). In some countries, such as Sweden, Belgium or the UK, cooperative banks have entirely given up their cooperative status[21] (Birchall, 2013, p. 17; Swedbank, 2016; Fonteyne, 2007, p. 15). However, there are still many cooperative banks that have managed to remain loyal to their cooperative roots. These banks believe that their cooperative identity separates them from their investor-owned competitors and that their unique business model offers specific advantages, not only for the banks themselves, but also for their customers and the economy in general (Fonteyne, 2007, p. 15).

[21] It should be noted that in Sweden this was a result of the high losses suffered by the cooperative banks during the Nordic financial crisis of the early 1990s.

Sammanfattning på svenska -Swedish summary

Kooperativa banker och bankmarknadens konkurrensdynamik

Introduktion

Kooperativa företag skiljer sig på flera olika sätt från de dominerande kapitalistiska bolagsformerna. Det normala antagandet i vårt samhälle är att privata företag ägs av enskilda företagare eller utomstående investerare och att företagets primära syfte är att öka ägarnas förmögenhet. Däremot ägs kooperativa företag av sina medlemmar som ofta är också företagets kunder, arbetare eller producenter. Kooperativa företag siktar inte till att maximera sina vinster utan till att öka sina medlemmars välfärd till exempel genom att ge dem en möjlighet att utöva sitt yrke eller genom att erbjuda dem varor eller tjänster till ett skäligt pris. (Sanchez Bajo & Roelants, 2013, pp. 116-118)

På grund av att kooperativa företag inte strävar efter att maximera sina vinster, beter de sig annorlunda än sina investerarägda konkurrenter. Man kan anta att existensen av ett kooperativt företag som siktar på att maximera sina medlemmars välfärd ökar konkurrensen på marknaden. Samma fenomen har observerats också i studier av så kallade blandoligopol, det vill säga marknader där ett fåtal privatägda företag konkurrerar med ett oftast statsägt bolag vars syfte är att öka samhällets välfärd (Cremer, et al., 1989; de Fraja & Delbono, 1990; Willner, 2006). I dessa studier har man ofta märkt att den ökade konkurrensen även kan tvinga de privata företagen att ge upp och antigen upphöra med sin verksamhet helt och hållet eller flytta den över till någon annan marknad.

De tänkbara konkurrenseffekter som kan orsakas av närvaron av kooperativa företag är speciellt viktiga inom banksektorn där kooperativa banker har traditionellt haft en mycket viktig ställning. Banker och banksektorn är centrala för vårt ekonomiska system, och den senaste globala finanskrisen visade hur störningar på finansmarknaden kan leda till alvarliga konsekvenser för hela vårt samhälle. Efter den finanskrisen har flera forskare påpekat att existensen av kooperativa banker ökar diversiteten på banksektorn, vilket verkar ha en positiv effekt på dess stabilitet (Ayaldi, 2010; Goodhart & Wagner, 2012; Liikanen Report, 2012, p. 34). Dessutom är forskare ganska eniga om att bankmarknadens struktur samt konkurrensnivån påverkar finansiell stabilitet på ett eller annat sätt (Beck, 2008; Fiordelisi & Mare, 2014; OECD, 2010).

I denna avhandling diskuterar jag de kooperativa företagens tvåfaldiga identitet och i synnerhet de kooperativa bankernas särdrag. Dessutom presenterar jag resultaten av en marknadsanalys där jag har testat och analyserat hur närvaron av en kooperativ bank påverkar balansen och konkurrensdynamiken på bankmarknaden. Dessutom diskuterar jag kort hur de kooperativa

bankernas och andra kooperativa företagens marknadsbeteende borde granskas från en konkurrenspolitisk synvinkel.

Kooperativa banker

Kooperativa banker är depositionsbanker som ägs av sina kunder och som bygger sin verksamhet på de kooperativa värderingarna, och som följer de kooperativa principerna. Liksom övriga kooperativa företag är syftet för de kooperativa bankerna inte att maximera sin vins. I stället strävar de efter att öka sina medlemmars välfärd genom att erbjuda dem olika banktjänster emot en skälig ersättning (Ayaldi, et al., 2010, pp. 7-8). De första kooperativa bankerna grundades i Tyskland för över 150 år sedan på initiativ av *Hermann Schulze-Delitzsch* och *Friedrich Raiffeisen* som önskade engagera bönder och hantverkare som ofta saknade kapital och adekvat tillgång till lån och andra banktjänster (Birchall, 2013, pp. 7-14).

Idag utgör kooperativa banker en viktig del av banksektorn i flera EU-länder. Av de cirka 8000 banker inom det europeiska banksystemet är ungefär 4000 lokala eller regionala kooperativa banker (Schoenmaker, 2011). Tillsammans betjänar dessa banker över 200 miljoner kunder och står för cirka 20 % av depositions- och lånemarknaden inom EU (ECAB, 2016). I Finland finns det två kooperativa bankgrupper varav OP-gruppen är marknadsledare för hela den finska banksektorn med en marknadsandel på 35,1 % i lån och 36,5 % i depositioner. Den näststörsta banken i Finland är Nordea med en marknadsandel på 28,1 % i lån och 28,3 % i depositioner medan Danske Bank kommer på tredje plats med en marknadsandel på 9,6 % i lån och 13,7 % i depositioner. Resten av den finska bankmarknaden delas mellan ett antal mindre affärsbanker, sparbanker och kooperativa banker från POP guppen. (Finanssialan Keskusliitto, 2016)

Ayaldi et al. (2010, p. 8) har kallat kooperativa banker för ”dual-bottom line institutions” det vill säga organisationer med tvåfaldiga målsättningar. Med detta menar de att kooperativa banker inte enbart kan sikta på att öka sina medlemmars välfärd, utan de måste också generera tillräckligt med vinster för att kunna vara lönsamma och utveckla sin verksamhet på långt sikt. Detta är en gemensam egenskap för alla kooperativa företag och den beror på deras tvåfaldiga identitet som både ett slags förening och affärsföretag (Puusa, et al., 2013). Tillräcklig lönsamhet är en förutsättning för kooperativa banker på grund av att de är mer än vanligt beroende av sina egna vinster som en källa till eget kapital, eftersom de oftast saknar utomstående ägare eller välgörare som skulle finansiera dem vid behov. Den del av bankens vinster som inte returneras till medlemmarna lämnas därför i banken där den förblir en del av bankens generationsöverskridande tillgångar (”intergenerational endowment”) som utgörs av den del av kooperativets eget kapital som ingen av kooperativets nuvarande medlemmar har något laga anspråk på (Fonteyne, 2007).

Denna tvåfaldighet eller dualitet betyder att kooperativa banker och andra kooperativa företag befinner sig någonstans mellan de vinstmaximerande affärsföretagen och de välfärdsmaximerande välfärdsorganisationerna och statsägda bolagen. Var exakt den kooperativa banken befinner sig på skalan beror på hur banken bestämmer sig att betona medlemmarnas välfärd och sina egna vinster. Ifall banken bestämmer sig att betona sina medlemmars välfärd på bekostnad av sina egna vinster rör den sig närmare de välfärdsmaximerande företagen medan om banken bestämmer sig att betona mera sina vinster, börjar den närma sig sina vinstmaximerande konkurrenter.

Analys av en oligopolistisk bankmarknad

En marknad där ett relativt litet antal företag konkurrerar med varandra kallas ett oligopol. DE utgör en vanlig marknadsform och har därför attraherat forskning sedan början av 1800-talet. Också de flesta bankmarknaderna är oligopol. Den finska bankmarknaden, som är Europas mest koncentrerade, kan nästan beskrivas som ett duopol på grund av att ungefär två tredjedelar delas mellan den kooperativa OP-gruppen och Nordea. Lokalt kan bankmarknaden verkligen vara mycket nära en duopol eller även ett monopol på grund av att både Nordea och Danske bank nästan helt har stängt sina kontor på landsbygden och i mindre kommuner.

För att kunna studera hur närvaron av en kooperativ bank påverkar bankmarknaden har jag konstruerat två modeller för oligopolistisk konkurrens. De baserar sig på en enkel Cournot-modell och följer ganska långt idéer utvecklade av ekonomer som har studerat så kallade blandoligopol (Cremer, et al., 1989; de Fraja, 2009). I båda modellerna antar jag att en kooperativ bank konkurrerar med en investerarägd bank genom att bestämma produktionsmängden av sinsemellan homogena finansprodukter (t.ex. bostadslån). Liksom i de flesta blandoligopolmodellerna antar jag att efterfrågekurvan är lineär och neråtlutande ($P(Q) = 1 - Q$) (de Fraja, 2009). Bankerna antas vara lika effektiva, men jag testar också en variant där den kooperativa banken är mindre effektiv. I båda fallen antar jag att den investerarägda banken är en normal vinstmaximerare medan den kooperativa banken försöker maximera en målfunktion som kombinerar medlemmarnas överskott och bankens egna vinster på två olika sätt. Medlemsöverskottet är ett begrepp som är en vidareutveckling av konsumentöverskottet, som ekonomer ofta använder för att representera konsumenternas välfärd (Belleflamme & Peitz, 2010, pp. 24-25). Till skillnad från konsumentöverskott inkluderar medlemsöverskottet enbart den kooperativa bankens medlemmar och kan uttryckas som $MS = \frac{q_c^2}{2}$.

I den första modellen försöker den kooperativa banken maximera en blandning av medlemsöverskott och sina egna vinster som kan uttryckas som

$$\max_{q_c} \gamma MS + \pi_c = \gamma MS + P(Q)q_c = \gamma \frac{q_c^2}{2} + (1 - q_p - q_c)q_c \qquad (1)$$

där MS är medlemsöverskott, π_c den kooperativa bankens vinster, $P(Q)$ marknadspriset, q_c och q_p den kooperativa (c) och den investerarägda (p) bankens produktionsmängd och γ en viktkoefficient som representerar den kooperativa bankens strategiska val att betona sina målsättningar på ett visst sätt.

I den andra modellen försöker den kooperativa banken maximera medlemsöverskott begränsad av ett krav på att förbli lönsam. Den kooperativa bankens målfunktion uttrycks som *Lagrange*-funktionen

$$\max_{q_p} MS = \frac{q_c^2}{2} \qquad \text{s.t.} \quad (1 - q_c - q_p)q_c - cq_c - \pi_0 \geq 0 \qquad (2)$$

där c representerar den kooperativa bankens effektivitetsskillnad i förhållande till dess konkurrent och π_0 dess budgeterade vinster.

Resultat och slutsatser

Båda modellerna visar att närvaron av en kooperativ bank ökar konkurrensen på marknaden. Intensiteten av konkurrensen som den investerarägda banken utsatts för beror på hur den kooperativa banken viktar sina målsättningar. Ifall den kooperativa banken förstärker betoningen på sina medlemmars välfärd ökar också dess produktion, vilket leder till ökad konkurrens och lägre marknadspris. Ifall de däremot betonar sina egna vinster, närmar den sig den investerarägda bankens beteende, vilket leder till att konkurrensen försvagas.

Båda modellerna tyder på att konkurrensen blir för hård för den investerarägda banken, som måste lämna marknaden, ifall den kooperativa banken betonar sina medlemmars välfärd tillräckligt mycket. Den investerarägda banken kan skydda sig emot denna ökade konkurrensen främst genom att öka sin effektivitet och därmed få en liten fördel jämfört med den kooperativa banken. Å andra sidan kan det vara mycket farligt för den investerarägda banken ifall den kooperativa banken lyckas bli effektivare än sin konkurrent. Dessutom är det möjligt att den investerarägda banken kan försöka öka sina kunders lojalitet antingen genom att utveckla och differentiera sina produkter eller genom att försöka öka sin pålitlighet och soliditet.

Diskussionen och resultaten i denna avhandling tyder på att närvaron av kooperativa banker och andra liknande kooperativa företag ökar konkurrensnivån på marknaden. Nivån av konkurrensökningen beror på hur mycket banken betonar sina medlemmars överskott. Det är viktigt att observera att ifall kooperativa banker betonar för mycket sina egna vinster och börjar bete sig som vinstmaximerade, kan de förlora en betydande konkurrensfördel. Dessutom

skulle samhället då mista en stor del av de fördelar som närvaron av kooperativa banker medför.

Det kan vara problematiskt om den kooperativa banken lyckas öka sin marknadsandel så mycket att den får en dominant position, även om det är bättre för samhället att ha ett välfärdsmaximerande än ett vinstmaximerande företag om man måste välja mellan två slags monopolsituationer. Som konstaterats ovan så ökar diversitet bankmarknadens stabilitet. Behöriga myndigheter borde därför satsa på att försäkra sig om att lagstiftningen och dess tolkningar garanterar jämlika möjligheter för olika bolagsformer att konkurrera på bankmarknaden. Detta betyder till exempel att både tillsyns- och konkurrensmyndigheterna bör ta i beaktning de kooperativa bankernas särdrag. De skall varken hindra eller alltför mycket befrämja kooperativ verksamhet.

Annex 1: Cooperative identity, values & principles

Definition

A co-operative is an autonomous association of persons united voluntarily to meet their common economic, social, and cultural needs and aspirations through a jointly-owned and democratically-controlled enterprise.

Values

Co-operatives are based on the values of self-help**,** self-responsibility**,** democracy**,** equality**,** equity and solidarity**.** In the tradition of their founders, co-operative members believe in the ethical values of honesty, openness, social responsibility and caring for others.

Principles

The co-operative principles are guidelines by which co-operatives put their values into practice.

1. Voluntary and Open Membership

Co-operatives are voluntary organisations, open to all persons able to use their services and willing to accept the responsibilities of membership, without gender, social, racial, political or religious discrimination.

2. Democratic Member Control

Co-operatives are democratic organisations controlled by their members, who actively participate in setting their policies and making decisions. Men and women serving as elected representatives are accountable to the membership. In primary co-operatives members have equal voting rights (one member, one vote) and co-operatives at other levels are also organised in a democratic manner.

3. Member Economic Participation

Members contribute equitably to, and democratically control, the capital of their co-operative. At least part of that capital is usually the common property of the co-operative. Members usually receive limited compensation, if any, on capital subscribed as a condition of membership. Members allocate surpluses for any or all of the following purposes: developing their co-operative, possibly by setting up reserves, part of which at least would be indivisible; benefiting members in proportion to their transactions with the co-operative; and supporting other activities approved by the membership.

4. Autonomy and Independence

Co-operatives are autonomous, self-help organisations controlled by their members. If they enter into agreements with other organisations, including governments, or raise capital from external sources, they do so on terms that ensure democratic control by their members and maintain their co-operative autonomy.

5. Education, Training and Information

Co-operatives provide education and training for their members, elected representatives, managers, and employees so they can contribute effectively to the development of their co-operatives. They inform the general public - particularly young people and opinion leaders - about the nature and benefits of co-operation.

6. Co-operation among Co-operatives

Co-operatives serve their members most effectively and strengthen the co-operative movement by working together through local, national, regional and international structures.

7. Concern for Community

Co-operatives work for the sustainable development of their communities through policies approved by their members. (ICA, 2016)

Figures

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