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The Impact of the Closure of Primary Schools on the Economic Development of Rural Areas in Małopolska Voivodeship

Abstract: In the last two decades, the map of the primary school network in Poland has undergone a significant transformation, especially in rural areas that are suffering depopulation. These changes generally involve the closing of small rural schools and this leads to numerous conflicts between residents and local government. However, it is rarely pointed out that closing a school can be a fatal blow to the local community, not only due to the reduction in the social activity of residents but also the loss of jobs which contributes to the economic decline of a village. However, few studies can confirm this thesis. Therefore, this article aims to present the spatial diversity of the reorganisation process of the primary school network in rural areas of Małopolska Voivodeship and attempts to determine the impact of school closures on the economic development of those villages. To achieve this, the author compared the average value of the entrepreneurship indicator for 2018 with changes in the number of businesses for 2009–2018 for individual villages. The calculated values were compiled for those communities where the primary school was closed and for those villages in which the residents decided to take over a school from the local government with their own organisation or association. For comparison of selected indicators, differences in the average values for the two types of localities were presented using a one-way ANOVA variance analysis. The research showed much higher economic activity in places where the school was taken over compared to where the school was closed. In addition, the places where the school was taken over showed a stronger rate of growth for the number of businesses registered in the REGON system.

Keywords: closures of primary schoolsprimary education network; rural areas; the impact of a school closure

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Introduction

In the last two decades, there have been significant changes in the network of primary schools in Poland. They are associated with the effect of the education reform of 1999 and the introduction of 'junior high' schools (13–16), unfavourable demographic changes, and the education reform of 2017 which restored 8-year 'elementary' schools (7–15). These changes are generally associated with the closures of primary schools in areas where the number of children in the education system is decreasing. This process affected rural areas to a much greater extent than in cities, and especially those rural areas with an agricultural function that show substantial depopulation and a fragmented settlement network. In this type of locality, there is usually only one school, and its closure has significant social as well as economic consequences. Closing a rural school is associated with a reduction of jobs, not only through teaching positions and this process also affects village residents who are associated in many ways with a school's activities (Bajerski, Błaszczyk, 2015; Trnková, 2009). It is also noted that closures lower the rank of the village in the local settlement structure as a result of fewer bus connections or none, the closing of stores, the post office or kindergartens (Kučerová, 2012; Mandujano, Giesen, Ferrer, 2012).

The literature related to the significance of the village school and the consequences of its closure is extensive and has occurred in almost all western countries. This is due to similar factors and mostly to the depopulation of rural areas. Many studies have been devoted to the issue of school closures in European countries (Autti, Hyry-Beihammer, 2014; Bell, Sigsworth, 1987; Egelund, Laustsen, 2006; Kassai, Farkas, 2016; Kroismayr, 2019; Kučerová, 2012; Lyson, 2002; Post, Stambach, 1999; Slee, Miller, 2015) as well as in North and South America (Corbett, Tinkham, 2014; DeYoung, Howley, 1990; Mandujano, Giesen, Ferrer, 2012; Tieken, Auldridge-Reveles, 2019). It is often stated that rural schools operate more similarly in different countries than rural and urban schools in the same one. Polish researchers have not directly studied the issue of comparing the socio-economic situation of the districts in which a primary school has been closed. However, it has been discussed in the foreign literature, for example, Denmark (Egelund, Laustsen, 2006), Hungary (Kassai, Farkas, 2016) and Austria (Kroismayr, 2019). However, these studies indicate that it is challenging to obtain a reliable result by analysing the impact of school closure in a given locality based on indicators for an entire local government (Kassai, Farkas, 2016). In essence, the data was presented only at this level of a spatial unit. At the same time, it is emphasised that the main problem of rural development is the outflow of population, which consequently leads to the economic decline of villages and small towns. School closure is only a sign of a final phase of a village's dying, not the cause (Egelund, Laustsen, 2006). That is why it seems essential to work out a method that helps to compile data presenting the economic situation in given localities so that their comparison would test the impact of school closures.

In the light of the above, the study aims to present the spatial diversity of the reorganisation of the primary school network in rural areas of the Małopolska Voivodeship and attempt to determine the impact of school closures on the economic development of those villages in which they took place. The choice of the comparative method was identified as a critical issue.

The study covered rural areas of Małopolska Voivodeship in the years 2000–2018 to determine the scale of change in the number of schools and pupils by type of school authority as well as discover the main patterns. This research period results from the education reform, which came into force in 1999 and shortened the period of 'elementary' school education from eight to six years. The years 2008–2018 were chosen to present the spatial diversity of the reorganisation process, a choice dictated by the availability of data. A slightly shorter period (2009–2018) was used to determine changes in non-agricultural economic activity. Research on the spatial diversity of the analysed issues was conducted for individual rural *gminas* (communes) and the rural areas of urban-rural *gminas*. In total, the study covered 1,820 villages. Special attention was paid to 63 villages in which the school had been closed and 106 villages in which the only school was taken over from the local school authorities, protecting it from planned closure.

Research methodology

To achieve the aims, cartographic presentation methods, charts and tabular summaries were used. The impact of school closures on the economic situation of the surveyed localities was determined by comparing the entrepreneurship rate, i.e. the number of personal business activities per 1000 people of working age (as of 2018). Another indicator was the change in the number of companies (2009–2018, 2009 = 100) for localities in which the primary school had been closed and those in which the primary school was taken over by a body other than local government. Besides, to determine differences in the peripherality of the analysed villages, it was decided to compile the average values of a 'peripherality indicator'. This was calculated using the population potential method, and its values are interpreted as the lower the value of the potential (indicator value), the higher the degree of peripherality of the examined area (Semczuk, 2016). It was considered that it would not be acceptable to compare the economic situation of localities where the school was closed, with all locations where the school is still run. This is because, after many years of transformation of the network, schools often remained in villages which, as centres of the social and economic life of a *gmina*, show higher values for these indicators.

On the other hand, localities where the school was taken over usually operate in similar conditions to those in which the school was closed. Research on the variability of the entrepreneurship index is quite common (e.g. Kudłacz, Reśko, 2007; Krakowiak-Bal, 2007; Salamon, 2009; Iwańska, Bieńkowska, 2010; Strojny, 2010; Rachwał, Boguś, 2012; Kościółek, Strojny, 2015). However, there are no studies in which this type of analysis is carried out at this local a level. For comparison of selected indicators, differences in their average values in the two kinds of localities were presented using the one-way ANOVA variance analysis. This is a method used to compare mean values between populations. Also, as a result of its use, information is obtained whether these differences are statistically significant. When comparing two means, ANOVA gives the same results as a t-test for independent samples (when comparing two different groups of observations) or a t-test for dependent samples (when two variables of the same set of observations are compared).

The study uses data from the Local Data Bank of the Central Statistical Office including the number of schools, the number of pupils and the body running the school, as well as the number of business activities according to the REGON register. Despite

objections raised about the integrity of data in the REGON register (Kudłacz, Reśko, 2007), mainly related to the lack of a mechanism to force the deregistration of business activity, subsequent CSO analysis confirms (especially after 2011) the data contained there (Sołtys, Dorocki, 2016). To identify the villages where the school was closed, the list of closed schools and educational institutions, published by the Board of Education in Kraków, was used.

Diversification of the school network in Małopolska Voivodeship

The changes taking place in the primary school network in the last two decades show varying intensity. In the years 2000–2018, the number of schools in the rural areas of Małopolska Voivodeship decreased from 1,190 to 1,071 schools, i.e. by approx. 11% (Table 1). This occurred despite its relatively good demographic situation, however, this change was spatially highly diverse (which will be analysed later). In terms of changes in the number of schools, closures did not occur uniformly. Four-year cycles in which schools did not close were noticeable. These were related to the calendar of local elections, hence in 2006, 2010 and 2014, the authorities tried not to make difficult decisions for a local community. An increased rate of school closures usually took place in the years following the elections (e.g. 2007, when the largest number of schools were closed).

On the other hand, in 2000–2013, the number of pupils dropped by 2.3% on average (in total, the number decreased by over 8,000) whereas in subsequent years (except for 2016) there was an increase in the number of pupils. In the last two years, however, the increase has been caused by the educational reform which restored the 8-year primary school. Despite the significant increase in the number of pupils in 2014–2018, by over 40,000 in total, several schools were closed in the same period. Thus, the presented summary shows that the reduction in the number of schools was much more profound than would result from a change in the number of pupils alone (a decrease by 5.2%, while the number of schools decreased by 11.3%).

The drop in the number of schools would undoubtedly have been much more significant were it not for the option of transferring a primary school to a social association or organisation. Such a transfer usually takes place under art. 5 paragraph 5g of the act on the education system which was introduced in 2009 (*Act of 19 March 2009 amending the Act…*). In Małopolska Voivodeship, 116 schools of this type operated in rural areas in 2018 with their number increasing significantly by greatly facilitating the transfer of the institution. According to the previously binding provisions, schools run by bodies other than local government took them over with the right to subsequently close them. In light of the provisions in force since 2009, after a school has been handed over by the local government to another governing body, the local government is obliged to take the school back if the association or other non-governmental organisation decides not to continue running the institution (Semczuk, 2018). Despite earlier predictions about the rapid increase in the number of such facilities, from 2013 the rise in the number of schools run by a body other than the local government has significantly decreased, and in the last two years some of these schools have been closed (Figure 1).

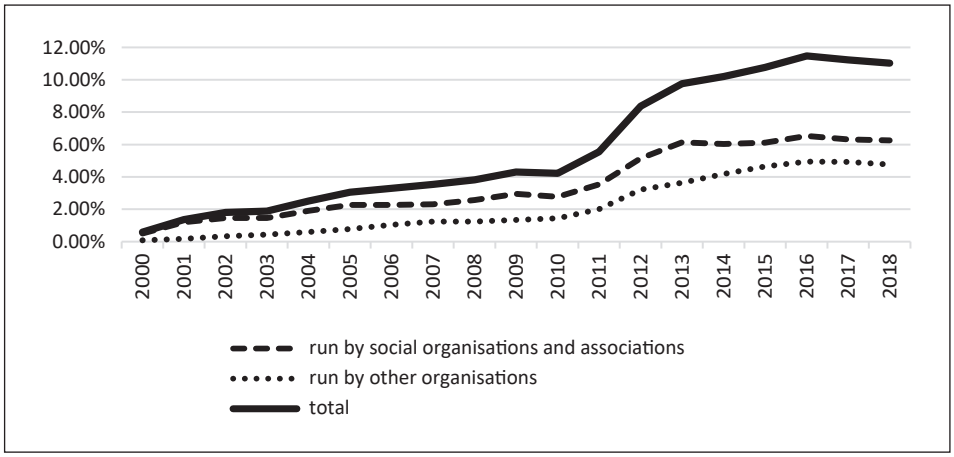
Table 1. Changes in the number of schools and pupils by school governing authority in rural areas in Małopolska Voivodeship in 2000–2018

Years	Rural schools							
	Total				Including those run by a body other than local government			
	Number of schools	Relative increase/ decrease (chain) in %	Number of pupils	Relative increase/ decrease (chain) in %	Number of schools	Relative increase/ decrease (chain) in %	Number of pupils	Relative increase/ decrease (chain) in %
2000	1190	x	155140	x	7	x	252	x
2001	1174	–1.34	152271	–1.85	16	128.60	652	158.70
2002	1169	–0.43	148298	–2.61	21	31.30	850	30.40
2003	1166	–0.26	144701	–2.43	22	4.80	865	1.80
2004	1154	–1.03	139329	–3.71	29	31.80	1058	22.30
2005	1148	–0.52	133961	–3.85	35	20.70	1450	37.10
2006	1151	0.26	128599	–4.00	38	8.60	1615	11.40
2007	1131	–1.74	123274	–4.14	40	5.30	1740	7.70
2008	1125	–0.53	120149	–2.54	43	7.50	1859	6.80
2009	1115	–0.89	116504	–3.03	48	11.60	2048	10.20
2010	1116	0.09	113150	–2.88	47	–2.10	2017	–1.50
2011	1101	–1.34	111438	–1.51	61	29.80	2511	24.50
2012	1087	–1.27	109205	–2.00	91	49.20	3779	50.50
2013	1075	–1.10	106877	–2.13	105	15.40	4599	21.70
2014	1078	0.28	113160	5.88	110	4.80	5135	11.70
2015	1078	0.00	118408	4.64	116	5.50	5879	14.50
2016	1072	–0.56	110098	–7.02	123	6.00	5947	1.20
2017	1077	0.47	128245	16.50	121	–1.60	7084	19.10
2018	1071	–0.56	147061	14.70	118	–2.50	7977	12.60
Increase/ decrease in 2000–2018	–119	–11.30	–8079	–5.20	111	1587	5695	3065
Increase/ decrease in 2000–2016	–118	–11.10	–45042	–30	116	1657	5695	2250

Source: Semczuk (2018); own work based on data from the Central Data Bank of the Central Statistical Office of Poland (last access 04.10.2019)

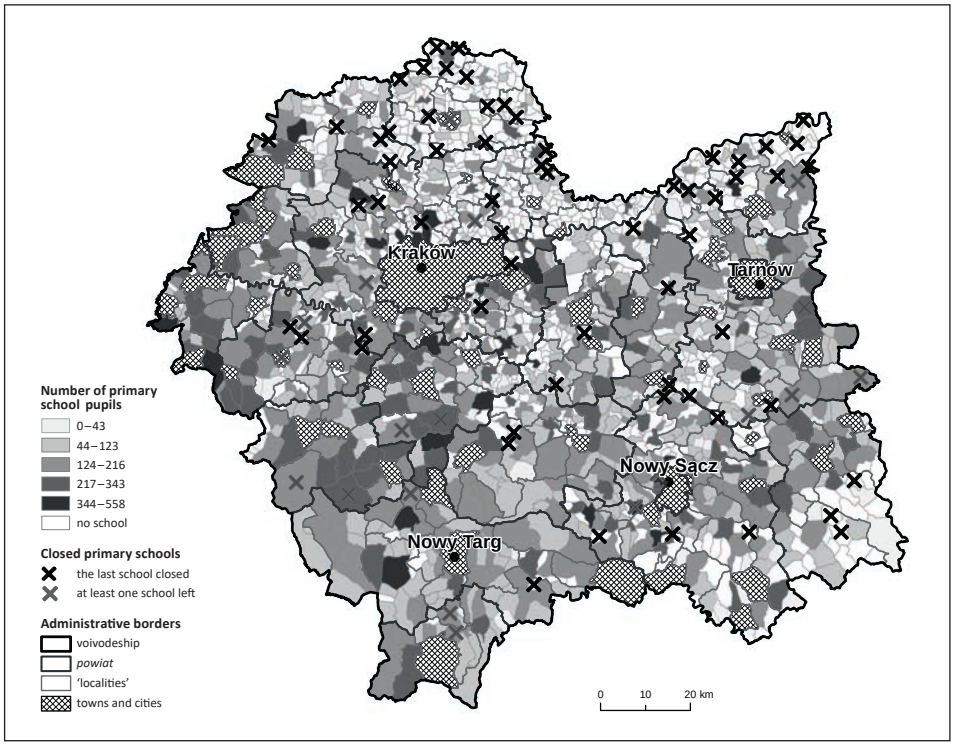
Changes in the network of primary schools in the analysed area show a strong spatial concentration. In total, 80 primary schools were closed in 2008–2018, most of them in 2011–2012: 28 schools in total. These closures took place mainly in the northern part of Małopolska Voivodeship in Miechów, Proszowice and Dąbrowa *powiats* (Figure 2). In total, 26 schools were closed in these administrative units, which constituted approx. 32.5% of the total number of closed institutions. The main factors influencing the sizable spatial diversity of the school closure process included the demographic situation which was the worst in the northern (traditionally "agricultural") part of the voivodeship. Another factor was its highly dispersed settlement (in the Miechów *Powiat*, where

Figure 1. Schools run by social organisations and associations as well as run and by others in Małopolska Voivodeship in 2000–2018



Source: based on data from the Central Data Bank of the Central Statistical Office of Poland (last access 04.10.2019)

Figure 2. Primary schools closed in 2008–2018 and the number of children per school in 2018 by locality in rural areas in Małopolska Voivodeship



Source: author based on the data from the Central Data Bank of the Central Statistical Office of Poland and the list of closed schools and educational facilities (last access 04.10.2019)

most schools were closed, on average a village has 275 inhabitants). The largest schools in 2018 were in *gmina* centres (e.g. Gromniki, Olesno, Lubień, Łącko) and the villages adjacent to or near major cities (e.g. around Kraków: Wola Batorska, Bibice, Michałowice, Modlnica; Nowy Sącz: Chełmiec, Wielogłowy). In some *gminas*, only one school remained (e.g. rural *gminas*: Racławice, Kozłów, Gręboszów; urban-rural *gminas*: Nowe Brzesko, Szczucin). In the year preceding the closing of a school, on average, 22 pupils attended it.

Impact of the closure of a primary school on the economic situation of a village

In an attempt to determine the impact of school closures on the economic situation of individual localities, it was first necessary to decide whether it would be justified to compare the indicators selected in the localities where the school was closed with the remaining group in which at least one school operates. After all, closing the school was probably the consequence of an earlier socio-economic decline. Besides, this type of comparison would also be unreliable because, as a result of many years of transformation of the school network, schools were maintained in *gmina* villages with a concentration of social and economic life. As already indicated, in many *gminas*, only one primary school remained, located in this very village. This issue was solved by comparing localities where the school was closed with places where the only primary school was taken over by a body which is not the local government. This approach gives an opportunity to compare places where the conditions leading to the closures of the school were similar. Still, in the second case, residents showed greater determination to maintain the institution.

The average values of the so-called entrepreneurship rate and rate of change in the number of companies were used to describe the economic situation of a *gmina*. In addition, to determine the difference in the peripherality of the analysed villages, it was decided to compile values of the peripherality index. For differences in average values, the statistical significance of these indicators was calculated using a one-way analysis of variance.

Table 2. Comparison of the average values of economic indicators for selected villages in Małopolska Voivodeship as of 2018

Indicator	Type of *gmina*	Number of villages	Average	Standard deviation	Minimum value	Maximum value
Entrepreneurship rate	A	63	**123.5**	49.9	44.0	310.7
	B	106	**150.5**	62.9	58.5	378.7
Rate of change	A	63	**119.5**	52.2	76.9	400.0
	B	106	**125.5**	41.6	88.7	345.5
Peripherality index	A	63	**142584.8**	30406.5	81668.0	234658.7
	B	106	**156703.4**	36546.7	94425.4	242570.3

Explanation: *A* – villages in which the primary school was closed, *B* – villages with a primary school run by an authority other than local government – statistically significant differences between the mean at the level of 0.01

Source: based on data from the Central Data Bank of the Central Statistical Office of Poland (last access 04.10.2019)

For the analysed indicators, differences in average values between the villages in which the last primary school was closed (A) and those in which the only school was taken over

(B), proved statistically significant (Table 2). Both in terms of the average number of enterprises per 1000 inhabitants, and changes in the number of companies on the REGON register, the localities in which schools were closed show lower values. Thus, in the villages with schools, the entrepreneurship rate was 150.5, and in the villages where schools were closed, it was only 123.5. Similarly, a significant difference is seen in the increase in the number of companies. In the years 2009–2018 more companies were entered on the register in the villages where the school was run – an increase of 25.5, than in villages where the school no longer exists – an increase of 19.5%. It should be noted, however, that localities without schools, on average showed a higher level of peripherality, which indicates that they are on average slightly located in less populated places with slightly worse accessibility.

Summary

The process of reorganising the primary education network is inevitable in a situation of decreasing numbers of pupils in the education system and thus increasing the costs of maintaining school facilities. However, it is most painful for those small villages where the school – often as the last public institution in the locality – is the only place focusing the activity of the inhabitants. Its closure generally raises protests from the residents, and if the school closes despite this, negatively affects the development of the village. As research has shown, in Małopolska Voivodeship alone, 119 primary schools were closed in 2000–2018. Data provided by the Board of Education in Kraków and the Central Statistical Office allow changes in the number of schools in given localities to be tracked since 2008. Since then 80 schools have been closed, in 63 cases it was the only school in the village. It was these villages that became the subject of detailed research on the impact of school closures on their further development. Aware of the fact that the closing of the school in the village is the result of a long-term outflow of people from this area and the entry, generally, of the village onto a path of socio-economic regression, it was decided to juxtapose this with those villages in which the conditions leading to the closure of the school were analogous and plans to close the school by the local government resulted in the takeover of the school by an association or organisation that was the result of the activity of a local community. The results of the study showed that closures can have a significant impact on the economic development of the village, both in terms of the number of non-agricultural economic activities operating in its area, as well as changes over the analysed years. It should be noted, however, that the study was partial, so care should be taken when interpreting the results obtained. However, the presented research results give grounds for further in-depth qualitative field research that would verify the statistical analysis carried out, which would also answer questions about the detailed directions of change in the socio-economic situation of villages affected by the school closures.

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