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Credit institution strategies in Central and Eastern Europe, and in Hungary - Focus on bank branch strategy, lending and their spatial, social and financial inclusion aspects

PhD dissertation theses

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1. Introduction

The financial intermediation system plays an important role in a national economy, its functioning is crucial for the corporate and household sectors, and its level of development may be closely related to the state of the economy. An inherent feature of these systems, however, is that they are subject to crisis from time to time, which may entail a recalibration of operations, the 2008-2009 global crisis being a prime example. The changed economic environment and the changes in the willingness to take risks have led to a rethinking of both cross-border financing and foreign involvement, by subsidiary banking or otherwise, and thus to shifts in the ownership structure of financial systems. This is of particular importance for regions with a substantial involvement of foreign banking groups, such as the Central and Eastern European region (and Hungary within it). Of course, the operation of credit institutions, and thus the access of economic agents (households, companies) to funding, is influenced by a number of other factors in addition to ownership attitudes, including (but not limited to) industry trends, the business and regulatory environment in the given country; whether the institution operates independently or is part of a banking group; as well as the alternations of boom and crisis cycles and, with it, the risk appetite.

The 2008-2009 crisis also marked a milestone in the strategy towards bank branches, which have traditionally played a key role in market penetration. The crisis brought about a change in the upward trend of the number of branches, according to data from the European Central Bank, the number of branches in the European Union (EU) decreased by 31 percent between 2008 and 2019. This was mostly due to the fact that, in addition to the widening spread of online banking solutions, the crisis brought to the fore the aspects of cost reduction and efficiency increase among the actors in the sector, which resulted in the downsizing of branches. From 2020 onwards, the coronavirus epidemic and the introduction of curfew restrictions have further intensified the process of reassessing the role of branches and online banking. The relevance of the topic also stems from these, i.e. how the behaviour of credit institutions has evolved in the light of post-crisis developments and what are the main territorial, social and financial implications of these developments.

2. Objectives

In its broadest territorial horizon, the dissertation examines the EU countries, with a deeper focus on the branching and lending strategies of banks in Central and Eastern Europe (CEE) and Hungary, emphasizing the territorial aspects of these strategies and analysing the social and financial inclusion implications.

The first set of research questions focuses on banks in the CEE region, analysing their expansion and operations after the 2008-09 crisis.

1. To what extent do the regional strategies and operations of CEE credit institutions differ from those of other credit institutions, mainly in Western Europe?

1.1. Do CEE credit institutions play a decisive role in regional (CEE) cross-border expansion after the 2008-2009 crisis and is this in the opposite direction to the behaviour of Western European banking groups?
1.2. Are there clear and strong differences and distinctions between the business models of CEE credit institutions and those of Western European banking groups more than ten years after the 2008-2009 crisis?

The dissertation also looks for spatial patterns in branch location and the main social and economic determinants of spatial distribution.

2. What are the spatial patterns and regularities that can be detected in the location of branches of EU credit institutions and Hungarian credit institutions?
   2.1. What spatial patterns can be found examining the branches of credit institutions in the European Union and can they be related to economic development?
   2.2. What are the spatial patterns in the location of bank branches in Hungary at the settlement level, and what are the main social and economic determinants of branch distribution?

In relation to branch closures, the dissertation examines the regularities of the closure trend after the 2008-2009 crisis, and then focuses on the social consequences in the dimensions of financial inclusion and financial service provision.

3. What were the credit institutions' perspectives and considerations behind the branch closures in the EU and Hungary, and what were their social consequences?
   3.1. Which European regions have experienced the largest wave of branch closures after the 2008-2009 economic crisis and is this pattern related to the level of economic development?
   3.2. How can the post-crisis branch closure trend be characterised for Hungary as a whole, in which settlement was it concentrated and what were the financial inclusion consequences, including access to branches?
   3.3. At the level of settlements, how has the trend of closures changed the range of settlements that can be considered as financial service centres in Hungary and their service area?

The fourth set of research questions investigates retail and corporate lending in Hungary. The former focuses on spatial analyses from a financial inclusion perspective, the latter on analysing the ownership background, the implementation of sustainability aspects and the impacts of the coronavirus crisis.

4. Examining the household and corporate lending activities and strategies of credit institutions in Hungary during certain periods between 2008-2021, what spatial regularities and economic consequences can be observed?
   4.1. How are branch location and branch closure trends related to household lending activity in Hungary, and is there a strong relationship between them?

4.2. Which areas of Hungary might be the most affected by the widespread informal lending format, the usurious lending which represents an alternative for the population excluded from the formal financial system?
4.3. What differences can be observed between the lending activities of domestic and foreign credit institutions operating in Hungary, to what extent does the corporate sector they finance differ?
4.4. Is there a growing appearance of sustainability and green aspects in the corporate lending activities of the Hungarian credit institutions sector over time?
4.5. Which strata of firms with credit proved to be vulnerable to the economic shock of the coronavirus crisis, and what spatial patterns can be observed in their location?

The fifth set of questions examines the relationship between face-to-face and online banking, their substitutability and consumer preferences based on the banking habits of the Hungarian population, and also aims to identify vulnerable groups.

5. How can the bank branch visiting and online banking habits of the Hungarian population be characterized and how do they relate to each other?
   5.1. What are the most important characteristics and influencing factors of visiting a bank branch regarding the population, and is distance from the branch a significant factor?
   5.2. How can the use of online banking solutions and digital affinity be characterised and, in relation to this, what are the preferences between face-to-face, in-branch and online banking in the present and future?
   5.3. How did the branch closures and the outbreak of the coronavirus epidemic shape the branch visiting and financial services usage habits?
   5.4. Based on the perceptions of the population, can online banking replace branch bank visiting and is it a real alternative for society as a whole?
   5.5. Can a segment of society be identified that is specifically at risk of exclusion from the formal financial sector due to the in-branch banking becoming more difficult or remote?

3. Research methods

The research uses both secondary and primary sources. Within the secondary sources, five data sources played a particularly important role in the study, namely:

- Standard and Poor's Market Intelligence (SNL) database
- P56 coded data service of the National Bank of Hungary (Magyar Nemzeti Bank, MNB), which contains information about branch and ATM locations
- MNB L10 data ("Data on corporate and household loans"), L11 data ("Credit risk data on corporate and household loans"), and MNB HITREG data
- National Spatial Development and Planning Information System (TeIR) databases: the Hungarian Central Statistical Office (HCSO) T-STAR, BP-STAR, 2011 census, 2016 microcensus; the National Tax and Customs Administration

(NTCA) Personal Income Tax, Corporate Tax; Ministry of Innovation and Technology Infocommunication data.

- Tax returns submitted to NTCA, balance sheet and income statement data.

The research also built on the following primary study:

- A questionnaire survey of the branch and online banking habits of the Hungarian population, carried out with the assistance of a research institute (Impetus Research) in February 2022 using a 20-minute Computer-Assisted Telephone Interview (CATI) methodology with 1000 people interviewed. The sample is representative of the Hungarian adult population by gender, age, education, type of settlement and county, and is also jointly representative by age and type of settlement, as well as by age and education.

Based on the data presented, the individual analyses were carried out using the following methodological approaches:

- European credit institution expansion: Aggregation of cross-border merger and acquisition transactions of banks in European countries between 2009-2022.
- Cluster analysis of European credit institutions: Clustering of European banks using business model-based cluster analysis based on year-end 2019 data.
- European Union branch analysis: The bank branch location analyses were prepared based on the status of February 1, 2021. For branch closures the analysis is based on branch stocks between October 2019 and February 2021 in the absence of historical data. First, examinations based on local Moran's I and Getis-Ord's G* spatial statistics are performed, then, the number of branches per capita and the closure rate are also compared with economic development.
- Location of bank branches in Hungary: The analysis was based on the P56 bank branch data as of 31.01.2020, which was analysed using descriptive and then regression methodology. First, calculations of global and local Moran's I and Getis-Ord's G* spatial statistics were carried out, followed by Ordinary Least Squares (OLS) linear and geographically weighted regression model estimations, in the latters the number of bank branches in the settlement was modelled using social and economic characteristics as explanatory variables.
- Branch closures in Hungary: Macro and micro level analysis for the period September 2008 to December 2020, with particular emphasis on the distance from the nearest bank branch by road for settlements without a branch.
    - Macro: Financial inclusion implications in focus. First, a Lorentz curve- and Gini index-based concentration analysis, as well as a Getis-Ord's G* hotspot analysis and a distance to nearest bank branches analysis are performed for 2008 and 2020, followed by a presentation of socio-economic characteristics of the settlements affected by closures, and a comparison of branch coverage and the number of internet subscriptions per capita.
    - Micro: Changes between 2008 and 2020 of the settlements considered as financial centres and their service areas, and the evolution of the stock of bank branches within the city in Győr, Debrecen and Pécs.

- Relationship between bank branches and lending: Loan disbursement data for Hungary from 2008 to 2020 are at the district level, while mortgage disbursement data for Hungary from 2015 to 2020 are at the settlement level. In addition to the map presentation, loan disbursement data are compared with the number of branches in the case of territorial units covered by a branch, and with the distance to the nearest bank branch in the case of settlement without a branch, by calculating correlation coefficients. For branch closures between 2008 and 2020, districts were grouped according to the relative change in the number of branches and the time-varying share of the groups in total lending was presented. Finally, the correlation between the change in the number of bank branches at the district level between 2008 and 2020 and the change in the share of lending in that district over the same period was also analysed.
- Usurious lending: Areas in Hungary with limited opportunities to access the formal financial system are mapped. The existence of bank relationship is examined for the most economically disadvantaged areas, as its low level and the poor financial situation are which may lead to widespread usurious lending.
- Sustainable lending: The interest margins on corporate loans granted between 2016 and 2020 were examined, the potential increase in which over this period could reflect the financial risk from climate change. In the absence of firm-level sustainability characteristics, the average spreads of loans disbursed are aggregated at the national economic branch level.
- Vulnerability in the coronavirus epidemic: The most vulnerable national economic branches to the crisis caused by the coronavirus epidemic are identified on the basis of the change in the share of the categories of an indebtedness and a profitability financial indicator between 2019 and 2020. Subsequently, an aggregated spatial analysis was carried out at district level regarding SME companies, where vulnerability was defined individually at enterprise level.
- Questionnaire analysis of banking habits: 1) Descriptive analysis based on the responses by presenting the basic statistics of bank branch visiting and online banking; 2) Examination of the relationship between bank branch visiting and online banking with the help of OLS linear, logistic and multinomial regression models. Three groups of models were constructed, one explaining bank branch visiting, one explaining online and mobile banking, and one explaining the willingness to go to a bank branch, and after that robustness tests were also carried out. The aim of the modelling was to estimate the effects of the explanatory variables of interest, which characterize the relationship between bank branch visiting and online banking.

4. Summary of results

For the first set of questions, focusing on the CEE region, the following findings emerged:

1.1. In the intra-regional cross-border expansion of CEE credit institutions, the buy-side activity significantly exceeded the sell-side activity, while Western

(mainly German and French) banking groups tended to reduce their exposure and withdraw from the region after the 2008-2009 crisis.

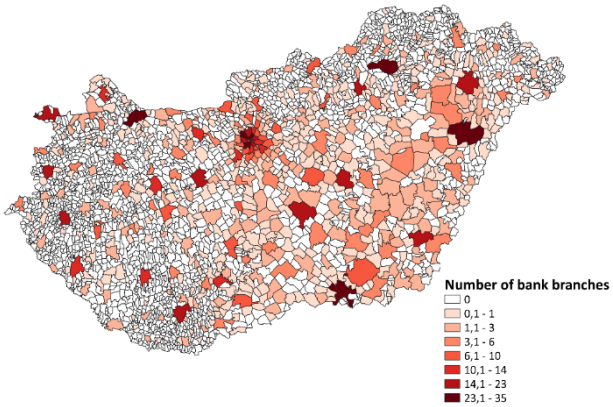
1.2. The business model-based cluster analysis shows significant differences between the CEE and Western European regions in terms of the share of credit institutions from the regions in the clusters, but this breakdown does not represent a clear delimitation, other factors also play an important role.

In relation to the location of branches of credit institutions in the EU and Hungary, the study found that:

2.1. The CEE region (except for a few areas) is in the lower, lower-medium range of the distribution in terms of branch coverage, with the Baltic States being considered with low coverage, while some Western and Southern European Member States have a high branch density. There can be seen a relationship between branch coverage and economic development, with the more developed regions having a somewhat higher degree of coverage.

2.2. In Hungary, the location of branches is spatially clustered on the one hand, and on the other hand there is an east-west divide, with eastern settlements being covered more, as shown in Figure 1. In addition, in the small rural areas of South Transdanubia and Northern Hungary, many villages are without branches and are relatively far from the nearest bank branch compared to other settlements. According to the regression analysis, population, share of active businesses, average income, type of settlement and the average number of bank branches in neighbouring settlements are decisive in terms of the coverage with branches of settlements.

Figure 1: Number of bank branches in Hungarian settlements



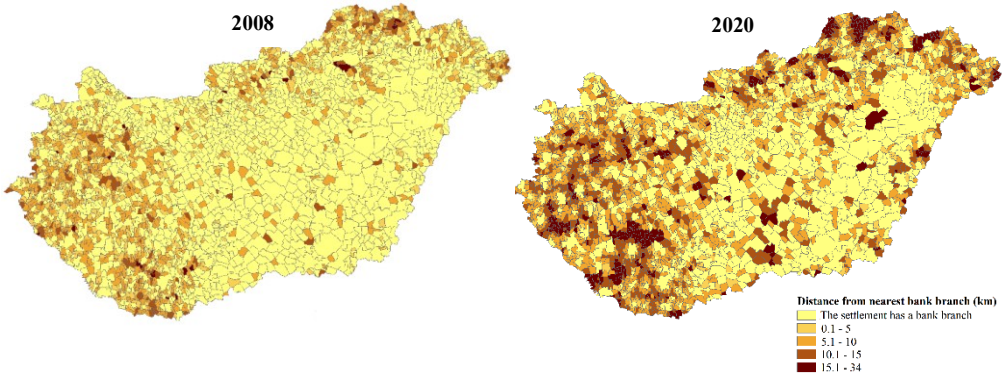
Source: own editing based on MNB.

As for the analysis of the post-crisis branch closures of credit institutions in the EU and Hungary, the analysis has led to the following conclusions:

3.1. The branch closure trend has affected the Baltic and Nordic countries the most in the European Union. There is no clear relation between branch closures and economic development, the closures are rather linked to digitalisation and online banking, high levels of which are typical in the Nordic countries.

3.2. The trend of branch closures in Hungary following the crisis has significantly increased (more than doubled) the number of settlements (and people living there) without branches and increased the (average) distance to the nearest branch to its 1.5 multiple, shown in Figure 2. Branches in smaller settlements and municipalities have closed down the most, which has substantially increased concentration. The trend of closures has left those settlements, that are in a relatively less favourable economic condition and are less covered by the necessary infrastructure for online banking, without branches, so that the risk of being excluded from the formal financial system may be greatest for those in disadvantaged circumstances.

Figure 2: Spatial pattern of the distance from the nearest bank branch by road in Hungarian settlements without a bank branch in 2008 and 2020



Source: own editing based on MNB

3.3. The average population and service area of cities considered to be financial service centres have increased substantially as a result of closures, with the focus shifting to county seats that play a central role from an economic and administrative point of view.

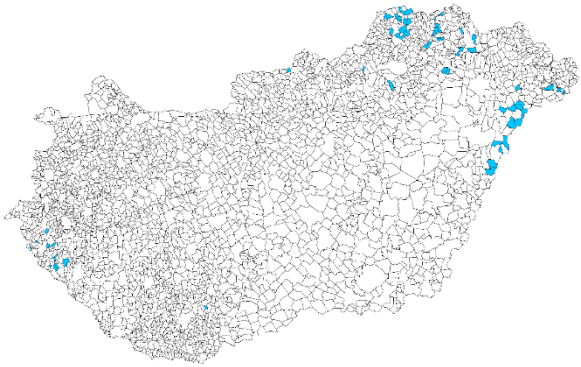
Regarding the lending activities of Hungarian banks, examining certain periods of the period between 2008-2021, the following consequences emerge:

4.1. Based on the spatial analyses, in settlements with branches, branch density has a moderately strong, in settlements without branches, the distance from the

nearest bank branch has a weak relationship with lending activity. There is also a weak relationship between the rate of closures and changes in lending activity.

4.2. 64 small settlements in Hungary were identified as potentially affected by widespread usurious lending, mostly located in the counties of Borsod-Abaúj-Zemplén, Szabolcs-Szatmár-Bereg and Zala (Figure 3).

Figure 3: Settlements in Hungary exposed to widespread usury lending based on the estimation



Note: Potentially exposed settlements are marked in blue. Source: own editing based on MNB, HCSO

4.3. Substantial differences can be seen in the lending activity of domestic and foreign credit institutions. Foreign credit institutions finance a larger proportion of foreign, larger, urban and manufacturing companies.

4.4. Over time, there is no significant difference in the trend between sustainable and less sustainable companies based on an analysis of the interest spreads on loans, so the strengthening of green aspects cannot be justified.

4.5. Considering the economic shock caused by the coronavirus epidemic, accommodation and food services, construction, administrative and support service activities, education and art, entertainment and recreation sectors, as well as micro and small companies proved to be the most vulnerable in terms of profitability and indebtedness. However, there is no clear spatial pattern in the location of these companies with credit.

Concerning the branching and online banking habits of the Hungarian population, the research revealed that:

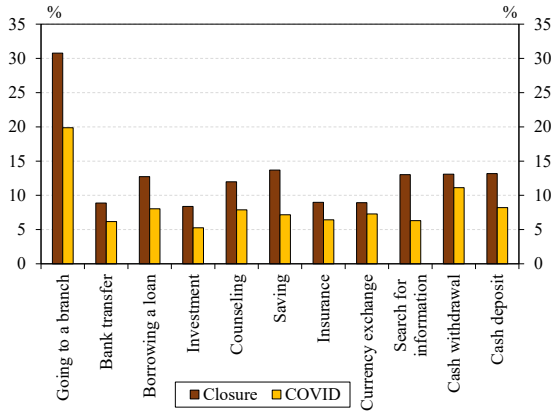
5.1. The respondents consider the main reasons for going to the branch to be simplicity, security, the existence of matters that can only be dealt with in person, and the quality of physical and online services, which are supplemented by the

price of the latter two when choosing a bank and having a bank relationship. The network of branches, their distance, and the cost of getting to them are also important factors. In addition to the age group, the frequency of going to the branch is also related to the distance from the branch.

5.2. Online platforms are considered decisive forms of administration for certain financial services, and the respondents can be considered mainly receptive to digital banking, with the exception of one or two types of administration. The current, actual online administration rate, however, exceeds the intended rate in the future, which shows that the residents prefer the personal form of administration, even if they now manage their matters online by necessity.

5.3. Branch closures and the outbreak of the coronavirus epidemic reduced the frequency of visits to a branch substantially and the use of other financial services to a lesser extent, the size of which is shown in Figure 4.

Figure 4: Proportion of people who use certain financial services less as a result of branch closures and the outbreak of the coronavirus epidemic



Source: own editing based on the questionnaire survey

5.4. Based on the population's behaviour, online banking alone cannot fully replace going to a branch, the latter becoming more difficult does not clearly result in the transition to online platforms, so it cannot be considered as a clear substitute. Digital solutions are a real alternative for an urban, young, better-off social strata.

5.5. In-branch administration becoming more difficult and remote can mean the risk of being pushed out of the formal financial system mostly for the older age group, living in small settlements, who are in a relatively worse financial situation, and who are less digitally receptive.

List of publications related to the topic of the thesis

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