# What Determines Membership in Co-operatives? A New Framework and Evidence from Banks

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**Abstract**:

We construct a conceptual framework to study the determinants of membership in consumer co-operatives. Both economic and non-economic motivations to join co-operatives are identified as well as individual and collective motivations. Our empirical work analyzes data for 2005 for over 200 Finnish co-operative banks. We compare two empirical concepts of the membership ratio: 1) *relative attractiveness of the co-operative* (members/potentially eligible persons) and 2) *recruiting success of the co-operative* (members/customers). We find: (a) a negative relationship between the size of the pool of eligible members with both types of membership rates; (b) a positive relationship between loan and deposit interest rates and the relative attractiveness of the co-operative; (c) a positive association of the recruiting success of the co-operative with individual's financial involvement; (d) that competition is negatively associated with the relative attractiveness of the co-operative, but has no association with the recruiting success of the co-operative; (e) neither membership ratio is responsive to social capital, measured by participation rates in municipal elections. Overall our findings provide support for both economic and non-economic motivations to join co-operatives, but we find no evidence in support of collectivistic associational impulses to join.

**Key words:** ownership; membership; co-operative; bank; social capital.
**JEL Classification:** G21, P13

**1 Introduction**

Economists have traditionally paid little attention to the question of what motivates

people to join economic organizations. A notable exception is the work on the

determinants of union membership that started from the seminal contribution of

Ashenfelter and Pencavel (1969). Their key insight was that the determinants of union

membership could be analyzed within a rational choice framework, where potential union

members compare benefits of unionization to its costs and join if the former exceed the

latter (see Blanchflower (2006) for an exhaustive survey of the literature that followed).

One purpose of this paper is to extend this heuristic framework and to build a general

framework for studying membership in another type of economic organization, namely

co-operatives. The topic is important in part because co-operatives are significant

institutions around the world with the International Co-operative Alliance

(www.ica.coop) estimating that co-operatives have around 800 million members and

generate approximately 100 million jobs. (See also Kalmi 2007; Altman 2009; Jones and

Kalmi, 2009.)

The second purpose of the paper is to use data to investigate the particular case of

financial co-operatives. These are financial institutions that are owned by their customers

and in which ownership rights among members are equally distributed according to the

"one member, one vote" principle. Members participate in residual revenue sharing

primarily based on their use of services. Through their rights to control and receive

residual revenue, customers become owners of these institutions. Financial co-operatives

are a particularly important type of co-operative. For instance, they are very prevalent in

the United States (e.g. Klinedinst, 2007; Goddard et al. 2008).[1] Around 88 million

inhabitants of the US (about 44 % of the economically active population) were members

of credit unions in 2007 (WOCCU 2009). This represents a substantial growth from 1996

when the membership totaled around 70 million (Emmons and Schmid 1999). Another

example is France, where co-operative financial institutions have more than 50 % market

share of deposits and they have almost 20 million members or almost one-third of total

population.[2] For comparison, the number of trade union members in France in 2005 was

3.2 million and in the US around 17 million (Blanchflower, 2006). The specific case we

examine, Finnish financial co-operatives, have a market share of retail deposits and retail

loans of more than 30% and, as elsewhere, those shares have been mostly growing

(Fonteyne, 2007).What makes investigation of financial co-operatives especially timely

and relevant is that they have been found to be more stable than commercial banks

(Hesse and Cihak, 2007) suggesting that their importance may grow during the current

financial crisis.[3] Another use of our empirical work is that many actors within the

industry of financial co-operatives are interested in how to increase membership rates in

order to gain a competitive advantage.[4] Our study then sheds light on potential

mechanisms for improving membership rates.

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[1] We are not aware of statistics that would give an estimate to the overall membership figure for financial co-operatives. For the subset of credit unions, the World Council of Credit Unions estimates the membership of credit unions worldwide to be around 180 million, of which 100 million is from North America (WOCCU 2009). This figure does not include at least 50 million members of European co-operative banks that are structured differently from credit unions, as well as financial co-operatives other than credit unions elsewhere.

[2] This information comes from the European Association of Co-operative Banks (EACB) website www.eurocoopbanks.coop augmented with information from Caisse D'Epargne (which is a co-operative banking group not affiliated with EACB) website www.caisse-epargne.fr.

[3] The evidence from the US Savings and Loans (S&L) crisis from the 1980s indicates that mutual S&Ls were much less likely to become insolvent than their joint-stock counterparts (Hermalin and Wallace 1994). Ebrahim (2009) argues that a stronger role of financial cooperatives in mortgage markets would be associated with reduced macroeconomic volatility.

[4] Higher and more stable membership is expected to lead to increases in deposits and lending.

Despite their importance, financial co-operatives have remained relatively understudied. The literature on financial co-operatives usually focuses on performance comparisons with commercial banks (e.g. Mester 1993; Altunbas et al., 2001; Iannotta et al., 2007).[5] Analysis of membership has remained unexplored except for Emmons and Schmid (1999) who looked at membership rates in US credit unions and Gottlieb (2007) who use data for Michigan workers in the furniture industry to investigate the probability of joining insurance cooperatives in the US in the late nineteenth century. While worker co-operatives have been studied more extensively (e.g. Bonin et al. 1993; Dow and Putterman 2000; Joshi and Smith 2008), even there the determinants of membership have seldom been addressed with only a single study by Estrin and Jones (1995), who investigated the determinants of membership rates in French worker co-operatives.

For several reasons we regard our study as both novel and exploratory. To evaluate the determinants of membership in co-operatives, we develop a framework that is broader and richer than those used in previous work. Specifically, by emphasizing how non-economic, including psychological, factors help to determine formal ownership (membership), we go beyond existing literature that explores how ownership may help satisfy individuals' motives for psychological ownership in participatory organizations like co-operatives (see Pierce et al. 1991; 2001). In addition, we argue that the impulse to join a co-operative may be of an individual nature (where the benefits from individual action accrue mostly to that individual, for example in the form of patronage refunds) or of a collective nature (where the action benefits a larger collectivity, for instance, to ensure continued provision of banking services within a community.) As such we

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[5] There is also relatively scant literature on the objectives of financial co-operatives (Taylor 1971; Smith et al. 1981).

contribute to the growing behavioral economics literature which points to the important role social preferences have been found to play in a variety of settings.[6] Finally, in testing our hypotheses, this is the first study that compares two empirical concepts of the membership ratio, namely the *relative attractiveness of the co-operative* and the *recruiting success of the co-operative*. The former is measured as the proportion of members of potentially eligible persons (broadly understood as people living in the area), while the latter is measured as the proportion of members of a narrower class of potential members (individuals who are customers of the co-operatives).

Our empirical analysis is based on data from the largest Finnish co-operative banking group, the OP Group. Specifically we use data for over 200 independent co-operative banks to analyze membership issues within a regression analysis framework. The data are for 2005. While the data are cross sectional, they do have the advantages of being highly reliable. The data are assembled by a single provider and are unusually detailed and also very homogeneous.

We continue by presenting our conceptual framework. This is followed by a brief overview of the structural features of Finnish co-operative banks. Next we draw on the two preceding sections to develop a series of hypotheses that can be tested using bank-level data. After describing our data we report the results from the empirical analysis. Finally, we conclude with a discussion of some implications of the findings.

## 2 Conceptual Framework

In considering theoretical arguments that bear on the questions of why individuals choose to become co-operative members and why cooperative organizations want to

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[6] For a recent review of that literature see DellaVigna (2009).

secure additional members, we argue that the resulting membership rates are mostly influenced by *customers' demand for membership*, whereas banks are not interested in constraining the supply of membership. Open membership means that anyone who is willing to pay the membership fee will be accepted as a member, and the membership fee is usually very small relative to the amount of transactions. According to Hansmann (1996), financial co-operatives often benefit from economies of scale, giving a powerful incentive not to restrict membership.[7] This issue is slightly more complicated in European co-operative banks where individuals can be customers even without becoming members. However, given that membership provides incentives to use bank services more intensively, we would expect that banks would find it important to aim for widespread membership. Also there are important structural features that ensure that existing members do not have an incentive to close membership (for instance by setting extraordinarily high membership fees). One such example is that the monetary rewards for membership do not depend on profitability, so that the incumbent members do not get any greater share of revenue for themselves by restricting membership.

In examining the kinds of economic incentives potential members have for joining a co-operative, the traditional answer given by economists as to why human beings select a course of (economic) action is based on the assumption of material self-interest as being the primary motivation. However, in research on co-operatives, counterarguments have been put forward that also acknowledge the role of collectivism. In the following, we move beyond these arguments suggesting that there are also several

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[7] This is in stark contrast to the case in some other cooperatives. Thus in worker co-operatives, existing members (who are mainly workers), may have incentives to close the co-operative to new members, to prevent incoming employees from free-riding on the investment of incumbent employees (Ben-Ner 1988; Dow and Putterman 2000). And Gottlieb (2007) shows how US cooperative insurance societies adopted pricing policies to discourage older workers from joining.

non-economic motivations and also that these may be either of an individualistic or a collectivistic nature.

Among the economic motivations, the division between individual and collective economic motivations can be made on the basis of whether the decision to join is based solely on self-interested calculation or whether membership has elements of a public good. Examples of individual motivators to join are competitive interest rates for loans and deposits, earning rebates based on transactions, or earning interest based on invested equity (see below for a discussion of the benefits of membership). An example of a collective economic good is the supply of banking services in an area. Co-operatives are often the sole providers of goods and services in sparsely populated areas (Fulton and Hammond-Ketilson, 1992). In such conditions, individuals may join co-operatives for the sake of the common good, even if based on purely individualistic calculations they would not join. In other words, a collectivistic motivation to join a co-operative reflects the fact that the optimal strategy for an individual may depend on what others are doing[8].

As self-governing economic organizations, co-operatives also have a strong associational element. Therefore we hypothesize that there may be non-economic, social motivations for joining co-operatives. These may be especially realized by becoming involved in the governance of the co-operative.[9] Furthermore, membership in cooperatives may be a good application of Tirole's (2006) argument concerning the roles that social image and reputation often may play in determining behavior. Some of the

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[8] And, especially in small localities in Finland, we expect that individuals probably know where their neighbors bank. By contrast, there is a potential for free-riding (enjoying the benefits of the co-operative but not contributing to the co-operative capital) that might lead into an underinvestment in the co-operative and ultimately undermine its existence. From a collectivistic point of view, on the other hand, members would adapt to the norms of the member community and avoid such deviance.

[9] Birchall and Simmons (2004) have studied the motivations of members to become involved in the governance processes of co-operatives. They have also divided the motivations into individualistic and collectivistic motivations in a fashion similar to what is done here.

rewards of membership are individualistic. Such individualistic rewards include the strategic use of co-operative to promote positive self-evaluations, enhanced social status from being a co-operative member, and being able to contribute to the decisions that are aligned with one's preferences.

Some individuals may also be motivated to contribute to the collective good without any expectation that they would derive personal gain from the act or be able to influence decision-making. Such participation is often motivated by feelings of belonging to the group and resulting group solidarity (i.e.the group's capacity to influence members' behavior), which are associated with particular social needs (e.g., the need to see one-self and to be seen by others as part of a collective of people) and can be interpreted as "support for the cause". Schmid (2002) argues that these types of unselfish sentiments motivate people to join voluntary organizations. According to him, the participation rate in voluntary organizations - that has been used as an indicator of social capital in Putnam (1993) and numerous studies thereafter - should be properly understood as an *outcome* of social capital. The motivating forces for participation in these cases are shared values across the community, perceived duty of participation, and sense of community, each associated with the need for social identity. Concern for community has been cited as a motivation to join financial co-operatives in Amess and Howcroft (2001) and Hannafin and McKillop (2006).

**3 Structure and Membership of OP Co-operative Banks**

The background of the OP Group is in the agrarian reforms of the early 20th century in Finland. The initial purpose of the co-operative bank was to intermediate agricultural loans made by the Finnish government to small farmers. From these humble beginnings

the group has transformed itself into the leading institution in consumer retail banking in Finland. In the early 1970s the co-operative financial institutions were legally transformed into co-operative banks that could offer a full range of banking services. This change in strategy was largely successful, as the OP Group was able to increase its market share in consumer deposits and loans from below 20 % in the early 1970s to over 30% by the late 1980s, at which level it has remained ever since. The group has experienced a rapid growth in membership from 290,000 in 1970 to 1,255,000 in 2008, implying that one in four inhabitants of Finland was a member in one of the co-operative banks in the group.

The OP Group is characterized by a complex governance structure. Certain centralized functions in the group are divided between two units at the group-level. OKO Bank (since 2008, Pohjola Bank[10]) operates as the central bank for co-operative banks, guaranteeing liquidity for them. It also takes care of more specialized operations (e.g. investment banking), whereas individual banks are responsible for retail operations. The Group Central is responsible for joint marketing activities, development of online banking and IT services, product and service development, and provision of training services for the group.[11] Within the group, the banks are also cross-insuring themselves. For co-operative banks, there are significant benefits from group membership—for example, small banks are helped to overcome size limitations and to attain economies of scale (Desroches and Fischer 2005). These group-level units are in turn owned by individual member banks, proportionally to their size.

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[10] In fall 2005, the OP Group purchased the insurance company Pohjola. This acquisition became effective in 2006 and thus falls beyond the period that is investigated in this paper. Since 2008 the group has been referred to as the OP-Pohjola Group.
[11] Jones et al. (2009) examine the economic effects of training in OP banks.

Despite the presence of strong co-ordination of activities within the group, co-operative banks are essentially autonomous and make a variety of decisions independently. This includes setting loan and deposit rates, making lending decisions, and hiring staff. Each co-operative is governed by the board that consists of member representatives. The board exercises oversight over the professional management that is responsible for daily management issues.

Individual co-operative boards are elected in member meetings[12] that typically take place annually or bi-annually. A particularly important feature of the allocation of decision-making rights within co-operatives is that, consistent with the general principles, voting rights in member meetings are evenly divided among the members (i.e. 'one-member, one-vote'). Thus voting rights are independent of equity investment beyond the required membership fee.

There are four distinct categories of co-operative equity: (i) basic equity, (ii) additional equity, (iii) mandatory reserves, and (iv) collective equity capital (in excess of mandatory reserves). The basic equity consists of membership fees. To become a member, the customer must pay a nominal membership fee (averaging about 100 euros) that is returned when the individual ceases to be a member. [13] Importantly, since a customer can lend or borrow from the bank without being a member, the customer thus has to make an active decision to become a member.[14] The large majority of the co-

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[12] This is either a general meeting or a meeting of a representative body.
[13] Although there are no explicit adjustments made for inflation, the par values of basic equity may be increased.
[14] The arrangement whereby customers choose whether or not to become members is found in most European co-operative banks, and not just in Finnish banks. However, this is different from credit unions where, in order to have some financial involvement with the institution, an individual must first become a member. For example, only members can get loans. Typically the membership requirement is to make a modest initial deposit in a savings account.

operative bank members are individual customers[15]. Usually no interest is paid on the

basic equity and all members must purchase one share of basic equity. The second class

of equity is additional equity. It is entirely voluntary for members to purchase additional

equity shares. Interest is paid on this additional equity according to rates determined by

the board. Although the interest paid is not directly tied to profitability, the bank board

can adjust the interest rate according to it. This method of compensation thus comes

closest to the ways of sharing residual revenue in investor-owned firms.

One of the key principles of co-operation is that the economic surplus is distributed

in relation to the use of the co-operative, rather than on the basis of invested capital. In

the OP Group, this happens through a method of patronage refunds that are called

'bonuses.' Customers receive as bonuses a certain percentage of the amount of their

deposits, loans and investments in mutual funds (we call this combination 'financial

involvement'). These bonuses (or rebates), in effect, lower the price of services for

members.[16] The member bonuses are paid when the combined amount of these deposits,

loans and mutual fund holdings with the bank is at least 5,000 euro. At the 2005 rate of

bonus (0.12%), the minimum bonus was 6 euros annually. Bonuses did not depend on

profitability in 2005. [17, 18]

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[15] Also corporations and foundations may become members with limited rights (no right for refunds or voice in elections). We concentrate on the individual members.

[16] For tax reasons, bonuses are first deducted from service fees the banks charge from their customers. When all bonuses have been used, the rest is paid in cash.

[17] Starting in 2006, co-operative banks also have been able to pay additional, discretionary bonuses based on profitability.

[18] There is an important asymmetry concerning how the rates of these two types of benefits were set during our observation period. The rates for bonuses were set by the Group Central and co-operatives could not deviate from these rates. Since this is a decision that is exogenous to individual banks then there are no simultaneous causality problems with this variable when explaining the variation within them. In contrast, the rates concerning additional equity investments were set by management in individual banks, so this is clearly a variable that is endogenous on bank-level decisions. Because of endogeneity issues, the parameter coefficient for additional interest payments may be underestimated.

**4. Hypotheses**

In this section we translate key ideas developed earlier in the general conceptual framework into specific hypotheses that can be tested for the particular case of Finnish co-op banks and by using bank-level data. While we will defer discussion of the precise measurement of all dependent and independent variables until the next section, it should be noted that in the empirical analysis we will employ two different dependent variables, with one reflecting the relative attractiveness of the co-operative and the other focused on the recruiting success of the co-operative.

We identify three different types of *individualistic* economic incentives to join co-operative banks: (i) to get competitive rates for loans and deposits; (ii) to receive bonuses based on the volume of financial involvement; and (iii) to receive interest payments for holding additional equity investments in the bank.

The importance of these variables may differ depending on the particular membership ratio that we want to explain. Usually since both members and non-members are offered the same rates for loans and deposits, interest rates should not determine the recruiting success of the co-operative (i.e. the members per customer ratio). However, interest rates play a major role when choosing between different banking groups, so competitive interest rates should be a major determinant of the relative attractiveness of co-operative banks within an area (i.e. the member per population ratio).

As noted earlier, the amount of bonuses depends linearly on the financial involvement of the member (above a certain threshold), whereas the cost of becoming a member (and thus getting access to bonuses) is fixed at the level of the membership fee.

Therefore, when an individual is already a customer, we expect that the likelihood of that individual becoming a member depends on her financial involvement. By contrast, interest paid on additional equity is fixed for all levels of additional equity investments so the relative returns to these investments do not depend on the quantity of investment, but only on their returns.

In sum, based on individualist economic motivations, we hypothesize:

*Hypothesis 1a): Loan interest rates are negatively related to the relative attractiveness of the co-operative.*

*Hypothesis 1b): Deposit interest rates are positively related to the relative attractiveness of the co-operative.*

*Hypothesis 1c): The average level of financial involvement of individuals is positively related to the recruiting success of the co-operative.*

*Hypothesis 1d): The interest rates paid on additional equity are positively related to both the relative attractiveness and the recruiting success of the co-operative.*

Individuals have also to bear certain costs by joining a co-operative. The most obvious one is paying the membership fee. There is also an opportunity cost of joining the co-operative. Becoming a co-operative member usually means that the person commits to use the co-operative bank for financial services, and thus foregoes the option to purchase these services from elsewhere.[19] This opportunity costs depends on availability of alternative providers, and is low in the case of low local competition. This

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[19]There are no formal regulations restricting the ability of members of co-operative banks to use other financial institutions. However the reasons to concentrate the use of services in one bank are convenience, financial incentives (higher bonuses), and psychological commitment to loyalty towards jointly-owned bank.

brings us to two hypotheses on how privately born costs (both direct and opportunity costs) influence membership rates:

*Hypotheses 1e): Membership fee is negatively related to both the relative attractiveness and the recruiting success of the co-operative.*

*Hypothesis 1f): Competition is negatively related to the relative attractiveness of the co-operative.*

There is also a collectivistic economic motivation related to competition. Under conditions of imperfect competition, consumer co-operatives set prices at a lower level than do comparable profit-maximizing entities, because co-operatives aim to maximize consumer surplus rather than profits (Hart and Moore, 1996). This implies that co-operatives have a competitive advantage relative to profit-maximizing firms in areas that are characterized by weak competition. If co-operatives were closed in such areas, profit-maximizing banks would either be unwilling to enter or they would use pricing strategies that would exploit their monopoly power. Thus, the people who are served by co-operatives have a strong mutual interest to ensure that the co-ops will continue to operate in and serve their area. Ensuring continuance may include collectivistic actions such as approval of retaining profits as collective capital and ensuring that prospective members perceive that a higher number of members in a co-operative enhance the legitimacy of the organizational form. Therefore, our hypothesis related to collectivistic economic motivation is

*Hypothesis 2): Competition is negatively related to the recruiting success of the co-operative.*

In considering the purely non-economic (individualistic associational) motives for co-operative membership, we note that in the analysis of what makes people want to participate in mass movements (which consumer co-operatives arguably are), it has been argued that participation rates vary inversely with the size of the population that can be potentially mobilized (e.g. Gavious and Mizrahi,1999). In small groups the contribution of each individual member is socially more visible and traceable than in large groups, and hence contributors are more likely to get individualistic social rewards from their actions. Further, the likelihood that the member is pivotal in decision-making situations (such as majority voting) increases when the collective is smaller. In other words, a rational candidate for membership is more likely to join a society with the expectation of social rewards such as an enhanced social status when the society is smaller. The flip side of this argument is that shirkers are also more likely to be detected when the group is smaller. If there is a perceived social obligation to participate in certain types of organizations, this pressure is felt stronger when the size of the social entity is smaller.

As noted earlier, the individualistic associational motivation described above has been argued to be important in co-operatives as well (Birchall and Simmons 2004). Therefore we predict that membership rates vary negatively with group size, which can be argued to be a proxy for influence opportunities and potential rewards for participation or non-participation.[20] We present separate hypotheses for the two dependent variables:

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[20] Emmons and Schmid (1999) employ similar arguments when they posit a negative relationship between the size of a credit union and its participation rates (defined as the number of members relative to the potential members). They use a Hotelling spatial model and argue that in larger credit unions the divergence of preferences is larger, and therefore the expected distance between individual members' preferences and average preferences are increased. In more informal discussion, they also note that there are other arguments that also predict a negative relationship between membership rate and the size of the potential membership pool, such as the greater affinity members may feel towards each other in smaller organizations, and greater decision-making possibilities.

*Hypothesis 3a): The size of population residing in the operative area of the bank is negatively related to the relative attractiveness of the co-operative.*

*Hypothesis 3b): The number of customers is negatively related to the recruiting success of the co-operative.*

Finally, as implied above, we believe that co-operatives' relative ability to attract customers and their success in recruiting new members amongst the customers are outcomes of collectivistic associational motivations. Further, we regard those motivations to be manifested in social capital. The idea that social capital is related to the (financial) success of co-operatives was first made by Fischer (1998) and later by Paldam and Svendsen (2000); all hypothesized a positive relationship interpersonal trust (an element of social capital) and the presence and growth of co-operatives. This hypothesis was first tested empirically by Jones and Kalmi (2009), who in a cross-country analysis found a robust connection between trust and the presence of large co-operatives. The argument that activity in municipal politics and popular participation in firm governance are correlated has a much longer pedigree, see e.g. Smith (1985). More specifically, our hypotheses are following:

*Hypotheses 4a): Social capital is positively related to the relative attractiveness of the co-operative.*

*Hypotheses 4b): Social capital is positively related to the recruiting success of the co-operative.*

## 4. Empirical Strategy, Data, Measures of Key Variables and Descriptive Statistics

To estimate the determinants of co-operative membership, our empirical strategy is straightforward. For both dependent variables, we estimate two sets of regression models—a baseline model and an augmented model. Each aims to explain differences in participation by using proxies for the variables discussed in the hypotheses as previously outlined. While we will elaborate on our approach throughout this section, we continue by first describing the data, then turn to consider several issues surrounding measurement of key variables and implementation of the empirical strategy before finally reporting descriptive statistics.

In our empirical analysis, we combine *data* from two sources. All the bank-level data (membership data, financial involvement, number of customers, etc.) come directly from the OP Group, while the data concerning demographic information are from Statistics Finland. These data are matched by using information on the geographic area where co-operative banks are active. All information is for 2005, except for the data on municipal elections (social capital) that are from 2004 and data on population growth, which are averages for 2003-2005.

As the above discussion indicates, we use two different *dependent variables* in our analysis. The *relative attractiveness of the co-operative* is operationalized as membership relative to the general population in the area (MEM_POP) and is similar to the measure of credit union members relative to the eligible individuals, defined by common bond, as used by Emmons and Schmid (1999). In our case, we have to stretch the definition of eligible members somewhat. Since most members in Finnish co-operative banks reside in the area where the bank is located, we use the number of people living in the municipalities where the bank has branches as the pool of eligible

individuals. However, there is no formal requirement that customers *must* reside in the area, and therefore our denominator may not be accurate, but it is not possible to determine the direction of the bias.[21] Moreover, organizations can be members as well, which means that the numerator may contain some observations that logically cannot be in the denominator. This creates an upward bias in the measure of the relative attractiveness of the co-operative.

Another problem is that there are a few co-operatives that operate only in some parts of a municipality and, if this is a large municipality, then the calculated membership ratio may substantially underestimate the "true" membership ratio. Such situations occur mainly after mergers between a small municipality and a larger city. Since the municipality is the smallest area for which we have population data, the only way to get around this type of measurement error is to discard data for observations for which we know that this is a pronounced problem. We drop seven observations from further analysis because of this problem.[22]

The other dependent variable, the *recruiting success of the co-operative*, is calculated by the ratio of members to customers (MEM_CUST). In their work on French worker co-operatives Estrin and Jones (1995) use a similar measure, the number of members relative to the total number of workers. In those co-ops the pool of eligible members is easy to observe. But for financial co-operatives there may be more

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[21] In practice, it is not uncommon that people who live in one area in their youth to remain members and customers of a co-operative bank even after they move away from that area. This is made possible by the network structure of co-operative banks, where customers make their transactions in branches of other co-operative banks in the same network.
[22] However, the main results survive even if these observations are included. The results including these seven observations are available from the authors upon request.

measurement error since there may be customers who have an account at the co-op bank but have their main account elsewhere.[23]

One set of *independent variables* are measures of individual-level economic incentives. These include loan interest rates (LOAN_RATE) and deposit interest rates (DEPOSIT_RATE) that are measured as bank-level averages of all loans (or deposits) given to the public, and they are our main variables in regressions where we explain the relative attractiveness of the co-operative.[24] In regressions where the regressand is members per customers, our main variables are the stock of loans relative to the number of customers (LOAN_CUST) and the stock of deposits relative to the number of customers (DEPOSIT_CUST), both given in 1000 euro.[25] These variables are entered in a linear form, because the bonuses also depend on them linearly (above the threshold of 5000 euro).[26] Another key measure under economic incentives is the interest paid on additional equity (EQ_R). This is measured in excess of the rate paid on normal deposits.

To control for the costs of membership, we include the main cost of membership which is the membership fee (MEMBER_FEE) that is paid once when entering the co-operative and returned upon departure at a nominal value. We measure competition intensity (COMPETITION) is measured as the ratio of the branches of competing banks within the area in which the bank operates.[27] Branches of other co-operative banks are

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[23]   However, this kind of measurement error may not be that serious in Finland where people typically have accounts in only one or two banks. This differs from the US where the norm is to have multiple banking relationships.

[24] While we would have preferred to use measures of differentials in interest rates  compared to competitors, such data are unfortunately not available.

[25] We do not have information on the third component of bonuses, namely mutual fund investment, by banks.

[26] However the results remain essentially unchanged if a log transformed variable is used instead.

[27] The increase in internet banking has made it possible for consumers to enjoy banking services even when there is no branch presence. However, as DeYoung, Hunter and Udell (2004) argue, many customers view

included as competitor banks, as these banks are also essentially competing for the same customers.

Turning to measures designed to capture *associational benefits* of co-op membership, the size of potential membership is calculated in two different ways. One is the log of population in the area in which the bank is operating (LN_POP). The other measure is the log of customers (LN_CUST). These measures correspond to the denominators in the two dependent variables. Logarithmic transformations are used because they result in a much better fit with the data than do linear measures.

To measure social capital we follow the extant literature (including Putnam, 2000 and Guiso et al., 2004) and use the voting participation rate, specifically in 2004 municipal elections (VOTEPR). In other words, we consider the participation rate to be an appropriate measure to use in this study since it may be considered as a behavioral manifestation of social capital and individuals' need to belong to a social entity.

Taken together these variables provide a set of proxies for the demand for and supply of membership and, thus, constitute the baseline model. In addition, we test an extended model where we augment the baseline model with two sets of additional variables that potentially influence co-operative membership rates.

As discussed earlier, we may need to control for the ways that banks may influence membership rates. To this end we include three control variables that are related to bank characteristics. The first measure is the density of branch network in the area per 1,000 inhabitants. Closer proximity of branches might attract higher membership

the services provided in branches complementary to those provided through the web, and they argue that community banks are especially able to benefit from this complementarity. Because branches and internet banking are arguably not perfect substitutes, it seems to us reasonable to view the presence of competitors' branches as a measure of bank competition.

rates. Because the distribution of this variable is very skewed, we enter it in logarithmic form (LNBRANCH_POP). The second measure is profitability. We use a measure of the return on assets (ROA). As discussed earlier, while the returns to members do not directly depend on profitability, nevertheless the supply of membership or demand for membership may be different in profitable co-operatives. We expect this relationship to be positive. Third, we use the percentage of organizational customers to all customers (ORGCUSTPR) as a control variable. We expect that a high percentage of organizational customers may create heterogeneity in organizational objectives, and therefore it may be negatively correlated with the dependent variables.

The other set of augmenting variables comprises four additional variables that relate to the demographic background of the population. These include a dummy variable SWEDISH that takes the value 1 if the main language of the bank is Swedish rather than Finnish. This variable captures the impact of cultural differences between the two main ethnic groups in Finland. The expectation is that co-operative traditions are stronger among the Finnish speaking population, so the expected sign of this variable is negative. We also include a variable that measures the agricultural workforce as a percentage of the total workforce in the area (AGRIPR). The expected relationship between this variable and the membership ratio is positive, because co-operative banks have a long tradition among the agricultural population. We also control for population growth (POPGR) in the banking operation area in 2003-2005. Here the idea is that in areas where population is shrinking (most likely due to outmigration) the member-to-population ratio may be artificially inflated because people tend to remain members in the co-operative in the area where they come from. Conversely, in areas where there is net immigration, the new

migrants may be less likely to join local co-operative banks. Therefore we expect that the relationship between population growth and the dependent variables is negative. Finally, we include a measure of the percentage of the economically active population, i.e. percentage of people who are 18-65 years old (ACTPOPPR). We expect that those in the economically most active part of the population are more likely to be members than either the very young or the very old (although there are no age limits for co-operative membership). Finally, we expect that these demographic characteristics are mostly related to the relative attractiveness of the co-operative.

Our *empirical strategy* is to estimate the membership equation using data from the year 2005. Of course cross-sectional data cannot handle unobserved heterogeneity in the way that fixed effects panel data estimation techniques can. However, in this case we note that, even if panel data were available, there are reasons why fixed effects techniques might be problematic to implement. In particular, fixed effects techniques require that the independent variables that are of interest vary meaningfully over time. However, many of our explanatory variables are such that they change only slowly over time (e.g. customer base, population, competition, social capital) and, therefore, the estimation of coefficients for these variables is problematic. In addition, because our theory is based on the behavior of individuals but the data we observe is bank-level, we are bound to use proxy variables for our theoretical concepts that we cannot observe directly at the individual-level. The measurement problems associated with the use of proxy variables are aggravated in fixed effects estimations. Therefore, we view the cross-sectional OLS specification as appropriate, although we recognize that causal interpretations suffer from potential omitted variables biases.

Given this set of dependent and independent variables, the baseline model we estimate can be written as:

$MemberPop_i = \alpha + \beta_1 LoanRate_i + \beta_2 DepositRate_i + \beta_3 EQ\_R_i + \beta_4 Member\_Fee_i +$

$\beta_5 Competition_i + \beta_6 LnPop_i + \beta_7 VotePr_i + \varepsilon_i$ , $\qquad\qquad$ (1)

where $\alpha$ is the constant, $\varepsilon$ is the error term, and other variables are as explained above.

For the augmented model, we augment the equation (1) as follows:

$MemberPop_i = \alpha + \beta_1 LoanRate_i + \beta_2 DepositRate_i + \beta_3 EQ\_R_i + \beta_4 Member\_Fee_i +$

$\beta_5 Competition_i + \beta_6 LnPop_i + \beta_7 VotePr_i + \beta_8 BankChar_i + \beta_9 AreaChar_i + \varepsilon_i$ , $\quad$ (2)

where *BankChar* refers to the vector of bank characteristics and *AreaChar* refers to the vector of demographic characteristics of the area, both as explained above.

For the dependent variable *MemberCust$_i$*, the specifications are the following:

$MemberCust_i = \alpha + \beta_1 LoanCust_i + \beta_2 DepositCust_i + \beta_3 EQ\_R_i + \beta_4 Member\_Fee_i +$

$\beta_5 Competition_i + \beta_6 LnCust_i + \beta_7 VotePr_i + \varepsilon_i$ , $\qquad\qquad$ (3)

And for the augmented model:

$MemberCust_i = \alpha + \beta_1 LoanCust_i + \beta_2 DepositCust_i + \beta_3 EQ\_R_i + \beta_4 Member\_Fee_i +$

$\beta_5 Competition_i + \beta_6 LnCust_i + \beta_7 VotePr_i + \beta_8 BankChar_i + \beta_9 AreaChar_i + \varepsilon_i$ , $\quad$ (4)

The standard errors in the estimations are heteroskedasticity-robust.

In Table 1 we report *descriptive statistics* -- means, standard deviations, and quintiles of dependent and independent variables -- where measures have been calculated for the 205 banks used in the regression analysis.[28] It is interesting to note that the two membership ratios are very close to each other, 38 % for MEM_POP and 39% for MEM_CUST. Although the customer base of co-operative banks is of course smaller

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[28] Since data were missing for some variables we exclude 31 banks. A further 7 observations were deleted since we could not reliably identify the geographical scope of the bank's operations.

than the general population, in many small communities the first type of participation rate is often higher than the second. Population size and MEM_POP are strongly negatively correlated ($r = -0.37$), which helps explain this result which, at first sight, might appear rather odd. We also noted earlier that because organizations can become members, there is an upward bias in the estimate of the membership-per-population rate. A second observation is that whereas MEM_CUST is quite tightly concentrated around the mean, MEM_POP is more spread out, taking the range of values from 1% to 101%.[29]

The average size of loans per customer is 8000 euro (this includes customers with no loans) but there is considerable variation across banks. The average size of deposits per customer is 8140 euro. The average deposit rate was around 0.9% with fairly limited variation, while the average lending rate was 3.6% with substantially higher variation. On average, the interest paid on additional equity is 2 percentage points over the deposit rate (or roughly 3%), again with quite considerable variation across banks. Membership fees are mostly 100 euro (for over 80% of the sample), although there is some variation. There is, on average, one competitor branch per 3000 inhabitants. 17% of banks have no branches of competing banks in their municipality (not shown in the table). In average bank, there is one branch per 3,000 inhabitants, but there is a quite significant variation in this variable. All banks had solid profitability in 2005, the mean ROA being 1.7% which is a fairly good figure in the banking industry.[30] The average percentage of organizational customers across banks is 11%, and again there is quite substantial variation. The proportion of Swedish banks is fairly small although consistent with the size of the ethnic

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[29] As discussed earlier, when considering the MEM_POP variable, the denominator is not well defined, and therefore this variable occasionally has values exceeding 100%.
[30] Fonteyne (2007) explains that co-operative banks often have higher ROAs than commercial banks because of their labor-intensive production technologies.

minority in Finland (both around 5%). The average share of the agricultural workforce is 5% with substantial variation. This is higher than the national average, but it is due to the fact that smaller municipalities have higher fractions of their workforce in agriculture. On average, the share of the economically active population is 80%, but it varies between 65% and 85%. Finally, we note that the average bonus paid out per member was 34 euro annually, and the variation between the second and fourth quintile is fairly condensed.[31]

## 5. Empirical Findings

We begin by reporting findings emerging from our baseline regressions where we include only variables that are essential to our core hypotheses concerning the benefits and costs of membership. The dependent variable is the relative attractiveness of the co-operative (MEM_POP). Second, we estimate specifications in which we also include variables that we believe might be important to introduce as additional controls in the membership regressions. These serve as robustness checks for omitted variable biases in the analysis. In the remaining regressions results we report findings based on comparable specifications except that we use the recruiting success of the co-operative (MEM_CUST) as the dependent variable and modify pertinent independent variables as noted in equation (4). The results are reported in Table 2.

In the first specification we note that three of the factors are statistically significant at conventional levels of statistical significance: log of population, competition and loan interest rate. All three of these coefficients are of the expected sign. Moreover, some of the coefficients imply effects that are economically significant. The coefficient for the LOAN_RATE means that decreasing the loan rate by one percentage

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[31] Thus this variable is not included in the regressions.

point would increase the membership rate by 18 percentage points. The coefficient for the log of population means that doubling population would be associated with an expected decrease of MEM_POP by around 11.5 percentage points, which is a sizeable decrease. The coefficient on COMPETITION means that that an increase of one competitor branch per 1000 inhabitants would decrease MEM_POP by 27 percentage points. Such an increase in COMPETITION is rather large, as the standard deviation of the variable is 0.25. A standard deviation increase in this variable would decrease MEM_POP by 7 percentage points, which is also quite a large decrease.

However, the other variables in the model -- deposit interest rates (DEPOSIT_RATE), interest rates for additional equity (EQ_R), membership fee (MEMBER_FEE) and voting rates in municipal elections(VOTEPR)  -- are all found to be statistically insignificant at conventional levels of statistical significance. The R-square of the regression is 0.60, which indicates that the variables included in the regression capture more than half of the variation in the dependent variable.

In the second specification we include a host of control variables. An F-test indicates that these additional variables are jointly statistically significant at the 1% level, and therefore we may regard this as the preferred specification. The R-square increases to 0.67. We look first at the effect of including these additional variables on the size and statistical significance of coefficients for variables included in the base specification. The coefficients for LOAN_RATE, COMPETITION and LN_POP all remain rather close to their previous levels and are statistically significant. Rather interestingly, the coefficient for DEPOSIT_RATE now becomes now significant at the 1% level and the effect is

fairly large: a one percentage point increase in this variable would increase the participation rate by 20 percentage points.

In addition, some of the individual control variables are found to be important: branch density and profitability are positive and statistically significant at the 1% level, and population growth is negative and statistically significant at the1% level. Both of these relationships are of the expected sign. Other variables are not statistically significant.

The third and fourth specifications use the recruiting success of the co-operative (MEM_CUST) as the dependent variable. The main findings that are consistent with our hypotheses are that a higher amount of loans per customer is associated with higher membership rates, and a larger number of customers are associated with less success in recruiting members. An increase of loans to customers by 1000 euro leads to a 0.6 percentage point higher membership rate (significant at the 5% level.) Doubling the number of individual customers is associated with a decline of the members-per-customers -ratio by 2 percentage points.

However, there are some more surprising results. Social capital has a negative and significant coefficient, as does the interest rate for additional equity. Competition, membership fee and the stock of deposits are insignificant in these regressions.

The fourth and final specification use the full set of control variables. Again, based on an F-test the additional variables are collectively found to be statistically significant at the 1% level. The proportion of variance explained in the recruiting success of the co-operative (MEM_CUST) more than doubles to 0.42. Group size and the stock of loans continue to be significant at conventional levels of statistical significance. In this

preferred specification (when the control variables are added), our earlier findings concerning social capital and the interest rate on additional equity are overturned; both of these are no longer statistically significant. Also we find that the membership fee is now negative and significant at the 5% level. Finally, we find evidence that points to the importance of some control variables. In particular we find that the percentage of organizational customers and Swedish language co-operatives are each, as predicted, negative and significant (both at the 1% level). More surprisingly, branch density is negatively associated with recruiting success.

## 6. Conclusions and Implications

In this paper, we propose that the determinants of membership in consumer co-operatives can be analyzed within a rational choice framework that acknowledges both economic and associational motivations for joining the co-operative. We argue that an individual may choose to become a member for individualistic and/or collectivistic reasons. In other words, an individual choosing to join a co-operative may expect from this course of action both economic and non-economic rewards and rewards that will accrue to him or her personally as well as to the larger collective that may be the community as a whole or all customers of the co-operative.

Based on our empirical work we reach five conclusions concerning the determinants of membership proposed in the conceptual framework. First, echoing earlier findings of Emmons and Schmid (1999), there is a robust negative relationship with co-operatives' relative attractiveness in their operation areas as well as their success in recruiting members among their customers and the size of the pool of eligible members.

In other words, the more competitors there are for decision-maker status (or for other individualistic associational satisfactions), the less likely it is that the individual becomes a member.

A second finding is that co-operatives' relative attractiveness in their operative areas as well as their success in recruiting members among their customers are positively associated with certain individualistic economic motivations. Lower borrowing rates increase the relative attractiveness, as do higher deposit rates. This indicates that more attractive interest rates help to gather a larger proportion of potential customers as members. We use loan per customers and deposit per customers as explanatory variables for recruiting success, because we argue that among customers, those having the highest financial involvement with the bank have the biggest incentives to join, as members are linearly rewarded on the basis of their transactions (above a threshold of 5000 euro). However, we are not aware of previous literature where this hypothesis has been examined empirically. This prediction appears true for loans, but not for deposits. This indicates that borrowers may be more likely to become members than depositors. When taking a loan, a borrower may be more aware of the savings he or she gets by joining also as a member, whereas depositors may not be as alert to this possibility, especially if deposits accumulate gradually.

Third we find that competition is negatively associated with the relative attractiveness of the co-operatives, but it has no statistically significant association with their success in recruiting customers as members. The first result is not very surprising given that people are more likely to establish a relationship with the co-operative when the outside options are poor. The second result indicates that the mere absence of

alternative providers of financial services is not sufficient to mobilize customers to become members, for instance to ensure the continuance of financial services in the municipality.

A fourth finding is that a number of economic variables typically were not significantly related to the membership rates. This was the case with the membership fee which was significant only once in four regressions, perhaps reflecting the low variability of this variable. In other cases the statistical relationship was either weak or found to be in an unexpected direction.

Finally we do not find any evidence that the relative attractiveness of the co-operatives or their recruiting success are responsive to social capital, measured by participation rates in municipal elections. As such, the results lend much more support to individualistic motivations to join co-operatives than collectivistic associational motivations (such as the need for belonging). However, conceivably our proxies for these particular motivations are imperfect, and future research might address this issue.

There are several policy recommendations that can be derived from this work. First, increased rates of remuneration from using bank services would be expected to increase membership ratios. Moreover, in view of their solid profitability, the existence of accumulated reserves and the fact that their pay-out ratios have been low in international comparisons (even among co-operative banks), Finnish co-operative banks should have room to implement such a change. Interestingly it turns out that *after* 2005 the OP Group (currently OP-Pohjola Group) increased the rates of remuneration of customers (up to 0.25% in year 2008), and also increased the flexibility of this remuneration, so that individual banks could also pay additional bonuses, in excess of the

scheme agreed upon at the group-level. Given that the membership figure had increased by 120,000 (or over 10%) between 2005 and 2008, this strategy of attracting members appears to have been successful.

Second, our results concerning group size indicate that membership rates are not entirely determined by economic motivations. People are more likely to join co-operatives when members are drawn from a smaller area (in terms of inhabitants) and when the customer base is smaller. This may also indicate that there are limits to mergers between co-operatives, so that the sense of membership and the co-operatives' potential for satisfying individualistic associational motives do not get diluted.

Our results that the membership rate per population was negatively correlated with competition intensity and positively correlated with branch density indicate that branch presence continues to be important for attracting members. We do not find much evidence for collective motivations, but at least this indicates that social capital (which may be hard to enhance by policy interventions) is not a significant determinant of co-operative membership, and the lack of social capital may not constrain the growth of co-operatives. This finding is different from that contained in Jones and Kalmi (2009), perhaps reflecting the fact that they study variation across countries and use macro data. On the other hand, as put forward above, the findings concerning the role of social capital and collectivistic associational motives might be different if different measures were used. Thus, we offer a word of caution concerning this particular conclusion.

Two broad research implications emerge from our study. The first reflects the observation that, to date, the bulk of research on diverse organizations has focused on issues surrounding *outcomes*. This is, perhaps, most evident for labor unions (with a

massive literature on wage and productivity effects), but is also the case for other

organizations such as political parties (e.g. Li et al., 2007). Our study suggests that there

may be dividends flowing from more researchers turning to issues of *incidence*. This is

especially the case when considered alongside a small but growing literature that

investigates matters surrounding the determinants of membership in various institutions

including other forms of cooperatives (e.g. Gottlieb, 2007), trade unions (e.g. Harel,

2000) and rural producer organizations (e.g. Arcand and Fafchamps, 2006). Second, there

is a growing body of laboratory (e.g. Charness and Rabin, 2002) and field evidence

(reviewed in DellaVigna, 2009) that, in their decision-making, individuals often show

concern for the welfare of others. The conceptual framework that we develop has similar

implications. Our finding that the group size is a significant determinant for co-operative

membership even when economic incentives are controlled for, provides additional

evidence in support of the behavioral economics approach.

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**Table 1: Descriptive statistics**

|  | Mean | Standard deviation | Min. | 25% | Median | 75% | Max. |
|---|---|---|---|---|---|---|---|
| MEM_POP | 38.28 | 18.04 | 1.34 | 25.29 | 39.97 | 50.02 | 101.25 |
| MEM_CUST | 39.00 | 6.03 | 16.26 | 35.58 | 39.11 | 42.80 | 56.79 |
| LOAN_CUST | 7.99 | 1.78 | 2.80 | 6.86 | 7.93 | 9.13 | 12.19 |
| DEP_CUST | 8.14 | 1.29 | 4.84 | 7.32 | 8.06 | 8.90 | 13.01 |
| LOAN_RATE | 3.63 | 2.61 | 3.04 | 3.45 | 3.61 | 3.79 | 4.58 |
| DEPOSIT_RATE | 0.93 | 0.18 | 0.48 | 0.80 | 0.92 | 1.03 | 1.71 |
| EQ_R | 1.99 | 0.81 | 0.66 | 1.45 | 1.75 | 2.34 | 4.75 |
| MEMBER_FEE | 97.37 | 21.12 | 50 | 100 | 100 | 100 | 200 |
| COMPETITION | 0.34 | 0.25 | 0 | 0.17 | 0.31 | 0.48 | 1.59 |
| Population | 18227 | 37783 | 881 | 3358 | 6251 | 13098 | 319528 |
| LN_POP | 8.95 | 1.15 | 6.78 | 8.12 | 8.74 | 9.48 | 12.67 |
| # of customers | 12139 | 20845 | 662 | 3427 | 5866 | 9961 | 159676 |
| LN_CUST | 8.78 | 1.01 | 6.50 | 8.14 | 8.68 | 9.21 | 11.98 |
| VOTEPR | 62.61 | 5.18 | 51.08 | 59.49 | 62.30 | 65.62 | 81.73 |
| Branches / 1,000 inhabitants | 0.34 | 0.47 | 0.01 | 0.13 | 0.23 | 0.39 | 5.78 |
| LNBRANCH_POP | -1.52 | 0.93 | -4.51 | -2.07 | -1.47 | -0.95 | 1.75 |
| ROA | 1.68 | 0.42 | 0.76 | 1.38 | 1.65 | 1.94 | 3.46 |
| ORGCUSTPR | 10.95 | 2.24 | 6.17 | 9.36 | 10.72 | 11.91 | 20.88 |
| SWEDISH | 0.05 | 0.22 | 0 | 0 | 0 | 0 | 1 |
| AGRIPR | 5.74 | 4.88 | 0.30 | 2.23 | 4.20 | 7.54 | 30.43 |
| POPGR | -0.06 | 0.82 | -1.83 | -0.64 | -0.13 | 0.47 | 2.62 |
| ACTPOPPR | 79.10 | 3.09 | 64.99 | 77.17 | 79.18 | 81.16 | 86.38 |
| Bonus / member (in euro) | 33.87 | 6.24 | 10.91 | 30.40 | 33.86 | 37.66 | 51.13 |

**Notes:** 1) Sources: OP Group, Statistics Finland

**Table 2: Determinants of Membership Rates: OLS regressions**

| Membership ratio | Mem_Pop | Mem_Pop | Mem_Cust | Mem_Cust |
|---|---|---|---|---|
| LoanRate | -17.80*** | -19.86*** | | |
| | (4.90) | (4.20) | | |
| DepositRate | 6.765 | 20.12*** | | |
| | (6.54) | (6.10) | | |
| LoanCust | | | 0.584** | 0.771*** |
| | | | (0.24) | (0.23) |
| DepositCust | | | 0.103 | -0.290 |
| | | | (0.37) | (0.32) |
| EQ_R | -1.007 | -0.625 | -1.039* | -0.101 |
| | (1.41) | (1.36) | (0.57) | (0.43) |
| MemberFee | -0.0250 | -0.0281 | -0.0247 | -0.0475*** |
| | (0.041) | (0.035) | (0.021) | (0.017) |
| Competition | -27.28*** | -23.98*** | -1.101 | -1.146 |
| | (3.83) | (3.92) | (1.89) | (1.41) |
| LnPop | -11.51*** | -5.743*** | | |
| | (1.05) | (1.06) | | |
| LnCust | | | -1.887*** | -1.971*** |
| | | | (0.59) | (0.52) |
| VotePr | -0.122 | -0.117 | -0.446*** | -0.00338 |
| | (0.21) | (0.23) | (0.11) | (0.094) |
| LnBranchPop | | 8.903*** | | -1.113** |
| | | (1.65) | | (0.54) |
| ROA | | 6.713*** | | 0.242 |
| | | (2.14) | | (0.85) |
| OrgCustPr | | -0.120 | | -1.151*** |
| | | (0.47) | | (0.23) |
| Swedish | | -0.646 | | -5.890*** |
| | | (4.38) | | (2.22) |
| AgriPr | | 0.00324 | | -0.0387 |
| | | (0.18) | | (0.087) |
| PopGrowth | | -4.132*** | | -0.985* |
| | | (1.21) | | (0.56) |
| ActPopPr | | 0.339 | | 0.236 |
| | | (0.35) | | (0.17) |
| Constant | 220.8*** | 138.3*** | 82.85*** | 50.32*** |
| | (28.9) | (36.8) | (10.3) | (14.6) |
| Observations | 205 | 205 | 205 | 205 |
| R-squared | 0.60 | 0.72 | 0.18 | 0.42 |

Notes:
1. Levels of significance: *10%; ** 5%; *** 1%
2. Standard errors are heteroskedasticity-robust.