A METHODOLOGY FOR THE EMPIRICAL IDENTIFICATION OF DYNAMIC CAPABILITIES – THE CASE OF LOCAL BANKING

DRAFT!

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In this paper we propose a two-stage methodology for the empirical identification of dynamic capabilities. The first stage of the methodology aims to identify the competitive advantage of the firm and to control the effect of market power on firm success. The purpose of the first stage is to identify the existence of competitive advantage that is sustained over a period of time in a changing competitive environment. The second stage concentrates on the in-depth identification of the capability. The first stage of the methodology is applied in an analysis of Finnish banking markets. In order to find out the competitive advantage of the firm we estimate differences both in production costs and in the pressure of competition faced by bank groups. The analysis is based on a panel analysis of the local banking markets during 2002–2005.

Keywords: Dynamic capabilities, competitive advantage, competition analysis, panel data, banking

Introduction

Strategic management literature traditionally has focused on questions relating to organizational performance from a managerial point of view. In order to also understand the functioning of markets and the competitive outcomes at the economy level we have to understand how firms cope with change. Dynamic capabilities approach has emerged within the resource-based theory of strategic management literature to address this issue. Dynamic capabilities are seen as the means to operate successfully and to outperform competition in a changing environment.

Until recently dynamic capabilities literature has evidenced mostly conceptual progress (Teece, Pisano & Shuen 1997, Eisenhardt & Martin 2000, Zollo & Winter 2002, Winter 2003). Even though the empirical study of dynamic capabilities has become the focal point of dynamic capabilities research after over a decade of mostly conceptual analysis and case studies, the empirical evidence on dynamic capabilities is still scarce. Reason for this is that dynamic capabilities have been seen as abstract and difficult to observe (Zott 2003). Literature has been

1 This is also the case in resource-based view type research in general (Hoopes, Madsen & Walker 2003).
lacking empirical yardsticks to measure the performance of dynamic capabilities (Helfat et al. 2007, 7).

The purpose of this paper is to provide a means to improve understanding of dynamic capabilities via empirical research. Since dynamic capabilities are not easily pinned down, we propose a top-down or market approach for analysing them. We regard this so that the point of departure is the market outcome and general organizational performance from which we deduce possible cases of dynamic capabilities. Since the resource-based and dynamic capabilities view has also been criticized for being tautological (e.g. Porter 1994, Williamson 1999), we adapt a falsificationist approach. That is, we cannot assume the existence of dynamic capabilities before their inexistence is falsified. This is opposite to the traditional inductive managerial approach.


The paper is organized as follows. The next section provides a short review of dynamic capabilities literature. After that we present a top-down method for the identification of dynamic capabilities. Then we apply the first stage of the method to analyze bank group level competitive advantage and the possibility of dynamic capabilities in Finnish bank markets. The last section concludes.

Theory of Dynamic Capabilities

Strategy research has focused on dynamic capabilities for ten years now after the publication of the seminal paper from Teece, Pisano and Shuen (1997). Stemming from the resource-based view research in the line of dynamic capabilities, however, dates further back. Literature on the resource-based theory has grown exponentially in the recent years (Acedo, Barroso and Galan 2006). The resource-based theory of the firm, dating back to the seminal book by Penrose (1959) and more recently building on the papers of for example Wernerfelt (1984), Rumelt (1984), and Barney (1991), has become one of the most important theories in strategic management.

The resource-based view is based on the idea that there are systematic and stable differences in the resource base and hence in the performance of firms (Foss 1998, 137). Performance differences are based on the resources and capabilities of firms. These resources and capabilities have to meet the VRIO criteria (Barney 1997). From the resource-based view

2 Although the authors had previous papers (Teece & Pisano 1990, 1994) on the topic, this one is the most cited.
3 VRIO= Valuable, Rare, Inimitable and Organization focused
competitive advantage focuses on firm specific resources and their organizing and combination in ways that give firms capabilities to outperform their competitors.

Most recently the focus has moved towards considering the dynamic nature of sustainable competitive advantage. The dynamic capabilities view of competitive advantage has focused on the capabilities that give firms the competence of adapting to change in their environment and competitive position (cf. Teece *et al.* 1997). This strand of literature has highlighted the *process* of creating and maintaining competitive advantage instead of focusing on the resource and capability base of a firm on which firms build their competitive advantage.

In the field of strategic management literature the dynamic capabilities view of competitive advantage is a direct descendant of the resource-based view (see e.g. Acedo *et al.* 2006). It can be said to be a dynamic version of the resource-based view in the sense that it adds the element of change to this approach. Dynamic capabilities as a theoretical concept arose from the criticism directed at the resource-based view (RBV). The RBV did not taken into account factors relating to the development of the resource base and capabilities of firms. Instead, the RBV emphasizes the selection of resources leaving out the process of resource development and adaptation to the external environment.

The dynamic capabilities view builds on four central ideas:

i) The ability to alter the resource base in relation to the changing environment is fundamental to dynamic capabilities (Teece *et al.* 1997). Hence, they are more valuable in unstable environments.

ii) Dynamic capabilities may create market change not only respond to it (Eisenhardt & Martin 2000). Dynamic capabilities and the evolution of the market environment are not separate phenomena. The co-evolution of the market and firms complement the ambiguous nature of dynamic capabilities.

iii) The resource base of the firm is path dependent and dynamic capabilities can alter these paths (Helfat 1997). Dynamic capabilities do not exist separately of the resource base of firms. On the contrary, they only function together with and through the existing resource base.

iv) Dynamic capabilities are context dependent (Winter 2003). It is not possible to generalize the performance or even existence of dynamic capabilities without taking to account the institutional, environmental and market context (cf. Rouse & Dallenbach 2002).

These aspects are covered in the latest definition drawing on prior literature, which states that dynamic capabilities are *the capacities of organizations to purposefully create, extend, or*
modify its resource base (Helfat et al. 2007, 4). This is in accordance with the dynamic resource-based view introduced by Helfat and Peteraf (2003) which explicitly merged the dynamic capabilities and resource-based view. Moreover, this may be considered as a natural result of the development of the research on resource-based theory (Acedo et al. 2006).

Teece et al. (1997) define dynamic capabilities as “the firms’ ability to integrate, build, and reconfigure internal and external competences to address rapidly changing environments.” Illustratively Winter (2003) has specified the definition of dynamic capabilities as first order and higher order capabilities in contrast to the zero-level capabilities, which provide earnings on day-to-day basis. Dynamic capabilities are, on the contrary, focused on altering the resource base and thus enable sustainable outperforming even under a changing competitive environment. This makes it possible to conceptually separate dynamic capabilities from other resources and capabilities. Although dynamic capabilities are by definition intangible and abstract, it is not impossible to operationalize them for empirical analysis (Jantunen 2005).

Dynamic capabilities are not a single entity, but come in different forms and perform different tasks, for example foresight, organizational learning, management and so on. (Helfat et al., 2007). In addition, it is not trivial for the effectiveness of dynamic capabilities in what environment they are utilized in.

In conclusion we can draw together the difficulties in identifying and measuring dynamic capabilities:

i) Dynamic capabilities do not necessarily provide competitive advantage in every instance. For example Barnett and Pontikes (2006) show that maintaining a position of advantage in a highly competitive market might hinder the ability to successfully move to other markets. In other words, context and path dependency constrain the competitive moves possible to individual firms (Foss 1998).

ii) The possibility of ad hoc problem solving in situations of increasing competition or change in the operating environment (Winter 2003).

iii) Superior performance may result from market imperfections and other context dependent factors may be mistaken as capabilities.

iv) The separation of first order and second (or higher) order capabilities. Simple instruments or crude proxies leave capabilities often blackboxed (Jantunen 2005)

v) The focus of analysis must be inter-temporal or longitudinal. Cross-sectional case studies or other data alone cannot suffice (Levitas & Chi 2002).

The resource-based view is basically a result of the implementation of economics to the strategic management. In this sense the basic analysis is based on neoclassical economics (Foss
A Methodology for identifying dynamic capabilities

1998), which can be seen in argumentation of the static approach of the RBV. However, while the dynamic capabilities approach is also firmly based on economics, it relies on concepts that have a dynamic approach to economics. Dynamic capabilities literature has broadened the economic foundation from mostly neoclassical framework (price theory) to incorporate ideas of institutional and evolutionary economics. This can be seen as a natural development since they have both emphasized differences, i.e. heterogeneity of firms and institutional settings. This literature, in which the work of Nelson and Winter (1982) is the most influential, takes an evolutionary approach to the competitive advantage. Hence, in our view the empirical analysis should be also in line with this approach by taking into account the dynamic aspect of the markets and competition.

Empirical identification of dynamic capabilities - a methodology

Empirical research, on the elements behind competitive advantage or lack of thereof, dates back to the seminal paper of Schmalensee (1985). The fundamental debate, starting from traditional industrial organization research, where the industry structure was seen as the explanatory factor of firm performance, has been over what are the explanatory factors of differences in firm performance.

In the literature inspired by Schmalensee (1985) the sources of variation in profitability of firms, is decomposed between industry, corporate, and business unit effects. Schmalensee (1985) found that corporate effects were small compared to industry effects. However, subsequent literature has conversely shown that firm effects are more significant in explaining sustainable competitive advantage (e.g Rumelt 1991). This debate is of course fundamental from the strategic management point of view, since if the firm or business unit doesn’t matter managerial and strategic efforts are waste of time and resources.

Studies on performance variation have been conducted using panel data methods and mainly on data from US firms including a large number of industries (Lipczynski et al. 2005, 332). However, while some of the literature shows that the industry effect might not be eliminated (e.g. Porter & McGahan 1999), since there are persistent industry characteristics relating to the institutional environment, product characteristics etc., industry or market specific analysis would be warranted in order to probe more closely into the determinants of firm performance.

4 Lipczynski, Wilson, and Goddard (2005, 333–334) include an extensive review of the sources of variation in firm performance literature.

5 An early example of focusing on a single industry is the paper of Amel and Froeb (1991) who analyse the Texan banking sector. Their result is that differences between banks are greater than the variation between geographical markets. They justify focusing on geographical markets within a single industry by stating that they give a better approximation of markets than an industrial sector.
Research on the variation of performance however doesn’t address the question of identification of the sources of these variations (Rouse & Dallenbach 1999). Moreover, it does not allow for taking into account the environmental or contextual aspect of competitive advantage. The resource-based view on the other hand has approached these issues. However, the resource-based view, which has been around for over two decades, has yet to make methodological progress to form a unified base for the field. For instance Rouse & Dallenbach (1999) and Levitas & Chi (2002) represent opposite views of tackling the problem. While the former underlines the importance of qualitative case studies, which make it possible to retrieve in-depth knowledge on the sources of competitive advantage, Levitas and Chi (2002) emphasize the necessity of methods that are capable of handling both cross-sectional and longitudinal dimensions of the issue at hand. This discussion is as least as relevant a matter in the context dynamic capabilities as it is for the resource-based view in general.

Rouse & Dallenbach (1999, 2002) propose an approach for empirically analysis of competitive advantage. They suggest that researchers should trace down the path of value generation. However, the selection process of the firms should not be on ad hoc basis. Instead, thorough analysis of the market population should be performed, since it is possible to test for the existence of unobservable factors by examining their observable outcomes (Levitas & Chi 2002, 960). However in the case of dynamic capabilities there are inevitably problematic, ambiguous and obscure causalities (e.g. Williamson 1999). Situations might arise where the origin of competitive advantage is still unclear. In such instances the interpretations of competitive analysis might be left in the shadows and hence lead to the blackboxing of capabilities.

In Rouse’s & Dallenbach’s (1999) view the selection of firms is ultimately a subjective choice. This may lead to increasing the probability of making tautological reasoning (cf. Porter 1994, Williamson 1999). While Levitas & Chi (2002) call for the verification of the sources of sustainable competitive advantage the issue becomes more problematic in the dynamic capabilities framework. However, it is vulnerable to make a choice of the capability analyzed separate from the case at hand, if context and environment specific issues are not explicitly controlled for. Since dynamic capabilities are harder to operationalize than zero-level capabilities or resources, we have to provide first a possibility to falsify the existence of them before they can be verified. Adapting a contrary approach to that of Rouse & Dallenbach (1999) and Levitas & Chi (2002) we present a two stage top-down analysis of dynamic capabilities (Figure 1).
The first stage consists of quantitative empirical methods aimed at picking up interesting dynamic markets, successful companies and competition analysis of the market in order to control for the market power of the companies based on market imperfections. Since it is clear that not all dynamic capabilities ensure profitability independently of context, they should be analysed explicitly taking into account the market and institutional environment. Focusing on the capabilities that create competitive advantage gives us the opportunity to analyse market specific dynamic capabilities.

Competition is of course one of the most important aspect of the environmental context in which the firms operate (cf. Dutta, Narasimhan and Rajiv 2005). Thus, when analysing the competitive environment in the context of dynamic capabilities competitive indicators have to be taken into account. Therefore it is necessary that we have a measure for performance as well as for the competitive conduct of the environment. Looking back to the variation of performance literature, a parallel may be drawn between it and the first phase of our methodology. After separating the industry, corporate, and business unit level explanatory factors, we may proceed with more detailed analysis of them.

Our method is an extension of what was originally developed in Björkroth et al. (2006), as a method of competition surveillance for competition authorities.
In-depth analysis is needed in order to draw new conclusions on the functioning of competitive advantage and the role dynamic capabilities. The second stage of our methodology is aimed at achieving this purpose. After controlling for context dependent factors and identifying firms that still show sustained competitive advantage, it is necessary to move “inside the organization”. After looking into the identified firms, we can use the insights of the in-depth analysis to test them with a population of firms in other contexts, i.e. create better proxies.

The method aims at making explicit the subjective and often implicit choices which typically precede case studies. This approach resembles a multi-method approach, which consist of a combination of qualitative and quantitative analysis. This has become known as triangulation of methods and recently become more common in other disciplines of social sciences.

Case Local Banking

In this section we use the first stage of the methodology presented above for Finnish banking markets. Finnish local banking is a suitable case to analyse from the respect of dynamic capabilities, since the market has been under dramatic endogenous as well as exogenous change during the last decade. A severe crisis in the banking sector in the beginning of the 1990’s led to changes in the market structure. It has also reflected to the increasing use of internet banking in which Finland has been one of the leading countries. Also loan interest rates (and especially loan premiums) have been falling and saving behaviour has changed from time deposits towards stocks and mutual funds. All together this has lead to increasing changes of the market environment of local banks.

The data

According to the Finnish Bankers’ Association, at the end of 2001 there were a total of 334 domestic banks operating in Finland, which included 8 commercial banks, 244 co-operative banks belonging to the OKO Bank Group, 42 local co-operative banks and 40 savings banks. These figures vary in time, but variation is limited during the period of analysis, years 2002-2005. In the case at hand we concentrate on groups of local independent banks. The analyzed bank groups are the following:

i) Savings banks: Savings banks are treated as a one group, which here includes local savings banks. Current savings banks are the few that survived the Finnish banking crisis in the early 90’s.
ii) OKO Bank Group: local independent cooperative banks, which are members of the OKO Bank Group and commercial bank OKO Bank operating in the Helsinki-area.

iii) Local cooperative banks: local cooperative banks which did not join the OKO Bank Group and which established The Association of Local Co-operative Banks in 1997.

The reason for choosing Finnish local banks as an example here is twofold. The first part is practical; with these local banks we have access to detailed profit and loss accounts and balance sheets at a local market level. This data can be combined with the local market structure data in order to control for market power due to market imperfections. Currently this information at a local level is unavailable for commercial banks. Second, even though local banks are independent banks, but they can be considered as business units of the joint brand providing same services. Hence we can analyze whether there are group level competitive advantages or dynamic capabilities. Furthermore, it is also possible to expand the analysis to the business unit level.

The main variables used in analysis are presented and defined in table 1. Used variables cover the profitability of the business, the scale, focus of the business and efficiency. Logarithmic form of net operating profit has been used as an indicator of profitability. There are two scale measures, one with and one without off-balance sheet items. Off-balance sheet items can be used here as indicators of the business focus and scale. Income share of net interest revenues will be used to control effect of the differences of business focus in cost levels. The cost efficiency variables are the most typical one in banking sector, the cost/income ratio and the alternative measure, cost/scale of total business ratio. Use and motivation of the variables are presented more detailed in the next subsections.

Table 1. Definitions and descriptive statistics of the main variables:

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Std.Dev.</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>LNPROFIT - natural logarithm of the net operating profit</td>
<td>6.59752</td>
<td>1.11767</td>
<td>0</td>
<td>9.82363</td>
</tr>
<tr>
<td>ASSETS - sum of balance sheet items (thousand euros)</td>
<td>105952</td>
<td>172403</td>
<td>4008</td>
<td>1552230</td>
</tr>
<tr>
<td>ASSETS1 - balance sheet items (ASSETS) and off-balance sheet commitments (thousand euros)</td>
<td>112197</td>
<td>185994</td>
<td>4115</td>
<td>1719230</td>
</tr>
<tr>
<td>FIMSHARE - income share of net interest revenues</td>
<td>0.740124</td>
<td>0.084134</td>
<td>0.411854</td>
<td>0.992313</td>
</tr>
<tr>
<td>CRR - cost/income ratio</td>
<td>0.641567</td>
<td>0.179974</td>
<td>0.339803</td>
<td>5.30269</td>
</tr>
<tr>
<td>CPA - cost/assets1 ratio</td>
<td>0.022145</td>
<td>0.004755</td>
<td>0.011081</td>
<td>0.0550557</td>
</tr>
</tbody>
</table>

7 Group-wise data is presented in the Appendix A.
Next we will take a closer look at the indicators of the competitive advantage. Group-wise differences in cost efficiency will be analyzed first. Then we analyze whether there are differences in competitive pressure between the members of different bank groups. With these analyses we tackle two main manifestations of competitive advantage: superior efficiency and relaxed competition. However, the latter is somewhat cumbersome, since the analysis method is not capable of sorting out the monopoly power based on market imperfections at local submarkets. Market imperfections are tentatively analyzed with the average number of rivals in geographic core markets of the banks.

**Cost efficiency and economies of scale**

In banking sector it is reasonable to assume that at least some economies of scale is immanent. Even though the estimations for minimum efficient scale are often rather low (see e.g. Berger & Humphrey 1994, Altunbaş et al. 2001, Cavallo & Rossi 2001, Hughes et al. 2001, Bos & Kolari 2005), in this case where the banks are small local banks, these levels are not typically exceeded and we are likely to find economies of scale. There is also evidence that banks face economies of scale at the business unit level (see e.g. Benston 1965, Berger et al. 1987, Zardkoohi & Kolari 1994, Toivanen 1995, Berger et al. 1997). Since there are remarkable differences in the scale of banks (see table 1), it is reasonable to also control for the scale of activity.

Similarly we can ask whether the income (or service) structure has an effect on the cost-revenue ratio. Since there are significant differences in income structures and therefore we will control for differences in income structure when comparing cost efficiency of different groups (see appendix A).

In the banking industry it is typical to report cost/income ratio as a indicator of the bank efficiency. Therefore we will use it here too. However, there is a problem related to cost/income ratio; the effect of market competition. That is, competitive intensity affects straightforwardly both interest and non-interest incomes. Therefore, intensifying competition, *ceteris paribus*, raises the cost/income ratio. In order to mitigate this problem, we also estimate a cost model for non-interest costs/scale of business ratio.

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8 The efficiency of banks is often analyzed by using methods like Stochastic Frontier Analysis (SFA) or Data Envelope Analysis (DEA). The former is a parametric and the latter a non-parametric method to estimate the relative efficiency of certain firms to the most efficient (hypothetical) firm. From our point of view, these methods are highly applicable also in the empirical research of dynamic capabilities especially when analyzing the success of a single firm, but rather heavy to apply. Here our focus is more on the analysis of the group of the firms and therefore it is useful to use the present method which reveals easily group level differences. For
The estimated models are of form:

\[
COST_{it} = \alpha_1 + \alpha_2 D2003_{it} + \alpha_3 D2004_{it} + \alpha_4 D2005_{it} + \alpha_2 DLCB_t + \alpha_2 DSB_t \\
+ \beta_1 FIMSHARE_{it} + \beta_3 SCALE_{it} + \epsilon_i + \nu_{it}
\]

where in first alternative COST refers to variable CRR and SCALE to variable ASSETS. In the second alternative COST refers to variable CPA and SCALE to ASSETS. Since there are time-invariant dummies estimations are random effects (see e.g. Greene 2000). Estimation results are presented in tables 3 and 4 below. Since the Lagrange multiplier test rejects the classical regression (OLS) against random effect model, we report only the latter.

Table 2. Cost efficiency measured by cost/income ratio

<table>
<thead>
<tr>
<th></th>
<th>Coeff.</th>
<th>Std.Err.</th>
<th>t-ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>ONE</td>
<td>41.3343</td>
<td>4.87382</td>
<td>8.48089</td>
</tr>
<tr>
<td>D2003</td>
<td>4.25258</td>
<td>0.644733</td>
<td>6.59587</td>
</tr>
<tr>
<td>D2004</td>
<td>3.28979</td>
<td>0.723581</td>
<td>4.54655</td>
</tr>
<tr>
<td>D2005</td>
<td>-1.72358</td>
<td>0.755178</td>
<td>-2.28235</td>
</tr>
<tr>
<td>DSB</td>
<td>12.9654</td>
<td>2.64828</td>
<td>4.8958</td>
</tr>
<tr>
<td>DLCB</td>
<td>4.6605</td>
<td>2.58745</td>
<td>1.8012</td>
</tr>
<tr>
<td>FIMSHARE</td>
<td>27.2027</td>
<td>6.05656</td>
<td>4.49144</td>
</tr>
<tr>
<td>ASSETS</td>
<td>-4.52E-06</td>
<td>4.65E-06</td>
<td>0.97286</td>
</tr>
</tbody>
</table>

Lagrange Multiplier Test vs. classical regression = 403.19 (prob. value < 0.001)

The first estimation (table 2) shows that the cost/income ratio increased from 2002 to 2003 some 4 percent units and henceforth it has decreased. That is, revenues increased during 2003–2005 faster than costs. On average the cost/income ratio of Savings Banks was statistically significantly higher than one of the Members of OKO Bank Group. Also the ratio was relatively higher for Local Cooperative Banks, but statistical significance was lower. It also seemed that concentration on traditional financial intermediation does not pay for and it raises costs higher than revenues. This model does not reveal economies of scale in Finnish local banking.

The results of the second model (table 3) show certain trend of lowering costs. Compared to the OKO Bank Group both rivals are less efficient. Here the share of net interest incomes from financial operations seems to lower the cost level. That is rather natural since the higher asset

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an extensive survey on the results and methods used in bank efficiency literature, see Berger & Humphrey (1997). For the use of SFA in measuring capabilities, see Dutta et al. (2005).
values due to relatively high deposits and loans have a decreasing effect on the dependent variable CPA. Model presents, however, ubiquitous economies of scale within this sample.

Table 3. Cost efficiency measured by CPA

<table>
<thead>
<tr>
<th></th>
<th>Coef.</th>
<th>Std.Err.</th>
<th>t-ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>0.03662</td>
<td>0.001171</td>
<td>31.261</td>
</tr>
<tr>
<td>D2003</td>
<td>-0.00235</td>
<td>0.000156</td>
<td>-15.0831</td>
</tr>
<tr>
<td>D2004</td>
<td>-0.00436</td>
<td>0.000175</td>
<td>-24.9505</td>
</tr>
<tr>
<td>D2005</td>
<td>-0.00663</td>
<td>0.000182</td>
<td>-36.3803</td>
</tr>
<tr>
<td>DSB</td>
<td>0.001485</td>
<td>0.000626</td>
<td>2.37085</td>
</tr>
<tr>
<td>DLCB</td>
<td>0.002399</td>
<td>0.000612</td>
<td>3.91703</td>
</tr>
<tr>
<td>FIMSHARE</td>
<td>-0.01483</td>
<td>0.001458</td>
<td>-10.1734</td>
</tr>
<tr>
<td>ASSETS1</td>
<td>-5.53E-09</td>
<td>1.02E-09</td>
<td>-5.45081</td>
</tr>
</tbody>
</table>

Lagrange Multiplier Test vs. classical regression = 969.93 (prob. value < 0.001)

Competitive pressure in local banking

Generally simple indicators of market competition (e.g. herfindal-index or price-cost margin) are problematic, since various factors of competition create non-monotonicity in typically used indicators. Boone (2000, 2004) and Boone et al. (2005) present a method based on the relative profitability of firms. Based on present evidence it seems that this method is less sensitive for different forms of competition (e.g. strategic competition, differentiation, or advertising) than other indicators.

The Boone method or the so-called Boone-indicator (BI) is based of idea that intensified competition cuts profits of inefficient firms more than those of efficient firms. The strength of this approach is in its generality; the basic effect is not conditional to the form of competition. Also the estimation of BI does not require extensive data; at the minimum only profits and costs of three companies at different levels of cost efficiency is enough.

One operational problem related to the approach is the choice of the reference company. As a solution to this Boone et al. (2005) operationalized model by estimating function

\[ \ln \pi_i = \alpha + \beta AV C_i + \varepsilon_i, \]

where \( \pi_i \) is for instance firm \( i \)'s turnover minus wage and material expenses and \( AV C_i \) (variable unit costs) wage and material costs divided by turnover. In this form estimated parameter \( \beta \)
measures how many percent the profits of the company change when unit costs change by one percent. Interpretation of this parameter is that the higher the value of $\beta$ the more intense the competition.

Here we use two alternatives as a proxy of AVC: cost/income ratio (CRR) and cost/sum of assets and off-balance sheet commitments (CPA). As mentioned the first one is a typical efficiency indicator in the bank sector and is close to the definition of AVC presented above. Since the basic function of the bank sector is asset formation, we apply the latter as a cost indicator of asset management. We also control for possible inter-bank differences with two control variables: FIMSHARE and ASSETS(1) in equation (3(4)).

Typically this indicator is used in order to analyze the change of intensity of competition in certain market over the time. In this case we apply the method to analyze whether there are differences in pressure of competition between the local banks. That is, in models the OKO Bank Group is the focal group and Savings banks and Local Cooperative banks have their own rotation terms presenting the differences in pressure of competition. These are DSB*CRR and DSB*CPA for Savings Banks, and DLCB*CRR and DLCB*CPA for Local Cooperative Banks. If the parameter estimate is statistically significant for these terms, there are differences in the pressure of competition.

Estimated model for first cost alternative, cost/income ratio CRR takes form

$$
\ln \pi_i = \alpha_1 + \alpha_2 DL CB_i + \alpha_3 DS B_i + \beta_1 CRR_{it} + \beta_2 CRR S B_{it} + \beta_3 CRR L CB_{it} + \beta_4 F I M S H A R E_{it} + \beta_5 A S S E T S_{it} + \varepsilon_i + \nu_i
$$

and the second alternative takes form:

$$
\ln \pi_i = \alpha_1 + \alpha_2 DL CB_i + \alpha_3 DS B_i + \beta_1 CPA_{it} + \beta_2 CPAS B_{it} + \beta_3 CP A L CB_{it} + \beta_4 F I M S H A R E_{it} + \beta_5 A S S E T S_{it} + \varepsilon_i + \nu_i
$$

Since the group dummy is time invariant, again only the random effect estimations for panel data are feasible for these models. Again the Lagrange multiplier test rejects the classical regression (OLS) against random effect model and we report only the latter. Results of the estimated equations (3) and (4) are presented in tables 4 and 5.

Table 4. Estimation results of competition, model 1

<table>
<thead>
<tr>
<th></th>
<th>Coeff.</th>
<th>Std.Err.</th>
<th>t-ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>8.74116</td>
<td>0.151038</td>
<td>57.874</td>
</tr>
<tr>
<td>CRR</td>
<td>-0.03819</td>
<td>0.001624</td>
<td>-23.5215</td>
</tr>
<tr>
<td>DSB</td>
<td>1.27849</td>
<td>0.324037</td>
<td>3.94549</td>
</tr>
<tr>
<td>DLCB</td>
<td>0.5115</td>
<td>0.306403</td>
<td>1.66937</td>
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Table 5. Estimation results of competition, model 2

<table>
<thead>
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<td>-2.23317</td>
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<td>DLCB</td>
<td>-0.52956</td>
<td>0.289001</td>
<td>-1.83239</td>
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<td>DLCB*CPA</td>
<td>14.2021</td>
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<td>1.2424</td>
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<td>FIMSHARE</td>
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<td>15.3624</td>
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</table>

Lagrange Multiplier Test vs. classical regression = 914.38 (prob. value < 0.001)

Estimations based on cost/income ratios shows statistically significant results that support for competitive advantage of the OKO Bank Group over the Savings Banks. Local Cooperative Banks are, however, as competitive as OKO Bank Group members.

Estimations based on total costs per assets and off-balance sheet commitments show opposite results; it seems that competitive pressure faced by the Savings Banks is relaxed compared to the OKO Bank group. Difference between the Local Cooperative Banks and the OKO Bank Group is not statistically significant.

Therefore, at least at a market level it is hard to get unambiguous statistical support for the competitive advantage for any group. Combined these results with the efficiency results, it seems that the OKO Bank Group has competitive advantage over its rivals in the production process side but there is no difference between the groups when it comes to market competitiveness.

The role of market imperfections

As said, the traditional question in industrial economics and strategy literature is the role of market imperfections as a source of superior financial performance. So far the method used
here does not distinguish that, but the group wise differences in competitive pressure can be based not only on superior customer value but also on local competitive conduct. Here we have not yet included variables controlling local competitive conduct. However, we can take a brief look at the number of rivals located close to focal bank. That is, it can be assumed that the local bank has market power, if there are few rivals in the same region.

Table 6. Group-wise branch networks, market areas and local rivals.

<table>
<thead>
<tr>
<th>YEAR 2003</th>
<th>Branches</th>
<th>municipalities</th>
<th>Rivals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cooperative banks (OKO Bank Group)</td>
<td>2.8</td>
<td>1.9</td>
<td>1.6</td>
</tr>
<tr>
<td>Local Cooperative Banks</td>
<td>3.1</td>
<td>1.9</td>
<td>2.5</td>
</tr>
<tr>
<td>Savings banks</td>
<td>5.3</td>
<td>3.9</td>
<td>2.5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>YEAR 2004</th>
<th>Branches</th>
<th>municipalities</th>
<th>Rivals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cooperative banks (OKO Bank Group)</td>
<td>2.6</td>
<td>1.7</td>
<td>1.7</td>
</tr>
<tr>
<td>Local Cooperative Banks</td>
<td>3.3</td>
<td>2.0</td>
<td>2.8</td>
</tr>
<tr>
<td>Savings banks</td>
<td>5.2</td>
<td>3.8</td>
<td>2.6</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>YEAR 2005</th>
<th>Branches</th>
<th>municipalities</th>
<th>Rivals</th>
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</thead>
<tbody>
<tr>
<td>Cooperative banks (OKO Bank Group)</td>
<td>2.7</td>
<td>1.8</td>
<td>1.7</td>
</tr>
<tr>
<td>Local Cooperative Banks</td>
<td>3.4</td>
<td>2.0</td>
<td>2.5</td>
</tr>
<tr>
<td>Savings banks</td>
<td>5.3</td>
<td>4.0</td>
<td>3.0</td>
</tr>
</tbody>
</table>

Source: Finnish Bankers Association, own calculations. Approximate number of banks in each group: cooperative banks 240, local cooperative banks and savings banks 40 each. Commercial banks are included in the number of rivals, but not reported here.

The operation areas of savings banks are the widest among the local bank groups. Also local cooperative banks have wider main markets than members of the OKO Bank Group. This can have a historical explanation: in 1997 these banks left the OKO Bank Group and in many cases they have had reasons to expand to new geographic markets. The OKO Bank Group member banks have on average the smallest branch network and they operate at the local level. It also seems that these banks have a very strong market position in their core markets since the average number of rivals is far lower than one of the rival groups. Unfortunately at this point we have not combined profit and loss accounts with the branch office and rival data, so we can neither report the average size of the branches nor estimate the effect of local rivalry straightforwardly to the competitive pressure. This is the next task to do.

These structural figures can give us a hint that the competitive position of the OKO Bank Group may be partly based on the superior accessibility of services and monopoly power at the local level.

The group’s extensive office network at the local level can also be economically suboptimal and low number of the rivals can be also a result of the organizational inertia of the OKO Bank
Group. That is, some of the member banks are very small compared to the banks of the rival groups (see appendix, table A1). Also many of those small banks have only one office. As the estimations showed, there seems to be economies of scale. It is possible that local monopoly power does not outplay these inefficiency costs. Since member banks are independent units, the only option is to merge with some bigger banks and after that the new bank possibly closes down that unprofitable branch office. In many cases this option is infeasible due to local democratic decision making in the bank. That is a sign of the significant role of path-dependency due to organizational form.

However, the same cost efficiency estimations showed cost advantage of the OKO Bank Group during the rather turbulent period of analysis. So, when it comes to the presence of dynamic capabilities, it seems that the group can have dynamic capability manifested as a cost advantage.

**Conclusion, Limitations and the Way Forward**

In this paper we proposed a two-stage methodology for empirical identification of dynamic capabilities. Idea of the methodology is that in order to correctly identify dynamic capabilities researcher has to control for market imperfections to separate capability based superior financial performance from market power based monopoly profit. Also, if the source of competitive advantage is claimed to be based on dynamic capability, it should survive the test of turbulent environment. In practice the methodology should include quantitative empirical analysis in the first stage and more in-depth, qualitative methods in the second stage.

One possible way of conducting the first stage of the methodology was presented with Finnish Local Banking. The results showed that there seemed to be some competitive advantage manifested as a cost advantage which lasted over the period of analysis. Cost advantage did not seem to create relaxed pressure of competition. This controversy, however, provides strong argument for variety of methods needed in the first stage; otherwise it would be more likely to jump into quick conclusions of absence of competitive advantage. Also the study revealed that qualitative methods are needed at the last stage of an extensive empirical analysis of dynamic capabilities also in banking.

The theme is not useful only for academics and managers; understanding the nature of competitive advantage is also in the interest of policy makers. The competition policy authority is interested in whether firms are behaving according to competition legislation. Traditionally competition authority approach has been firmly attached to the so called SCP paradigm. Concentrated markets with sustainably high price mark up are seen as an indication of market power harmful to competition. Recently, however, the role of competition authorities has changed from a constraining to a more enabling role (Audretsch 1998). In
competition policy this means that on one hand the pursuit for profits, rents, and hence market power is seen as a normal phenomena of the market and on the other hand the understanding of market dynamics has become more relevant. Also the sound analysis of competitive advantage may improve the innovation and technology policy and improve the nation’s competitiveness.

Thus, in our view policy makers, who are in most cases is leaved out in strategic management literature, are an important interest group who could be able to benefit from the insights of the resource-based and dynamic capabilities view. The top-down method is useful for policy maker for two reasons. First, it brings firm level issues to a relevant part of the policy makers toolbox including typically only industry/market level analysis. Second, in technology policy field investment decisions are often based on case-wise data. Using top-down method it is possible to analyze wider the success of the company, that is, to control market and competition factors.

This was the first attempt to use our methodology for empirical identification of dynamic capabilities. The central limitation of the research at hand is the missing second stage of the research. In order to proof the usefulness of the approach that research stage must be conducted. We hope also that this paper starts a conversation on applicable empirical research, since there is obvious need for using a diverse (eclectic) set of methods to unravel the complex phenomenon of dynamic capabilities.

**Appendix A**

Table A1 Group-wise pooled descriptive statistics

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>Std.Dev.</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Savings Banks, n=154.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LNPROFIT</td>
<td>6.55</td>
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<td>0.00</td>
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<td>BALANCE</td>
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<td>118976</td>
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<td>584283</td>
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<td>CPA</td>
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</table>

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>Std.Dev.</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Members of the OKO Bank Group, n=958.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LNPROFIT</td>
<td>6.67</td>
<td>1.10</td>
<td>1.39</td>
<td>9.82</td>
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<tr>
<td>BALANCE</td>
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<tr>
<td>ASSET$1$</td>
<td>172719</td>
<td>205945</td>
<td>4115</td>
<td>1719226</td>
</tr>
</tbody>
</table>

Appendix A
### References


Helfat CE 1997 Know-How and Asset Complementarity and Dynamic Capability Accumulation: The Case of R&D, Strategic Management Journal, 18, Iss. 5 339 – 360


A Methodology for the Empirical Identification of Dynamic Capabilities

The Case of Local Banking

Mikko Pohjola
PhD student
Institute for Competition Policy Studies
Turku School of Economics
The Structure of the Presentation

- Introduction
- Background
- Research problem
- Methodology of the two stage top-down approach
- Our case
- Discussion and conclusion
Introduction

• The paper aims to contribute to methodological discussion of the resource based theory of strategic management research
  – In particular the dynamic capabilities view of the firm

• An early draft of a paper that I am co-authoring with my colleague Aki Koponen
  – Background in IO, competition theory, competition policy issues

• We propose a top-down approach for analysing competitive advantage by identifying dynamic capabilities

• Our approach is demonstrated with a case from the Finnish local banking sector
  – Illustrative example of a turbulent industry
Background

- Resource based theory has become one of the most prominent approaches in competitive advantage in strategy literature (Wernerfelt 1984, Barney 1986)

- The original resource based view (RBV) has been criticised for example of being static, not allowing for the competitive environment and tautological.

- In response the resource based view has developed into different branches
  - Dynamic capabilities view (DCV), knowledge based view, and the relational view

- DCV is considered as an answer to the static and context independent nature of RBV. (e.g. Teece, Pisano and Shuen 1997)
  - Builds on evolutionary economics

- The main argument of DCV is that sustainable competitive advantage is possible only with a dynamic resource base capable of adapting to the environment
The research problem

• Definition of dynamic capabilities:
  “The capacities of organizations to purposefully create, extend, or modify its resource base” (Helfat et al. 2007)

• Dynamic capabilities view is not yet a coherent theory and we need more knowledge of the phenomenon
  – The content of dynamic capabilities is still under debate
  – After a decade of conceptual work, still hardly no empirical studies

• Operationalizing dynamic capabilities has proved to be problematic
  – Black boxed capabilities or crude proxies

• Our paper relates to the discussion on the suitable empirical approach for RBV
The research problem

• Dynamic capabilities especially hard to pinpoint
  – We are looking for sustainable competitive advantage
  – Dynamic capabilities as a process are an abstract and intangible phenomenon
  – Longitudinal data is necessary

• The main challenges of empirical analysis of DC’s
  – Good proxies of dynamic capabilities
  – Taking into account the competitive environment

→ There is a need for an explicit methodology that is capable of being able to focus on the issue and at the same time able to give new insights to the development of the theory
  – How do dynamic capabilities occur in firms in certain industries?
The two stage top-down approach

- We propose a methodology that begins from the industry or market level and moves on to look ‘inside’ the firm
- The aim of the first stage is to credibly verify the existence of competitive advantage in a competitive environment
- The first stage of analysing should be longitudinal to capture change in the market environment
- It should also take into account the different levels at which competitive advantage may manifest itself as superior performance
  - i.e. industry, corporate, and business-level
- For the second stage we propose case study methods to focus on the firms or businesses that have shown to hold competitive advantage
- Identifying dynamic capabilities with a top-down approach
  - It makes possible focusing explicitly on situations of competitive advantage
  - Provides understanding for better operationalization of the theory
The two-stage approach

first stage

Industry or market level analysis

Identifying competitive advantage

Firm-level analysis

Controlling for market power

second stage

Case studies

In-depth analysis of dynamic capabilities
The case: Local banking

- **Why this case**
  - Change in the market environment
  - Data access
  - Structure of the groups enables extension to business unit level

- **A total of 334 domestic banks**
  - 8 commercial banks
  - 244 co-operative banks (OKO bank Group)
  - 42 local co-operative banks
  - 40 savings banks

- **Savings banks**: Savings banks are treated as a group, which includes the local savings banks.

- **OKO Bank Group**: local independent cooperative banks, which are members of the OKO Bank Group and commercial bank OKO Bank operating in the Helsinki-area.

- **Local cooperative banks**: local cooperative banks which did not join the OKO Bank Group and which established The Association of Local Co-operative Banks in 1997.
How does the case fit in to our methodology

first stage

- Industry or market level analysis
  - Identifying competitive advantage
- Firm-level analysis
  - Controlling for market power

second stage

- Case studies
  - In-depth analysis of dynamic capabilities
First stage: Industry level analysis

- First we test for groups having competitive advantage manifested as superior cost efficiency

- Secondly we test for reduced competitive pressure between the members of different banks

- Our data is for 2002-2005; a relatively long period, possible advantage is rather persistent – sustainability?

- Studies show economies of scale in the local banking sector; controlled by scale variable

- Different income structure; costs can be different
  - Controlled by a variable measuring the share of net interest revenues of total revenues

- Controlling for income structure and scale we can have some proxy for group-specific strategic superiority, i.e. competitive advantage

- Random effect models
The case: Variables

<table>
<thead>
<tr>
<th>Variable Description</th>
<th>Mean</th>
<th>Std.Dev.</th>
<th>Minimum</th>
<th>Maximum</th>
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</thead>
<tbody>
<tr>
<td>LNPRESS - natural logarithm of the net operating profit</td>
<td>6.59752</td>
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<tr>
<td>ASSETS - sum of balance sheet items (thousand euros)</td>
<td>105952</td>
<td>172403</td>
<td>4008</td>
<td>1552230</td>
</tr>
<tr>
<td>ASSETS1 - balance sheet items (ASSETS) and off-balance sheet commitments (thousand euros).</td>
<td>112197</td>
<td>185994</td>
<td>4115</td>
<td>1719230</td>
</tr>
<tr>
<td>FIMSHARE - income share of net interest revenues</td>
<td>0.740124</td>
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<td>CRR - cost/income ratio</td>
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<td>0.022145</td>
<td>0.004755</td>
<td>0.011081</td>
<td>0.0550557</td>
</tr>
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</table>
Industry level analysis: Efficiency

\[ \text{COST}_{it} = \alpha_1 + \alpha_2 D2003_{it} + \alpha_3 D2004_{it} + \alpha_4 D2005_{it} + \alpha_2 \text{DLCB}_i + \alpha_2 \text{DSB}_i + \beta_3 \text{FIMSHARE}_{it} + \beta_3 \text{SCALE}_{it} + \varepsilon_i + \nu_{it} \]

• The first model:
  – Dependent variable is cost/income ratio (CRR), which is a typical measure for the banking sector
  – ASSETS as the scale variable
  – Year and group dummies

• The second model:
  – Cost / assets ratio (CPA)
  – ASSETS1 (includes the off balance sheet commitments) as the scale variable
  – Year and group dummies
## Industry level: Efficiency – cost/income ratio

<table>
<thead>
<tr>
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<td>0.755178</td>
<td>-2.28235**</td>
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</tbody>
</table>

Lagrange Multiplier Test vs. classical regression = 403.19 (prob. value < 0.001)

*p<0.05 **p<0.01 ***p<0.001
## Industry level: Efficiency – CPA

<table>
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<td>-36.3803***</td>
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<tr>
<td><strong>FIMSHARE</strong></td>
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<td>0.001458</td>
<td>-10.1734***</td>
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<tr>
<td><strong>ASSETS1</strong></td>
<td>-5.53E-09</td>
<td>1.02E-09</td>
<td>-5.45081***</td>
</tr>
</tbody>
</table>

Lagrange Multiplier Test vs. classical regression = 969.93 (prob. value < 0.001)
*p<0.05 **p<0.01 ***p<0.001
Industry level: efficiency

- The centrally led cooperative group showed better cost efficiency than its competitors.

- However, in the first model the scale variable captures also market power
  - A strong market position is typical for small banks (OKO Group), hence market imperfections could explain some of cost efficiency
Industry level analysis: Competitive pressure

• Competitive advantage can be treated as relaxed competitive pressure
• The Boone indicator (Boone 2000, Boone 2004) shows how intensified competition punishes less efficient firms
  \[ \ln \pi_i = \alpha + \beta AVC_i + \varepsilon_i \]
  - Idea technically: rotation terms for k-1 groups. If rotation term is statistically significant, there are differences in competitive pressure
  - Typically approach is used in analysis of changes in market competition, i.e. rotation terms are year-wise
• Differences in income structure and scale are controlled for
• The Boone indicator, because it comes close to the idea evolutionary competition economics (e.g. Metcalfe 1998) and is not sensitive for different forms of competition
Industry level analysis: Competitive pressure

• Model 1:

\[ \ln \pi_{it} = \alpha_1 + \alpha_2 \text{DLCB}_i + \alpha_3 \text{DSB}_i + \beta_1 \text{CRR}_t + \beta_2 \text{DSB}_i \times \text{CRR}_t + \beta_3 \text{DLCB}_i \times \text{CRR}_t + \gamma_1 \text{FIMSHARE}_{it} + \gamma_2 \text{ASSETS}_{it} + \varepsilon_i + \nu_{it} \]

• Model 2:

\[ \ln \pi_{it} = \alpha_1 + \alpha_2 \text{DLCB}_i + \alpha_3 \text{DSB}_i + \beta_1 \text{CPA}_t + \beta_2 \text{DSB}_i \times \text{CPA}_t + \beta_3 \text{DLCB}_i \times \text{CPA}_t + \gamma_1 \text{FIMSHARE}_{it} + \gamma_2 \text{ASSETS1}_{it} + \varepsilon_i + \nu_{it} \]

• OKO Bank Group is the focal group and Savings banks and Local Cooperative banks have their own rotation terms presenting the differences in competitive pressure

• We use two measures for average costs, because it is not necessarily clear what is the right one
## Competitive pressure: model 1

<table>
<thead>
<tr>
<th></th>
<th>Coeff.</th>
<th>Std.Err.</th>
<th>t-ratio</th>
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<td>CRR</td>
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<td>0.001624</td>
<td>-23.5215***</td>
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<td>DSB</td>
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<td>0.004403</td>
<td>-3.40771***</td>
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<td>1.71E-07</td>
<td>20.0744***</td>
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</tbody>
</table>

Lagrange Multiplier Test vs. classical regression = 1084.47 (prob. value < 0.001)

*p<0.05 **p<0.01 ***p<0.001
Competitive pressure: model 2

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coeff.</th>
<th>Std.Err.</th>
<th>t-ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
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<td>0.188217</td>
<td>39.9064***</td>
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<tr>
<td>CPA</td>
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<td>-9.48437***</td>
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<tr>
<td>DSB</td>
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<td>1.2424</td>
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<td>DSB*CPA</td>
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<td>2.07127*</td>
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<td>FIMSHARE</td>
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<td>1.95E-07</td>
<td>15.3624***</td>
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</tbody>
</table>

Lagrange Multiplier Test vs. classical regression = 914.38 (prob. value < 0.001)
*p<0.05 **p<0.01 ***p<0.001
Industry level: Competitive pressure

• Estimations based on cost/income ratio give little support the implication of competitive advantage for the cooperative banks (OKO group)

• However, the second model shows opposite results, i.e. savings banks having less competitive pressure

→ Measured by competitive pressure, there is no clear statistical support for the competitive advantage of any group.
Firm level: role of market imperfections, a brief look

<table>
<thead>
<tr>
<th>YEAR 2003</th>
<th>Branches</th>
<th>municipalities</th>
<th>Rivals</th>
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</thead>
<tbody>
<tr>
<td>Cooperative banks (OKO Bank Group)</td>
<td>2.8</td>
<td>1.9</td>
<td>1.6</td>
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<tr>
<td>Local Cooperative Banks</td>
<td>3.1</td>
<td>1.9</td>
<td>2.5</td>
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<tr>
<td>Savings banks</td>
<td>5.3</td>
<td>3.9</td>
<td>2.5</td>
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<table>
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<tr>
<th>YEAR 2004</th>
<th>Branches</th>
<th>municipalities</th>
<th>Rivals</th>
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</thead>
<tbody>
<tr>
<td>Cooperative banks (OKO Bank Group)</td>
<td>2.6</td>
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<td>1.7</td>
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<td>Savings banks</td>
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</table>

<table>
<thead>
<tr>
<th>YEAR 2005</th>
<th>Branches</th>
<th>municipalities</th>
<th>Rivals</th>
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</thead>
<tbody>
<tr>
<td>Cooperative banks (OKO Bank Group)</td>
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<td>1.7</td>
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<td>Local Cooperative Banks</td>
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<td>Savings banks</td>
<td>5.3</td>
<td>4.0</td>
<td>3.0</td>
</tr>
</tbody>
</table>

Source: Finnish Bankers Association, own calculations. Approximate number of banks in each group: cooperative banks 240, local cooperative banks and savings banks 40 each. Commercial banks are included in the number of rivals, but not reported here.
Conclusion of the first stage analysis

- The OKO Bank Group seems to have a competitive advantage manifested by better cost efficiency.

- However it is still not evident:
  - They don’t face relaxed competitive pressure.

- Taking market imperfections into account might clarify the picture:
  - At the local market level cooperative banks face fewer competitors. This might have a positive effect on cost efficiency measured by cost/income ratio. Competitive pressure should be weaker.

  - On the other hand, due to organizational form and historical reasons it is possible that they are located in unfavourable local markets.

  - Potential group level competitive advantage is partly lost at local market level exit rigidity.
The case in our two-stage approach

- We have only looked at the first stage
  - Still some work to be done
  - We should look more carefully at the role of market imperfections

- Since our analysis showed some support for sustainable competitive advantage for the OKO group, second stage analysis is warranted

- The result of the first stage is
  - By looking explicitly at the different components of competitive advantage, it becomes clear that its existence is ambiguous
  - It is impossible to give truthful analysis of the competitive advantage without conducting market level competitiveness and competition analysis to pinpoint the source of it.
Discussion

• Merits of our methodology
  – First stage:
    • Explicit analysis of competitive advantage
    • Objective choice of cases for second stage
  – Second stage:
    • Provides deeper understanding dynamic capabilities work
    • Gives tools for creating better proxies of capabilities to quantitative testing
    – Could also be used as a tool by the competition authorities to understand the competitive outcomes in markets

• Limitations
  – We do not look into the second stage
  – The method does not test the theory
Thank you for your attention!