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# The economic impact of changes in local bank presence

Iftekhar Hasan<sup>a</sup> , Krzysztof Jackowicz<sup>b</sup> , Oskar Kowalewski<sup>c</sup>  and Łukasz Kozłowski<sup>d</sup> 

## ABSTRACT

This study analyzes the economic consequences of changes in the local bank presence. Using a unique data set of banks, firms and counties in Poland over the period 2009–14, it is shown that changes strengthening the relationship banking model are associated with local labour market improvements and easier small and medium-sized enterprise access to bank debt. However, only the appearance of new, more aggressive owners of large commercial banks stimulates new firm creation.

## KEYWORDS

local economic activity; small and medium-sized enterprises (SMEs); entrepreneurship; local banks

JEL G21, G32, R11

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## INTRODUCTION

The 2008 global financial crisis changed the world's banking landscape. Banks hit by the crisis were nationalized or forced to merge or significantly restructure their activities. Both firms and citizens experienced the repercussions of those changes. The impact of the crisis on bank relationships and credit for small- and medium-sized enterprises (SMEs) has been analyzed in the literature (Popov & Udell, 2012; Kremp & Sevestre, 2013; Berger, Cerqueiro, & Fabiana Penas, 2015; Tsuruta, 2015). However, the regional and local effects of the crisis, including changes in the banking markets, have attracted thus far less attention. The study addresses this gap in the literature.

To examine the local repercussions of crisis-induced modifications in the banking sector, we used data from Poland from the period 2009–14. We focused on three types of changes in the local bank presence. First, we studied the dynamics of bank branch networks within local banking markets. Second, we investigated the changes in the number of banks. Finally, we analyzed the modifications of bank ownership structures within local banking

markets. We assessed the effects of instability in local banking markets from the perspective of local economic activity, and selected aspects of firms' performance related to bank financing.


The study contributes to the extant literature in three aspects. First, it uses a unique data set that allows one to trace different types of changes in the local bank presence in order to assess their influence on local economic activity in the post-crisis period. Second, the study adds to the relatively small number of studies that address SMEs' performance drivers in emerging economies, in general, and in Central European countries in particular. Third, and most importantly, it documents that changes in the local bank presence are an additional, independent, statistically significant and economically relevant factor that shape local economic activity and the access to bank credit for local firms.

The paper is organized as follows. The next section reviews the relevant literature and formulates the research hypotheses. The third section presents the empirical strategy, data and econometric models. The fourth section discusses the empirical results. The fifth section reports the conclusions and policy implications.


## CONTACT

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## LITERATURE REVIEW AND RESEARCH HYPOTHESES

Three main strands in the banking literature are related to this research. They relate to branching deregulation, relationship lending and the effects of bank consolidation on SME lending. The first strand of the literature deals with the effects of deregulation of branching laws on the banking industry and the economy. Most studies focus on the United States, where, between the 1970s and 1990s, some states removed restrictions on intra-state branching. Jayaratne and Strahan (1997) reported that the banking industry became significantly more efficient after deregulation. They found that the state averages for operating expenses and loan losses fell, and that much of these improvements were passed on to borrowers in the form of lower interest rates. Rice and Strahan (2010) confirmed that the cost of credit is lower in states that are open to interstate branching. Moreover, they showed that small firms are more likely to borrow from banks where branching is less restricted. Strahan (2003) provided a comprehensive review of the available evidence in favour of the benefits of deregulation.

In addition, Jayaratne and Strahan (1996) showed that gross domestic product (GDP) and income growth rates increased in the deregulated states. Beck, Levine, and Levkov (2010) provided an evaluation of the impact of branch deregulation on the distribution of income in the US economy. They reported that removing restrictions on intra-state bank branching reduced inequality by boosting incomes in the lower portion of the income distribution. They suggested three possible channels linking bank performance and income distribution. The first is related to studies showing that credit market imperfections prevent the poor from borrowing in order to invest more in education (Galor & Zeira, 1993). The second explanation is based on the results of Banerjee and Newman (1993). It focuses on the ability of the poor to become entrepreneurs. The last reason relies on the response of companies to lower interest rates, which encourages firms to substitute capital for labour. In contrast, Pastor, Pavia, Serrano, and Tortosa-Ausina (2016), in a rare study based on European data, found that out-of-region entries of savings banks did not have any positive effect on regional development in Spain.

Considering the majority view presented in the literature, we assume that the development of local bank branch networks positively affects local economic activity, both directly, through job creation, and indirectly, through factors related to the intensified competition and improvement of lending conditions. We express our expectations in hypothesis 1. However, the opposite effect, particularly in the case of the local labour market, is also conceivable as the increased competition may also force banks to lay off workers and the improved access to bank loans may encourage firms to invest in less labour-intensive technologies.

*Hypothesis 1: The development of local bank branch networks is beneficial to the overall economic activity, in particular to the local labour market.*

The second strand of the literature relevant to the present investigation focuses on relationship banking. The existing theoretical and empirical research suggests that small local banks possess an advantage in providing loans to SMEs. The benefit may result from relationship lending, which is characterized by close monitoring, re-negotiability and lengthy contractual agreements (Berlin & Mester, 1998). DeYoung (2002) argued that community banks have a comparative advantage over larger banks in forming relationships with lenders because they have permanent contact with local economic players. Petersen and Rajan (1994), Jin, Kanagaretnam, and Lobo (2017) and Elsas and Krahnen (1998) showed that building a close relationship with lenders results in a larger availability of credit. Additionally, Berger and Udell (1995) found that small firms with longer bank relationships pay lower interest rates and are required to provide less collateral.

Berger and Udell (2002) and Berger, Miller, Petersen, Rajan, and Stein (2005) concluded that large banks are not keen on small business lending, which relies heavily on soft information. In contrast, large banks prefer to lend to large firms that have well-documented track records. Large banks may also be objectively disadvantaged in this respect because their headquarters are often located at a substantial distance from potential small business borrowers. Strahan and Weston (1998) confirmed that the presence of large banks has an adverse effect on small business growth. They also showed that small business lending increases with a bank's growth for a while, but when a bank gets larger, lending to large firms increases dramatically.

Although several studies' documentation reveals that large banks have an informational disadvantage in making loans to small business, recent research shows that such banks have been using hard information-based technologies to evaluate credit application of small firms. For instance, Berger and Black (2011) found that lending techniques based on hard information guarantee a comparative advantage to large banks in lending to both small and large firms, but not to medium-sized companies. Nevertheless, most of the literature supports the view that small banks have a comparative advantage in lending to SMEs. As a consequence, we conjecture that changes in the local bank presence that boost relationship banking and privilege the use of soft information have a positive impact on local economic activity. Therefore, we introduce the following hypothesis:

*Hypothesis 2: The relative strengthening of small local banks improves the local economic situation.*

The third strand of the relevant literature focuses on the impact of bank consolidation on the credit availability for small businesses. Gilbert (1984) and Berger, Demsetz, and Strahan (1999) presented an excellent literature review regarding this topic. A bank merger-and-acquisition (M&A) process may involve changes in ownership, strategy and bank business model. Peek and Rosengren (1995) and

Strahan and Weston (1998) found that M&As between small banks increase small business lending, whereas consolidation between large banks tends to influence small business lending negatively. Berger, Saunders, Scalise, and Udell (1998) underlined the complexity of the impact of M&As on bank lending. They found that their negative impact on small business lending may be offset by changes in the lending behaviour of competitors within the same market. In line with their findings, Bonaccorsi Di Patti and Gobbi (2007) suggested that M&As only lead to a temporary reduction in the credit supply of SMEs. Moreover, Black and Strahan (2002) found that consolidation increases the rate of new business incorporation.

The empirical literature shows, therefore, that consolidation in the banking industry may raise concerns about the survivability of small banks and thus affects the credit availability for small firms. Consolidation among small banks seems to enhance small business lending, while the opposite appears to happen when large banks are involved. On the other hand, this reduction appears to be offset, at least in part, by the decision of other banks within the same local markets to increase lending to small businesses by way of response.

When we analyze the consequences of significant changes in the ownership structures of banks already present in local markets, it is reasonable to assume that banks with new owners are not informationally disadvantaged to a significant extent in relation to other banks. Moreover, the new, stronger owners of the existing banks are likely to enjoy an advantage in financing lending activities, similarly to foreign entrants, as demonstrated in the model presented by Boustanifar (2014) (see also Wu, Chen, Jeon, & Wang, 2017). Consequently, the appearance of new owners should reduce the financial constraints of opaque SMEs and positively impact local economic activity. We express these expectations as follows:

*Hypothesis 3: Significant changes in the ownership of banks that are present in local markets have a positive impact on local economic activity.*

## EMPIRICAL STRATEGY, DATA AND MODELS

### Level of the analysis

The traits of local banking markets are important for local economies and SME prospects for two main reasons. First, Presbitero, Udell, and Zazzaro (2014) show that the vast majority of loans are contracted locally. Second, Liberti and Mian (2009) and Agarwal and Hauswald (2010) document that a smaller geographical distance between the information-collecting agent and the loan-approving officer facilitates the collection and use of soft information about potential lenders. Conversely, a greater distance, according to Mian (2006), complicates the renegotiation of contracts and makes successful recovery less likely.

In the present study, we examine the impact of changes in local banking markets on the local economic situation

and selected aspects of SMEs' performance at the county level. In Poland, counties are intermediary units of administrative division between communes and voivodships. There are 380 counties in Poland, including 66 cities that perform a county function. Their average surface is 823 km<sup>2</sup>, while the average population slightly exceeds 100,000 people. Assessment at the county level represents a convenient choice for analysing the repercussions of instability within local banking systems. First, several important economic indicators that are available for counties and voivodships are not available for communes. In addition, in our opinion, county borders delimit local banking markets better than borders of communes and voivodships. In an average county, 15 banks and 40 bank branches operate. These numbers are sufficient to characterize local banking environments. In contrast, communes are very small units of administrative division. On average, only six bank branches operate in a commune. In more than 50% of communes no more than two banks are present. In turn, 16 voivodships in Poland are too big for studying the relationship between changes in local banking markets and local economic situation. The mean population of voivodships is 1.7 million people and, on average, as many as 650 bank branches are located within their borders.

### Specificity of the Polish economy and banking system

The Polish economy weathered the recent financial crisis surprisingly well. In 2008 and 2009, Poland recorded more than decent GDP growth at rate of 4.8% and 1.8% respectively. During the period 2008–16, the mean GDP growth exceeded slightly 3%. The lowest GDP growth rate 1.6% was observed in 2013. Besides a big internal market for goods and services and constant inflows of funds from the European Union budget, the relatively good performance of the Polish economy was fuelled by a stable supply of credit from the banks.

The Polish banking system is composed of two groups of banks that compete locally. These groups differ substantially in their business model, organizational form and size of operations. The first group of banks – the so-called commercial banks – includes large, distantly managed banks with nationwide branch networks, organized as joint-stock companies, state enterprises or branches of foreign credit institutions. Most of the commercial banks were foreign owned during the sample period. The second group comprises cooperative banks only, which are small local organizations covering, at best, several counties. According to data published by the Polish Financial Supervision Authority, 561 cooperative banks controlled almost 7% of the banking sector assets at the end of 2015. However, cooperative banks offered their services through as much as 4200 branches, almost 30% of all bank branches in Poland, and employed nearly 20% of the total banking sector workforce in Poland. Both traits are linked to the fact that cooperative banks rely heavily on the relationship-based banking model which requires maintenance of a comparatively high number of workers and branches in relation to the scale of operations.



Based on theoretical premises and the existing empirical evidence (Boot, 2000; Stein, 2002; Berger & Udell, 2002; Berger, Bouwman, & Kim, 2017; Liberti & Mian, 2009), we conjecture, therefore, that cooperative banks in Poland may play a disproportionately important role in shaping local economic activity in comparison with their modest share in banking sector assets. For this reason, we differentiate between changes in local banking markets regarding the presence of commercial and cooperative banks. However, we do not divide further the group of commercial banks according to the ownership criterion because, until 2017, only one big, state-controlled bank operated in Poland.

When formulating hypothesis 3, we have referred to the new phenomenon in the banking sector, which occurred after the recent global financial crisis and influenced local banking markets. Namely, after 2008, for the first time since the beginning of the economic transformation, several foreign banks decided to sell their Polish subsidiaries as a result of problems in their home countries. The sell-off was successfully used by a group of aggressive, branching new players. Their joint market share rose from approximately 5% in 2008 to as much as 20% in 2016, changing the competitive situation within the sector. As a consequence, we include in the analysis, among other factors affecting local banking structures, changes in the ownership structures of banks.

### Overview of the research strategy

The literature findings, hypotheses and the specificity of the Polish banking system determined the empirical strategy. We assess the economic repercussions of changes in the local bank presence. Specifically, we are interested in the impact of those changes on local economic activity and selected aspects of SMEs' functioning. With respect to local economic activity, we focus on unemployment growth and new firm creation, while being concerned with SMEs' performance; we concentrate on bank and long-term debt growth, financial expenses, and investments. We distinguish three sources of instability within local banking: the development of bank branch networks; bank entries into and exits from local banking markets; and significant modifications in the ownership structure of banks. We analyze the consequences of each type of instability for commercial and cooperative banks separately. Additionally, we assume, as previously mentioned, that county borders define local banking markets. The data necessary to conduct alternative analyses, based, for example, on commuting patterns, are not available. Moreover, by only using units of administrative division for the analysis, we can precisely control for the impact of demographic and economic factors, as well as factors related to human capital, on the studied phenomena.

### Data sources

The research project combines four data sources. The first data set reports the addresses of all bank branches in Poland between 2008 and 2014. The data set was obtained from the independent consulting company Inteliace Research.

This information allows one to track bank exits from and entries into counties, as well as the number of banks or branches operating in counties of Poland. Thus, this data set is the basis for constructing all variables describing changes in the local bank presence between 2009 and 2014. To reflect local banking market instability better, we hand-collected information on ownership changes among commercial banks between 2009 and 2014 (10 bank ownership changes involving 2300 branches in total) and among cooperative banks between 2010 and 2014 (13 bank ownership changes concerning 40 branches in total). The county-level information is supplemented by a third data set provided by the Polish Central Statistical Office describing the local economic condition, urbanization, human capital and other traits of counties. The fourth and last data set was obtained from the Amadeus database. It includes firm-level information about Polish SMEs in individual counties between 2008 and 2014. We identified SMEs following the definition of the Statistical Office of the European Communities (EUROSTAT),<sup>1</sup> and excluded all companies that did not meet these criteria in at least one year within the analyzed period. We also restricted the sample to companies from sections A–C and F–I of the Statistical Classification of Economic Activities in the European Community (NACE) Rev. 2 industry classification. We were then left with a final sample of approximately 40,000 companies. With regard to industries' shares in total revenues, the sample closely resembles the SMEs' population in Poland. However, micro-firms are underrepresented in the sample because they usually use simplified accounting techniques.

Table 1 provides the definitions of all variables constructed using the described data sources. Panel (A) specifies the construction of all county-level dependent and control variables; panel (B) describes the regressors related to the local banking market instability; and panel (C) concerns firm-level dependent and explanatory variables. The descriptive statistics for all variables are not presented for brevity, yet they are available from the authors upon request.

### Econometric models

#### Local economic condition

To study the impact of banking market instability on the local economy, we estimate a set of panel estimation models using county-year observations. We regress measures of local economic condition (*COUNTY.DEP*) against different measures of banking market instability (*INSTB*), and could expect some feedback from *COUNTY.DEP* to *INSTB*, at least in the case of some instability measures. We conjecture that banks could enter or exit from local markets if the local economic condition is good or poor respectively. To address this potential endogeneity problem, we apply the system generalized method of moments (GMM-SYS) estimation procedure proposed by Blundell and Bond (1998). We assume that the endogeneity affects the increases in the number of bank branches in counties and bank entries/exits (variables are: *BANKS.INCR*, *BANKS.COOP.INCR* and *BANKS.CB.INCR*; *ENTRIES*,

**Table 1.** Variable definitions.

<i>(A) County-level dependent and control variables</i>	
<i>UNEMPL</i>	Unemployment rate
<i>UNEMPL.INCR</i>	Year-to-year growth in the unemployment rate
<i>NEW.COMP</i>	Number of new companies registered in a given year divided by a county's population (per 100 people)
<i>HHI</i>	Local banking market's concentration (Herfindahl–Hirschman index, where the number of a bank's local branches denotes its significance)
<i>MAX.10.BANKS</i>	Binary variable that takes the value of 1 for counties with no more than 10 banks operating in their area, and 0 otherwise
<i>WAGES</i>	Average salary in a county in relation to the country's average salary
<i>GRADUATES</i>	People graduating from universities in a given year divided by a county's population (per 100 people)
<i>POPDENS</i>	Population density (hundreds/km <sup>2</sup> )
<i>MEAN.ROS</i>	Mean return on sales of small and medium-sized enterprises (SMEs) located in a county
<i>MEAN.SALES.GR</i>	Mean growth rate of sales of SMEs located in a county
<i>(B) Variables describing the instability of a banking market in a county</i>	
<i>BRANCH.INCR, BRANCH.COOP.INCR, BRANCH.CB.INCR</i>	Year-to-year percentage increase in the number of all bank branches, cooperative bank branches and commercial bank branches respectively that operated in a given county
<i>BANKS.INCR, BANKS.COOP.INCR, BANKS.CB.INCR</i>	Year-to-year increase in the number of banks, cooperative banks and commercial banks respectively that operated in a given county <sup>a</sup>
<i>ENTRIES, COOP.ENTRIES, CB.ENTRIES</i>	Number of all banks, cooperative banks and commercial banks respectively that opened their first branch in a given county and year <sup>a</sup>
<i>EXITS, COOPEXITS, CB.EXITS</i>	Number of all banks, cooperative banks and commercial banks respectively that closed all their branches in a given county and year <sup>a</sup>
<i>ACQ.BANK, ACQ.BANK.COOP, ACQ.BANK.CB</i>	Number of banks, cooperative banks and commercial banks respectively that operated in a given county and were acquired by other entities in a given year
<i>ACQ.BRANCH, ACQ.BRANCH.COOP, ACQ.BRANCH.CB</i>	Number of branches of all banks, cooperative banks and commercial banks respectively that operated in a given county and were acquired by other entities in a given year
<i>(C) Small and medium-sized enterprises' (SMEs) characteristics</i>	
<i>DEBT.GR</i>	Yearly increase in bank and long-term debt to total assets at the beginning of a year in constant prices
<i>FIN.COST</i>	Financial expenses to average assets per year
<i>INVEST</i>	Growth rate of tangible fixed assets at constant prices
<i>LNA</i>	Natural logarithm of total assets at constant prices
<i>CASH</i>	Ratio of cash and cash equivalent to total assets
<i>TAT</i>	Ratio of sales to total assets
<i>COLLAT</i>	Ratio of tangible fixed assets to total assets
<i>ROS</i>	Gross profit/loss to sales
<i>LT.LIAB</i>	Ratio of non-current liabilities to total assets
<i>EQUITY</i>	Ratio of shareholders' funds to total assets
<i>EBIT.S</i>	Operating profit/loss to sales
<i>FIXA</i>	Ratio of fixed assets to total assets
<i>YOUNG</i>	Variable that takes the value of 1 if a firm is not more than five years old, and 0 otherwise

Note: <sup>a</sup>To eliminate the effect of bank mergers, banks merging in period  $t$  are already treated as a single institution in year  $t - 1$ , while calculating the growth rate of bank numbers and the number of bank exits/entries in year  $t$ .

*COOP.ENTRIES* and *CB.ENTRIES*; *EXITS*, *COOP.EXITS* and *CB.EXITS*). On the other hand, we do not expect any feedback from the local economic condition to bank ownership changes (variables are: *ACQ.BANK*, *ACQ.BANK.COOP* and *ACQ.BANK.CB*; *ACQ.BRANCH*, *ACQ.BRANCH.COOP* and *ACQ.BRANCH.CB*), and treat these variables as strictly exogenous. We justify the choice by the fact that, in the sample, ownership changes mostly affect commercial banks with nationwide presence. Thus, the decisions regarding ownership changes should not be influenced by the economic situation of individual counties. The estimated county-level models are built according to the general principles expressed by equation:

$$\begin{aligned} \text{COUNTY.DEP}_{kt} = f(\text{COUNTY.DEP}_{kt-1}; \\ \text{LOCAL.CTRL}_{kt}; \text{INSTB}_{kt-1}; \\ \text{year dummies}) \end{aligned} \quad (1)$$

where *COUNTY.DEP<sub>kt</sub>* denotes a dependent variable reflecting new firm creation (*NEW.COMP*) or unemployment rate growth (*UNEMPL.INCR*) in county *k* and year *t*; *LOCAL.CTRL<sub>kt</sub>* is a set of control variables describing banking market specificities (*HHI* and *MAX.10.-BANKS*), local human capital (*GRADUATES*), urbanization (*POP.DENS*), the condition of local firms (*MEAN.ROS* and *MEAN.SALES.GR*) and the income of population (*WAGES*) in county *k* and year *t*; and *INSTB<sub>kt-1</sub>* is a set of banking market instability measures for county *k* and year *t* - 1 designed to test the research hypotheses. Model (1) also includes dummies to control for specific conditions in each year.

### Selected aspects of local firms' performance

To examine the impact of local banking market instability on already established SMEs, we apply the GMM-SYS technique and estimate dynamic panel models using a data set composed of firm-year observations. Equation (2) illustrates the general construction of the models:

$$\begin{aligned} \text{SME.DEP}_{ikt} = f(\text{SME.DEP}_{ikt-1}; \\ \text{SME.CTRL}_{it-1}; \text{LOCAL.CTRL}_{kt}; \\ \text{INSTB}_{kt-1}; \text{year dummies}; \\ \text{industry dummies}) \end{aligned} \quad (2)$$

where *SME.DEP<sub>ikt</sub>* in equation (2) denotes dependent variables illustrating selected aspects of SMEs' performance. Considering the hypotheses, we decided to use the following dependent variables: bank and long-term debt growth (*DEBT.GR*), financial expenses (*FIN.COST*) and investments (*INVEST*) ratios of firm *i*, in county *k* in year *t*. With regard to the dependent variables, two comments are necessary. First, the bank and long-term debt growth ratio provides the best available approximation for financial constraints encountered by SMEs. However, almost 37.96% of the yearly firm-level observations for the variable *DEBT.GR* have zero values. For this reason,

as a robustness check, we have excluded those observations from the sample. The main findings remain unchanged in the restricted sample. The outcomes of this robustness check are available from the authors on request. Second, the dependent variable *FIN.COST* contains in the numerator, due to data limitations, financial expenses. This item of firm financial statements reflects not only interest costs directly related to bank debt but also, for example, discounts on bills, foreign exchanges losses, charges and impairment losses on investments, or payments linked to capital leases. We believe, however, that the measurement error induced by the data constraints should not distort our inferences in a systematic manner.

*SME.CTRL<sub>ikt-1</sub>* in equation (2) is a set of control variables describing SMEs' size (*LNA*), asset turnover (*TAT*), asset structure (*CASH*, *COLLAT*, *FIXA*), profitability (*ROS*, *EBIT.S*) and shareholders' capital and leverage (*EQUITY*, *LT.LLAB*). *INSTB<sub>kt-1</sub>* is defined in the same way as in equation (1). *LOCAL.CTRL<sub>kt</sub>* contains all variables present in equation (1) with the exception of *MEAN.ROS* and *MEAN.SALES.GR*, but additionally includes a variable illustrating the situation on local labour market (*UNEMPL*). The model also comprises dummies to control for specific conditions in different years and industries.

## RESULTS

We organize the presentation of the research outcomes according to the type of modifications in the local bank presence. Therefore, in the next subsection we concentrate on changes in the number of bank branches; the second subsection focuses on banks' entries into and exits from local banking markets; and the third subsection looks at the changes in the ownership structure of banks. Hypotheses 1 and 3 are verified in the first and third subsections respectively. In contrast, hypothesis 2 is verified throughout the entire results section.

### Developments in local branch networks

Table 2 shows that changes in branch networks within counties affect the unemployment dynamics (specifications 1 and 2), but do not influence the creation of new companies (specifications 3 and 4). Regardless of the bank type, increases in the local presence are associated with positive tendencies on the labour market – the coefficients for the variables *BRANCH.COOP.INCR* and *BRANCH.CB.INC* in specification (2) are both negative and statistically significant at the 10% and 5% levels respectively. The identified relationships are also relevant in economic terms. Specification (2) implies that increases of 1 SD (standard deviation) in the number of cooperative and commercial bank branches lead to the reduction in the unemployment growth ratio by 11.4% and 36.9% of this growth ratio SD respectively. Therefore, the results support hypothesis 1 with respect to the local labour market.

The identified empirical pattern concerning the positive impact of bank branch expansion on local labour markets most probably is not related to the general financial inclusion in Poland. Although the participation of

**Table 2.** Impact of increases in the number of bank branches on counties.

	(1)	(2)	(3)	(4)
	<i>UNEMPL.INCR<sub>t</sub></i>		<i>NEW.COMP<sub>t</sub></i>	
<i>BRANCH.INCR<sub>t-1</sub></i>	-0.0600*** (0.0175)		-0.292 (0.309)	
<i>BRANCH.COOP.INCR<sub>t-1</sub></i>		-0.00527* (0.00305)		0.00911 (0.0391)
<i>BRANCH.CB.INCR<sub>t-1</sub></i>		-0.0259** (0.0128)		-0.135 (0.105)
Observations	1893	1846	1893	1846
Counties	379	372	379	372
Hansen	14.21	20.77	9.787	20.38
Hansen ( <i>p</i> -value)	0.163	0.291	0.459	0.312

Notes: The set of unreported explanatory variables includes year dummies, industry dummies and county-level controls (*HHI*, *MAX.10.BANKS*, *GRADUATES*, *PORDENS*, *MEAN.ROS*, *MEAN.SALES.GR*, *WAGES* and a lagged dependent variable). The variables describing instability of the local banking market are treated as endogenous.

\*, \*\*, \*\*\*Statistical significance at the 10%, 5% and 1% levels respectively. Robust standard errors are shown in parentheses.

households in financial markets increased moderately during the studied period, this change was caused by the rising importance of non-bank financial institutions, mainly insurance companies and pension funds (Social Diagnosis, 2015). In Table 2 and the following tables, for brevity we do not report the estimation results for control variables, yet the results are available from the authors upon request.

Table 3 reports how changes in local bank branch networks affect the selected aspects of SMEs' performance. The studied factor is almost irrelevant. We obtain only weak evidence – in line with hypothesis 2 – that an increase in the presence of cooperative banks within counties is favourable for SMEs' access to bank and long-term debt and investment, namely, the coefficients for the variable *BRANCH.COOP.INCR* are positive and significant in specifications (2) and (6), but only at the 10% level. Moreover, the impact of cooperative bank branch network

development is only moderately significant in economic terms. Specifications (2) and (6) indicate that the rise in the number of cooperative bank branches by 1 SD in the same county where an SME is established results in the bank and long-term debt and tangible fixed assets growth ratios higher by 0.1 and 0.4 percentage points respectively.

In sum, we believe that the positive relationship between local bank branch development and county labour markets reflects the direct impact (through the influence of new jobs creation) of this type of change in local bank presence on local economic situation. There are three reasons behind this conclusion. First, and most importantly, Table 3 provides only weak evidence that the modifications in local bank branch networks affect SMEs' performance. Second, as Table 2 documents, a larger number of branches does not translate into higher start-up activity. Third, and again as shown in Table 2, we obtain negative and statistically significant coefficients in the regressions explaining

**Table 3.** Impact of increases in the number of bank branches on small and medium-sized enterprises (SMEs).

	(1)	(2)	(3)	(4)	(5)	(6)
	<i>DEBT.GR<sub>t</sub></i>		<i>FIN.COST<sub>t</sub></i>		<i>INVEST<sub>t</sub></i>	
<i>BRANCH.INCR<sub>t-1</sub></i>	0.00348 (0.00412)		0.000308 (0.000823)		0.00740 (0.0296)	
<i>BRANCH.COOP.INCR<sub>t-1</sub></i>		0.00183* (0.00106)		-1.67e-05 (0.000236)		0.0130* (0.00751)
<i>BRANCH.CB.INCR<sub>t-1</sub></i>		0.000872 (0.00228)		-0.000647 (0.000423)		-0.0175 (0.0156)
Observations	154,399	152,711	119,353	118,004	146,113	144,508
Firms	41,733	41,309	34,396	34,039	39,569	39,163
Hansen	16.85	17.01	0.927	0.404	16.38	15.62
Hansen ( <i>p</i> -value)	0.206	0.199	0.336	0.525	0.229	0.270

Note: The set of unreported explanatory variables includes county-level controls (*HHI*, *MAX.10.BANKS*, *GRADUATES*, *PORDENS*, *UNEMPL* and *WAGES*), year dummies, industry dummies, a lagged dependent variable and other firm-level controls, i.e.: (a) *LNA*, *CASH*, *TAT*, *COLLAT*, *ROS* and *LT.LIAB* in the case of specifications (1) and (2); (b) *LNA*, *CASH*, *TAT*, *COLLAT*, *ROS* and *EQUITY* in the case of specifications (3) and (4); and (c) *LNA*, *CASH*, *TAT*, *LT.LIAB*, *EBIT.S* and *FIX.A* in the case of specifications (5) and (6). All firm-level control variables, except for *LNA*, were lagged by one period.

\*, \*\*, \*\*\*Statistical significance at the 10%, 5% and 1% levels respectively. Robust standard errors are shown in parentheses.



the unemployment dynamic for both cooperative banks (*BRANCH.COOP.INCR*) and commercial banks with nationwide branch networks (*BRANCH.OHTER.INCR*). Therefore, the impact of branch network development does not depend on the banking model and the kind of information processed. Due to the size of their operation, cooperative banks rely more on soft information and relationship banking, while all branching commercial banks are large, distantly managed organizations mainly employing a transaction approach in lending and hard information. Under the hypothesis that changes in local bank branch networks affect unemployment indirectly (through the conditions of local firms), we should witness

a positive and stronger impact of cooperative banks expansion on the local labour market compared with commercial banks. However, this does not seem to be the case in the present study.

#### Banks' entries into and exits from local markets

This subsection investigates the consequences of banks' entries into and exits from local markets. Table 4 reports the results of the county-level analysis and Table 5 presents the outcomes of the firm-level analysis. In line with the findings reported in Table 2, we establish that changes in the number of banks influence unemployment growth, but do not affect new firm creation. Specifications (2)

**Table 4.** Impact of bank entries/exits on counties

(A) <i>Increases in the number of banks</i>	<i>UNEMPL.INCR<sub>t</sub></i>		<i>NEW.COMP<sub>t</sub></i>	
	(1)	(2)	(3)	(4)
<i>BANKS.INCR<sub>t-1</sub></i>	-0.00142 (0.00123)		-0.0303 (0.0289)	
<i>BANKS.COOP.INCR<sub>t-1</sub></i>		-0.00378** (0.00188)		0.0161 (0.0400)
<i>BANKS.CB.INCR<sub>t-1</sub></i>		-0.00166 (0.00120)		-0.0299 (0.0256)
Observations	1893	1893	1893	1893
Counties	379	379	379	379
Hansen	14.39	21.07	11.88	21.72
Hansen ( <i>p</i> -value)	0.156	0.276	0.293	0.245
(B) <i>Bank entries</i>	(5)	(6)	(7)	(8)
<i>ENTRIES<sub>t-1</sub></i>	0.00585 (0.00422)		-0.0617 (0.106)	
<i>COOPENTRIES<sub>t-1</sub></i>		-0.00350 (0.00359)		-0.0476 (0.0913)
<i>CB.ENTRIES<sub>t-1</sub></i>		-0.00367** (0.00183)		0.0726 (0.0791)
Observations	1893	1893	1893	1893
Counties	379	379	379	379
Hansen	5.126	25.91	11.34	8.828
Hansen ( <i>p</i> -value)	0.645	0.102	0.125	0.265
(C) <i>Bank exits</i>	(9)	(10)	(11)	(12)
<i>EXITS<sub>t-1</sub></i>	-0.00109 (0.00477)		-0.0621 (0.0823)	
<i>COOPEXITS<sub>t-1</sub></i>		0.0151* (0.00836)		-0.0968 (0.125)
<i>CB.EXITS<sub>t-1</sub></i>		-0.00228 (0.00446)		0.0716 (0.0938)
Observations	1893	1893	1893	1893
Counties	379	379	379	379
Hansen	13.27	25.32	7.869	12.16
Hansen ( <i>p</i> -value)	0.209	0.116	0.642	0.839

Note: The set of unreported explanatory variables includes year dummies, industry dummies and county-level controls (*HHI*, *MAX.10.BANKS*, *GRADUATES*, *POP.DENS*, *MEAN.ROS*, *MEAN.SALES.GR*, *WAGES* and a lagged dependent variable). The variables describing instability of the local banking market are treated as endogenous.

\*, \*\*, \*\*\* Statistical significance at the 10%, 5% and 1% levels respectively. Robust standard errors are shown in parentheses.

**Table 5.** Impact of bank entries/exits on small and medium-sized enterprises (SMEs).

(A) Increases in the number of banks	<i>DEBT.GR<sub>t</sub></i>		<i>FIN.COST<sub>t</sub></i>		<i>INVEST<sub>t</sub></i>	
	(1)	(2)	(3)	(4)	(5)	(6)
<i>BANKS.INCR<sub>t-1</sub></i>	-0.000361 (0.000275)		-0.000262*** (5.62e-05)		-0.000194 (0.00212)	
<i>BANKS.COOP.INCR<sub>t-1</sub></i>		0.000411 (0.000447)		-0.000204** (8.62e-05)		0.00382 (0.00377)
<i>BANKS.CB.INCR<sub>t-1</sub></i>		-0.000677** (0.000325)		-0.000285*** (6.70e-05)		-0.00179 (0.00248)
Observations	154,399	154,399	119,353	119,353	146,113	146,113
Firms	41,733	41,733	34,396	34,396	39,569	39,569
Hansen	16.83	16.85	0.866	0.879	16.38	16.38
Hansen ( <i>p</i> -value)	0.207	0.206	0.352	0.349	0.229	0.229
(B) Bank entries						
<i>ENTRIES<sub>t-1</sub></i>			-0.000350*** (6.72e-05)		0.000366 (0.00239)	
<i>COOPENTRIES<sub>t-1</sub></i>		0.000748 (0.000485)		-0.000183* (9.45e-05)		0.00117 (0.00410)
<i>CB.ENTRIES<sub>t-1</sub></i>		-0.000985** (0.000397)		-0.000438*** (8.68e-05)		-4.89e-05 (0.00303)
Observations	154,399	154,399	119,353	119,353	146,113	146,113
Firms	41,733	41,733	34,396	34,396	39,569	39,569
Hansen	16.83	16.87	0.964	0.963	16.37	16.37
Hansen ( <i>p</i> -value)	0.207	0.205	0.326	0.326	0.230	0.230
(C) Bank exits						
<i>EXITS<sub>t-1</sub></i>			-3.39e-05 (8.63e-05)		0.000905 (0.00349)	
<i>COOPEXITS<sub>t-1</sub></i>		0.000267 (0.000721)		2.26e-05 (0.000141)		-0.00987 (0.00616)
<i>CB.EXITS<sub>t-1</sub></i>		-1.80e-05 (0.000560)		-6.08e-05 (0.000109)		0.00594 (0.00419)
Observations	154,399	154,399	119,353	119,353	146,113	146,113
Firms	41,733	41,733	34,396	34,396	39,569	39,569
Hansen	16.84	16.84	0.938	0.926	16.37	16.31
Hansen ( <i>p</i> -value)	0.207	0.207	0.333	0.336	0.230	0.233

Note: The set of unreported explanatory variables includes county-level controls (*HHI*, *MAX.10.BANKS*, *GRADUATES*, *POPDENS*, *UNEMPL* and *WAGES*), year dummies, industry dummies, a lagged dependent variable and other firm-level controls, i.e.: (a) *LNA*, *CASH*, *TAT*, *COLLAT*, *ROS* and *LT.LIAB* in the case of specifications (1)–(2), (7)–(8) and (13)–(14); (b) *LNA*, *CASH*, *TAT*, *COLLAT*, *ROS* and *EQUITY* in the case of specifications (3)–(4), (9)–(10) and (15)–(16); and (c) *LNA*, *CASH*, *TAT*, *LT.LIAB*, *EBITS* and *FIX.A* in the case of specifications (5)–(6), (11)–(12) and (17)–(18). All firm-level control variables, except for *LNA*, were lagged by one period.

\*, \*\*, \*\*\*Statistical significance at the 10%, 5% and 1% levels respectively. Robust standard errors are shown in parentheses.

and (10) in Table 4 suggest that the situation of the local labour market is more favourable when the number of cooperative banks increases, while it worsens when cooperative banks withdraw from a given county. However, as specification (6) indicates, entries of commercial banks with nationwide branch networks also limit the unemployment growth ratios. The effects of banks entries and exits are relevant in economic terms. For example, specification (2) shows that the increase by one in the number of cooperative banks within a county causes a reduction in the

unemployment growth ratio by 25.2% of its SD. The entry of a commercial bank in a county, according to specification (6), induces a very similar modification in the values of the *UNEMP.INCR* variable. The consequences of a cooperative bank exits are even more significant: specification (10) documents that this change is linked to a surge in the unemployment growth ratio of 100.5% of its SD.

At the firm level, the investigation reveals the most stable and significant empirical patterns in the analysis of financial expenses incurred by SMEs. We find that

increases in the number of banks and entries of banks into local banking markets lower the *FIN.COST* variable, in line with Rice and Strahan (2010). The coefficients for the variable *BANKS.INCR* in specification (3) and the variable *ENTRIES* in specification (9) are both negative and statistically significant at the 1% level. Moreover, specifications (4) and (10) document that the influence of an increase in the number of banks on the SMEs' financial expenses is stronger for commercial banks with a nationwide presence than for cooperative banks. Specification (4) implies that the presence of one more cooperative bank and one more commercial bank in a county is associated with the reduction in the financial expenses of an SME by 1.4% and 2.0% of the *FIN.COST* variable median in the sample respectively. We conjecture that entries of large banks exert pressure on all banks present in a county to diminish their lending spreads. Concerning bank and long-term debt growth ratios, specifications (2) and (8) show that a stronger position for large commercial banks worsens SMEs' access to bank lending. The evidence remains in line with the literature, documenting that small banks possess a comparative advantage over large banks in lending to SMEs (Berger & Udell, 2002; DeYoung, 2002; Berger et al., 2005, 2015; Hasan, Jackowicz, Kowalewski, & Kozłowski, 2017). However, the modifications in the value of the

*DEBT.GR* variable are modest. The entry of a commercial bank engenders a decrease in the long-term debt growth ratio equal to 0.2% of the *DEBT.GR* variable SD. Investment activities remain largely unaffected by banks' entries into and exits from local markets.

The empirical evidence reported in Tables 4 and 5 supports, at least to some extent, hypothesis 2. We show that changes that favour the application of the relationship banking model and the use of soft information in the lending process are beneficial to the local economy. The increase in the number of local, cooperative banks reduces unemployment growth while cooperative banks exits exacerbate the unemployment problem. In addition, a rise in the number of cooperative banks weakly lowers the financial expenses reported by SMEs. In contrast, a rise in the number of commercial banks seems to impede SMEs' access to bank financing.

### Changes in the ownership structure of banks

Variations in the ownership structure of banks represent the third and final source of the instability in local banking markets that we analyze. Table 6 presents the results at the county level, while Table 7 reports the regressions' outcomes at the firm level. In contrast with the two previous subsections, the studied factor does not affect

**Table 6.** Impact of changes in bank ownership on counties.

	<i>UNEMPL.INCR<sub>t</sub></i>		<i>NEW.COMP<sub>t</sub></i>	
	(1)	(2)	(3)	(4)
<i>(A) Ownership changes measured at the bank level</i>				
<i>ACQ.BANK<sub>t-1</sub></i>	-0.00375 (0.00345)		0.0170*** (0.00644)	
<i>ACQ.BANK.COOP<sub>t-1</sub></i>		-0.00216 (0.00839)		0.0124 (0.0258)
<i>ACQ.BANK.CB<sub>t-1</sub></i>		-0.00376 (0.00347)		0.0172*** (0.00648)
Observations	1514	1514	1514	1514
Counties	379	379	379	379
Hansen	3.555	3.593	3.476	3.474
Hansen ( <i>p</i> -value)	0.169	0.166	0.176	0.176
<i>(B) Ownership changes measured at the branch level</i>				
<i>ACQ.BRANCH<sub>t-1</sub></i>	-0.000394 (0.000306)		0.00569*** (0.00111)	
<i>ACQ.BRANCH.COOP<sub>t-1</sub></i>		0.00201 (0.00488)		-0.00205 (0.00765)
<i>ACQ.BRANCH.CB<sub>t-1</sub></i>		-0.000403 (0.000311)		0.00573*** (0.00113)
Observations	1514	1514	1514	1514
Counties	379	379	379	379
Hansen	3.019	3.073	3.704	3.658
Hansen ( <i>p</i> -value)	0.221	0.215	0.157	0.161

Note: The set of unreported explanatory variables includes year dummies, industry dummies and county-level controls (*HHI*, *MAX.10.BANKS*, *GRADUATES*, *POP.DENS*, *MEAN.ROS*, *MEAN.SALES.GR*, *WAGES* and a lagged dependent variable). The variables describing instability of the local banking market are treated as exogenous.

\*, \*\*, \*\*\*Statistical significance at the 10%, 5% and 1% levels respectively. Robust standard errors are shown in parentheses.

**Table 7.** Impact of changes in bank ownership on small and medium-sized enterprises (SMEs).

	<i>DEBT.GR<sub>t</sub></i>		<i>FIN.COST<sub>t</sub></i>		<i>INVEST<sub>t</sub></i>	
	(1)	(2)	(3)	(4)	(5)	(6)
(A) <i>Ownership changes measured at the bank level</i>						
<i>ACQ.BANK<sub>t-1</sub></i>	0.000239 (0.000717)		0.000363*** (0.000134)		-0.00182 (0.00529)	
<i>ACQ.BANK.COOP<sub>t-1</sub></i>		0.000208 (0.00401)		0.00103 (0.000791)		0.000915 (0.0331)
<i>ACQ.BANK.CB<sub>t-1</sub></i>		0.000240 (0.000727)		0.000343** (0.000136)		-0.00190 (0.00537)
Observations	124,214	124,214	95,939	95,939	117,366	117,366
Firms	40,558	40,558	32,928	32,928	38,358	38,358
Hansen	16.73	16.73	0.721	0.710	14.13	14.13
Hansen ( <i>p</i> -value)	0.160	0.160	0.396	0.399	0.293	0.292
(B) <i>Ownership changes measured at the branch level</i>						
<i>ACQ.BRANCH<sub>t-1</sub></i>	-9.69e-06 (3.05e-05)		-5.91e-05*** (8.71e-06)		8.27e-05 (0.000275)	
<i>ACQ.BRANCH.COOP<sub>t-1</sub></i>		2.08e-05 (0.00218)		0.000224 (0.000310)		-0.00258 (0.0144)
<i>ACQ.BRANCH.CB<sub>t-1</sub></i>		-9.70e-06 (3.05e-05)		-5.91e-05*** (8.72e-06)		8.30e-05 (0.000275)
Observations	124,214	124,214	95,939	95,939	117,366	117,366
Firms	40,558	40,558	32,928	32,928	38,358	38,358
Hansen	16.73	16.73	0.720	0.712	14.11	14.11
Hansen ( <i>p</i> -value)	0.160	0.160	0.396	0.399	0.294	0.294

Note: The set of unreported explanatory variables includes county-level controls (*HHI*, *MAX.10.BANKS*, *GRADUATES*, *PORDENS*, *UNEMPL* and *WAGES*), year dummies, industry dummies, a lagged dependent variable and other firm-level controls, i.e.: (a) *LNA*, *CASH*, *TAT*, *COLLAT*, *ROS* and *LT.LIAB* in the case of specifications (1)–(2) and (7)–(8); (b) *LNA*, *CASH*, *TAT*, *COLLAT*, *ROS* and *EQUITY* in the case of specifications (3)–(4) and (9)–(10); and (c) *LNA*, *CASH*, *TAT*, *LT.LIAB*, *EBITS* and *FIX.A* in the case of specifications (5)–(6) and (11)–(12). All firm-level control variables, except for *LNA*, were lagged by one period.

\*, \*\*, \*\*\*Statistical significance at the 10%, 5% and 1% levels respectively. Robust standard errors are shown in parentheses.

unemployment growth ratios, but it influences the pace of new firm creation, as in Black and Strahan (2002). According to specifications (3) and (7) in Table 6, the relatively high number of banks acquired by new entities positively and significantly correlates with the *NEW.COMP* variable, at the 1% level. Contrary to the results reported by Peek and Rosengren (1995) and Strahan and Weston (1998), specifications (4) and (8) suggest that this relationship is only driven by ownership changes in the group of commercial banks, characterized by nationwide branch networks. Specification (4) implies that if a new owner acquires one of the commercial banks operating in a given country, this leads to an increase in the pace of new firm creation equivalent to 6.6% of the *NEW.COMP* variable SD. Due to the post-crisis period specificity, we are inclined to explain the regularities identified in Table 6 by the fact that, after 2008, new owners of non-cooperative large banks usually pursued after 2008 more aggressive market strategies than their predecessors. Consequently, commercial banks after changes in ownership structures became more willing to finance new firm creation.

The results on SMEs' performance reported in Table 7 are either statistically not significant or ambiguous. The

growth of bank and long-term debt and investments of SMEs are not influenced by changes in the ownership structure of cooperative and commercial banks. The findings regarding the determinants of financial expenses reported by SMEs are method sensitive. When we consider the number of banks affected by ownership changes, the coefficients for the variables illustrating the instability within local markets (*ACQ.BANK* and *ACQ.BANK.CB*) are positive and significant. However, when we base our inferences on the number of bank branches affected by ownership changes, the coefficients for the *ACQ.BRANCH* and *ACQ.BRANCH.CB* variables become negative and significant. We offer two explanations for the puzzling results reported in Table 7.

First, the changes in ownership structures not only imply the arrival of new more aggressive and stronger owners but also cause modifications in lending policies, which, in turn, may lead to distortions in banks' relations with customers. Therefore, the positive and negative (from the perspective of SMEs) effects of ownership changes in banks already present in local markets may offset each other. Second, the indicators of the instability caused by changes in ownership structures based on the number of branches

exhibit much more variability than the indicators relying on the numbers of banks. In sum, we obtain weak evidence in favour of hypothesis 3 because such proof only relates to one aspect of the local economic situation: the pace of new firm creation.

## CONCLUSIONS

In this study, we examined whether the instability of local banking markets influences local economic activity. The empirical evidence showed that selected changes in the local bank presence constitute an independent factor that affects local economic activity after controlling for its persistence, macroeconomic tendencies, banking market characteristics, demographic situation, industry specifics, firm-level factors and factors related to local human capital.

We found that the situation of the local labour market is, on the one hand, positively affected by an increase in the number of commercial and cooperative bank branches, a rise in the number of cooperative banks and entries of commercial banks. On the other hand, it is negatively influenced by the exits of cooperative banks. In contrast, the pace of new firm creation is dependent only on the appearance of new owners for locally present commercial banks. The evidence suggests that the new phenomenon of acquisition of commercial banks by usually more aggressive owners, after the 2008 crisis, in Poland has facilitated the creation of new local firms.

With regards to SMEs' access to bank debt, we obtained evidence in line with the findings of DeYoung (2002) and Berger et al. (2017). In particular, we established that the strengthening of the cooperative banks' position is positively related to the bank and long-term debt growth ratios reported by SMEs. Conversely, the rise in the number of commercial banks and entries of those banks inhibit bank and long-term debt growth. The research outcomes appear to support the view that local bank organizations, such as cooperative banks in Poland, applying the relationship banking model and using soft information, have a comparative advantage over large, nationwide banks in satisfying the financing needs of local companies (Boot, 2000; Stein, 2002; Hasan et al., 2017).

The results suggest, therefore, that commercial banks expansion has the opposite effects on the local labour market and SMEs access to bank lending. Those prima facie contradictory and puzzling pieces of empirical evidence can be, however, reconciled. We conjecture that the impact of commercial banks entries and the development of their branch networks is direct and exerted through job creation in the financial sector, not through the lending channel and diminished financial constraints of local firms. In contrast, the positive influence of a stronger position of local banks applying relationship based banking model on local labour market may be caused both by direct effects related to job creation in the banking industry, as well as by indirect effects linked to better access of SMEs to bank loans.

The study suggests also some policy implications. First, policy-makers and regulatory bodies should not only

consider nationwide consequences but also they may focus on local effects when making decisions that influence the structure of the banking system. Second, small local banks seem to play an important and positive role in shaping local economic activity and the performance of local firms. Therefore, the regulatory approach to this kind of banking organizations should support them and help them preserve their financial soundness.

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## NOTE

1. Thus, SMEs are defined as employing fewer than 250 persons and having an annual turnover of as much as €50 million or a balance sheet total of no more than €43 million.

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