

## MACROECONOMIC INSTABILITY AND DEVELOPMENT DISPARITIES OF PERIPHERAL AREAS IN REGIONS IN POLAND

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**Purpose:** The aim of the article is to indicate the macroeconomic factors and their potential impact on the economy in the conditions of crises in the regional system in Poland and in peripheral areas of the regions, based on the example of the Mazowieckie province.

**Design/methodology/approach:** The study includes theoretical research on the impact of macroeconomic phenomena on development processes and empirical research on changes in macroeconomic indicators in crisis conditions. The research covered 314 communes and 37 districts in Poland and in the Mazowieckie province. The analytical and descriptive method of the impact of changes on the socio-economic development was used.

**Findings:** Theoretical research proves that macroeconomic instability affects the course of economic processes. The increase in interest rates and inflation may limit investment activity and reduce the efficiency of management. This poses a threat to the company's and state's performance. Empirical research has shown that in Poland there has been a deterioration in the economic situation in the regions and in the peripheral areas of the regions.

**Research limitations/implications:** The broad context of economic and social changes resulting from many crisis phenomena is a difficult subject of research. There are serious difficulties in accessing reliable sources and the continuity of source data, which limits research opportunities.

**Practical implications:** Identification of changes in factors adversely affecting development and leads to the need to monitor the macroeconomic situation and current changes taking place in enterprises, and indirectly relates to social changes. Hence, it is necessary to conduct further research in a systemic perspective and to take appropriate remedial measures.

**Social implications:** The research revealed the influence of negative factors on the phenomena taking place in the economy. The effects are wide-ranging and there is a risk of worsening both nationally and globally. Specific changes in the social sphere, including lowering the standard of living, are a derivative of crisis phenomena. The social consequences are already visible, further effects may occur in the future.

**Originality/value:** (mandatory) The article raises the problems of economic development in the face of crisis phenomena. The instability of development in the conditions of significant macroeconomic changes requires detailed analyzes of conditions and effects in the long term.

**Keywords:** economic development, development stability, macroeconomic factors.

**Category of the paper:** Research paper.

## 1. Introduction

Socio-economic development is a complex process and is associated with the impact of many factors of a different nature. It is possible to indicate local and regional conditions and opportunities, which, under given conditions, may constitute the leading factors in shaping development. One cannot ignore macroeconomic factors, the impact of which, in the conditions of the occurrence of crisis phenomena, may have the most important and primary impact on development. The complexity of the aforementioned processes means that in relation to the economy of states and regions, as well as the local economy, the approach should always be individualized when it comes to studying the causes and effects of the impact of various conditions of economic and social development.

European regionalism, oriented at gradual elimination of disproportions and even equalization of the level of socio-economic development, plays an important role in development processes in the European Union. At the regional level, important new development impulses have emerged from the Union's regional policy. In the conditions of a market economy, development in the system of regions revealed the occurrence of inequalities in the development of individual areas (Szul, 2013). As a result of the operation of market mechanisms, there has been a diversification of areas in terms of economic development, and as a result of these processes also development in the social dimension. The market economy has revealed the importance of endogenous development factors and the diversification of development potentials. From the perspective, we can see that the differences in the level of socio-economic development in the system of regions, as well as intra-regional differences, have become permanent.

The processes of socio-economic development are conditioned by many factors. An important role is played by external (exogenous) factors, which always influence the processes of economic development taking place in private sector enterprises as well as public sector entities and organizational units. Crisis phenomena can significantly affect the processes of socio-economic development taking place in the economy. As a result, development is subject to conditions that affect the dynamics of change and affect the results of management in terms of quantity, value and quality (Korenik, 2012).

The aim of the article is to analyze changes in macroeconomic factors in the conditions of crises and to assess the potential impact on socio-economic phenomena occurring in the regional system in Poland and in peripheral areas of the regions on the example of the Mazowieckie province. In the context of the stated objective of the study, two research questions were distinguished: is there a direct impact of selected macroeconomic factors on the socio-economic processes taking place at the national and regional level, and whether negative macroeconomic changes may worsen the socio-economic situation in smaller administrative units, compared to the peripheral location in relation to the central areas of voivodships.

## 2. Literature review and methodology of empirical research

An important group are macroeconomic factors: the level and stability of the basic interest rates of the central bank, the level and changes in the level of inflation, the fiscal policy of the state, the credit policy of investment banks, changes in the level of costs in enterprises, including labor costs, legal and organizational factors, such as the possibility of unforeseen regulatory changes. It is necessary to pay attention to investments, both in the private sector, but also in the public sector. An important group of factors are local and regional conditions. The factors of this group include the organizational and legal stability of the economic environment, the level of threat from internal and external political factors, the degree of uncertainty in the implementation of development investment projects (D'Costa et al., 2013). Attention should be paid to the quality of human capital, which indirectly affects the ability to undertake tasks of increased difficulty and relatively high technical, technological and organizational advancement (Zimny, 2008). The development processes may be influenced by changes in the level of budget deficit, public debt, values characterizing the level of GDP, stability of the state budget and budgets of local government units (Leibfritz et al., 1994).

The above-mentioned factors do not complete many conditions that may have an impact on the implementation of development investments. In the regional and local system, there may be significant differences between communes, districts and self-governmental provinces depending on the existing socio-economic potential and the possibilities of resource allocation. The complexity of the issues justified undertaking research on the possibility of implementing development processes in the conditions of macroeconomic instability (Jarosiński, 2022) both in the regional system and in intra-regional relations (Ocampo, 2005).

At the regional and local level, there are established differences in Poland between individual local government units, at the level of provinces, districts and communes, which allows to recognize that the differences must result from the influence of various factors conditioning development processes (Smętkowski, 2013). Within the regions, significant differences in the level of development were observed between individual cities, rural areas and local government units located peripherally in relation to the central area of the region (Bański, 2013). Crisis phenomena may lead to the deepening of development differences. The consolidation of differences may, in turn, lead to a number of negative social phenomena, such as national migrations, emigration, and lowering the indicators of the level of social development. It is necessary to monitor crisis phenomena and their consequences against the risk of a negative impact of macroeconomic factors at the regional and local level. Therefore, it is about anticipating possible effects and determining a priori the strength and scope of the impact of these factors on the adopted development scenarios (Chirwa, Odhiambo, 2016). An important part of the process of planning and implementing development investments may be the preparation of a scenario analysis that would take into account risk categories resulting

from unpredictable macroeconomic changes (Ulvedal, 2013). Limited macroeconomic stability may cause difficulties in the implementation of already started investment projects. Unforeseen changes in the economic environment of investment projects may lead to instability and lower investment efficiency and, as a result, worsen the conditions for development (Jarosiński, 2019).

In economic practice, the scope and strength of the impact of various macroeconomic factors may be determined by defining the level of risk associated with difficulties in achieving the planned results of investment development projects in the private sector, and in the public sector, despite the differences (Virlics, 2020; Tandberg, Allen, 2020; Milbourne et al., 2003). In addition to macroeconomic conditions, it is necessary to identify other risk factors in the investment environment, such as threats related to the competences of public administration, the degree of technical and technological complexity of the project, qualifications of teams implementing projects or the principles and methods of financing. (Bock, Trück, 2011; Davoodi et al., 2021).

As a result of the impact of negative factors and inequalities in development potentials, as well as deepening disproportions in socio-economic development in the system of regions, have led to the consolidation of differences and further deepening of development disproportions between countries, groups of countries, between regions, as well as in an intra-regional system (Ociepa-Kicińska, 2005; Woś, 2020). In the system of provinces in Poland, intra-regional differences appeared in two categories:

- in comparing the level of development in small and medium-sized cities, which are growth centers in a given region, and rural areas surrounding the above-mentioned growth centers,
- in comparing the level of development in peripheral areas of regions, areas bordering with neighboring provinces in relation to other areas of the province (Hauke, Konecka-Szydłowska, 2015; Kot, Kraska, 2018).

Development disproportions in intra-regional relations were noticed relatively early. Location in space may lead to differences in the level of economic development due to the weakening of many economic and social functions in the border areas of provinces (Churski et al., 2015) and in centers (Eliasson et al., 2021). Mitigating disproportions, also in the intra-regional dimension, was considered one of the goals in strategic documents developed in Poland (National Strategy, 2018; Buck, Zagórowska, 2016). Despite the efforts made to balance development in the regional system, both in the regions of the European Union and in Poland, the differences persist and even deepen. The effects of these actions are relatively weak and differ from the expectations that are placed on the regional policy of the European Union. In the system of regions, a consolidation of the differences in the level of development expressed by appropriate measures and indicators was observed (Majumder et al., 1995; McGowan, San Millán, 2019).

Based on the literature review, it was established that the regions may experience the phenomenon of peripherality in the development of communes and districts in relation to the central areas of the regions (Borkowicz et al., 2017). The level of socio-economic development in border areas of provinces is lower and differs from the average for a given province. Already in 2015, the results of the research conducted by the Central Statistical Office (GUS, 2015) confirmed the existence of differences in the level of development of communes and districts in the Mazowieckie province, based on the measures of the socio-economic situation, although the Mazowieckie province was characterized by many of the highest average indicators of socio-economic development in Poland.

The peripheral nature of areas in the regions is an identified problem and is characterized by high complexity. Administrative borders of provinces in Poland, as well as the borders of regions in the European Union, are often natural. Such conditions may affect the mutual relations of local communities living in neighboring regions. Natural barriers and organizational assignment of settlement units to different regions may lead to the weakening of economic and social relations in border areas (Demaniuk, Szymańska, 2016). There may also be opposing tendencies, where the relations in the interregional system become stronger than those inside the regions. In line with the adopted research concept for the peripheral areas of the Mazowieckie province, the research also took into account the situation in the following regions: Warmińsko-Mazurskie, Łódzkie, Świętokrzyskie, Lubelskie and Podlaskie.

In the course of the research, the method of critical analysis of the literature was used and the methods of empirical and descriptive research were used in relation to selected communities, gathered in accordance with the selected features adopted for the study. The study was therefore based on an analysis and assessment of changes in the macroeconomic situation in the conditions of crisis phenomena, and then it consisted in demonstrating the direct impact of such changes on the course of investment processes. Negative effects of such changes were common, and therefore also in peripheral areas, with the force of impact in units with weak potentials being usually much stronger than in areas with high development potentials. Hence, peripheral areas were much more at risk of slowing down development.

The collected individual data was subjected to the process of aggregation and analysis, which allowed for the presentation of quantitative data in a tabular form, and where the size of data sets made it impossible to present a numerical representation, the research results were presented in a graphical form in the form of charts and maps. During the analytical work, theoretical research was conducted on the impact of macroeconomic phenomena on development processes, empirical research was carried out on changes in macroeconomic indicators in crisis conditions, and empirical research was carried out on 314 communes and 37 districts in Mazowieckie province. The study used the method of analysis consisting in determining the most important factors which, when combined, may jointly affect the processes of socio-economic development.

The study took into account selected measures characterizing the situation in peripheral local government units at the commune level of the Mazowieckie province. The values have been aggregated and presented in the system of districts. On the border with the Warmińsko-Mazurskie province four districts have been indicated, two of which are entirely adjacent to the Warmińsko-Mazurskie province, while the other two are also neighboring districts with other provinces: Podlaskie (Ostrołęcki district) and Kujawsko-Pomorskie (Żuromin district). On the western side of the Mazowieckie province, five districts have been identified, three of which border on the entire length of their borders with the Łódzkie province, while two, Gostyński and Przysuski also partly border the Kujawsko-Pomorskie province in the first case and the Świętokrzyskie province in the second case. As far as the Świętokrzyskie province is concerned, in this section from the Mazowieckie region, four districts border with the neighboring provinces, two of which, the Przysuski and Lipski districts also border the neighboring provinces, in the first case with the Łódzkie province and in the second case with the Lubelskie province. When it comes to the Lubelskie province, we have six districts on the Mazowsze side, two of them, Lipski and Łosicki are also border districts with the Świętokrzyskie and Podlaskie provinces, respectively. In the north-eastern part, on the side of the Mazowieckie province, there are five border districts, of which two, the Łosicki and Ostrołęka districts are also districts bordering with the Lubelskie and Warmińsko-Mazurskie provinces, respectively. The study took into account the following macroeconomic measures, which are commonly used to assess changes in the macroeconomic situation:

- indexes of changes in the prices of goods and services (inflation),
- basic interest rates of the National Bank of Poland,
- gross domestic product (GDP) per capita,
- registered unemployment rate,
- total public debt in relation to GDP,
- general government deficit in relation to GDP,
- investment outlays in the economy and in the private sector by province,
- share of private investment in total investment.

The research on the developmental differences of peripheral areas included:

- registered unemployment rate in peripheral districts of the Mazowieckie province,
- small and medium-sized enterprises in peripheral districts of the Mazowieckie province,
- small and medium-sized enterprises (SMEs) in Mazowieckie province aggregated at the districts level and in size classes depending on the number of employees.

In the study, source unit data were obtained from available databases (Central Statistical Office, 2022; Ameco, 2022; Ministry of Finance, 2022; Eurostat, 2022) and appropriate calculations were performed, followed by aggregation of results. Due to the limited scope of the study, the text presents selected detailed results characterizing changes in the socio-economic situation as a result of crisis phenomena.

### 3. Results of empirical research and discussion

Changes in macroeconomic factors must have led to a slowdown in the pace of socio-economic development and posed a threat to maintaining the standard of living. A major threat was the surge in prices of goods and services, especially in terms of price changes in 2022 compared to 2021, as well as on a monthly and quarterly basis in 2022. According to the data of the Central Statistical Office, in October 2022 the price level in compared to October 2021, it was 17.9% higher. As a result, there was a significant reduction in real incomes. Selected macroeconomic indicators in Poland in 2009-2013 and 2019-2021 are presented in Table 1.

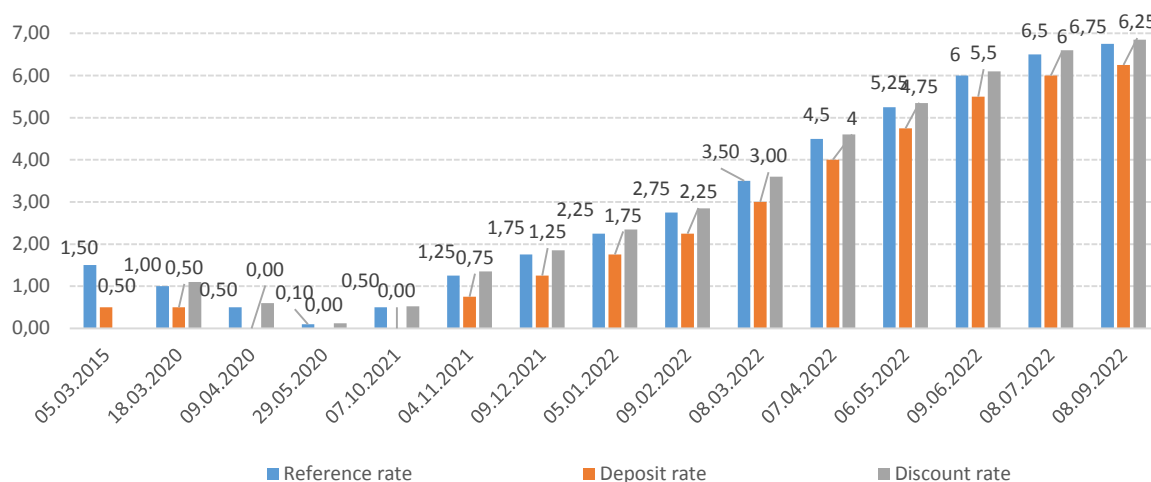
**Table 1.**

*Selected macroeconomic indicators in Poland in 2009-2013 and 2019-2021*

Specification	2009	2010	2011	2012	2013	2019	2020	2021
Consumer price index. in %	3.5	2.6	4.3	3.7	0.9	2.3	3.4	5.1
GDP per capita in thous. PLN	35 653	37 564	40 628	42 130	42 770	59 741	60 663	69 069
Registered unemployment rate, in%	12.1	12.4	12.5	13.4	13.4	5.2	6.3	5.4
Total public debt in relation to GDP, in%	48.8	51.7	52.1	51.8	53.6	43.2	47.8	43.8
General government deficit in relation to GDP, in %	-7.3	-7.4	-5.0	-3.8	-4.2	-0.7	-6.9	-1.8
Share of private investment in total investment, in %	59.6	56.5	55.1	57.9	61.7	66.3	63.8	-
Total enterprises	3742.7	3909.8	3869.9	3975.3	4070.3	4509.9	4663.4	4836.2
of which: SMEs in size classes according to the number of employees								
1-9	3548.4	3713.7	3675.0	3794.5	3890.7	4341.3	4497.1	4670.7
10-49	159.7	161.6	160.9	146.5	145.4	136.6	134.6	133.9
50-249	29.7	29.7	29.3	29.8	29.6	27.7	27.4	27.3

Source: own study based on: <https://bdm.stat.gov.pl/>, 15.10.2022, <https://dashboard.tech.ec.europa.eu>, 15.10.2022.

The level of basic interest rates in Poland in 2015-2022 was characterized by multidirectional changes. During this period, we dealt with stabilization and then, until 2021, a decrease in value. In the period from October 7, 2021 to September 8, 2022, there was a significant increase in basic interest rates. It was the central bank's response to the inflationary phenomena that occurred in the economy and was associated with an attempt to counteract further excessive price increases. In the conditions of the crisis, interest rate increases were a necessity and had an impact on development projects. The increase in interest rates (Figure 1), as well as the above-mentioned increase in inflation, had to reduce investment as a result of growing aversion to new investment projects.



**Figure 1.** Basic NBP interest rates in 2015-2022 (in %).

Source: own study based on: [https://www.nbp.pl/home.aspx?f=/dzienne/stopy\\_archiwum.htm](https://www.nbp.pl/home.aspx?f=/dzienne/stopy_archiwum.htm), 28.09.2022.

Raising the level of interest rates always leads to an increase in the cost of investment money, which may limit planned investments due to the increase in the value of the discount factor used in the assessment of investment projects. Failure to invest or postpone investment may result in a slower growth rate or even a reduction in the value of gross domestic product. Investments are therefore one of the best measures of the assessment of the economic situation, they are a measure of the assessment of the economic situation and can be considered a synonym for economic development.

The article is limited to presenting the impact of macroeconomic factors on changes in the effectiveness of investment projects implemented in a dynamically changing macroeconomic environment. If we take into account the discounted cash flow methods when evaluating investment projects, we can easily see that changes in macroeconomic factors in the medium and long term significantly affect the effectiveness of investment projects over time in relation to the design assumptions of the initial period.

$$NPV = \sum_{t=0}^n \frac{NCF_t}{(1+r)^t} \quad (1)$$

where:

$NPV$  – net present volume,

$NCF$  – net cash flow,

$r$  – discount rate,

$n$  – project duration,

$t = 0, 1, 2, 3, \dots n.$ , subsequent years of the calculation period.

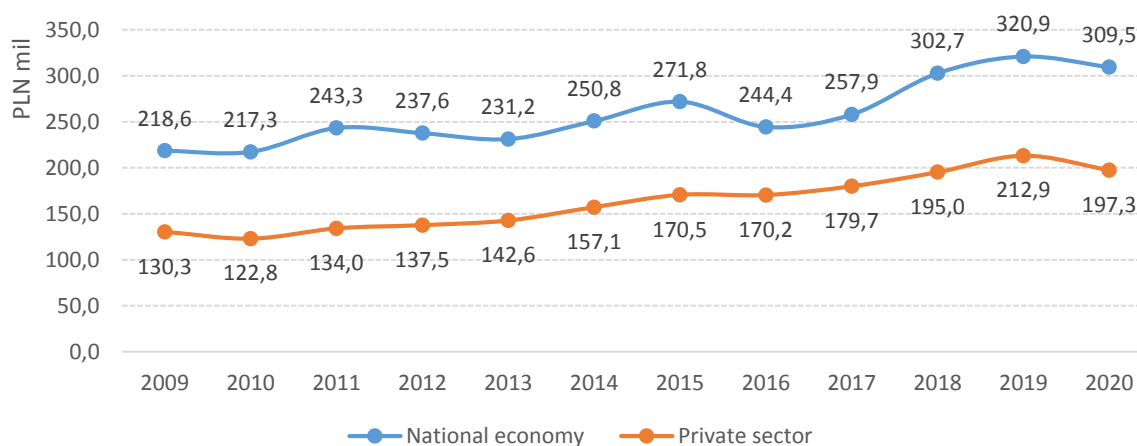
$\frac{1}{(1+r)^t}$  – discount factor.



If we take into account the entries contained in the numerator of the *NPV* equation, we can easily see that the *NCF* values constituting the difference between the sum of revenues in a given year and the sum of costs will be subject to adjustments. This will mean that in the numerator of individual components we will record lower values of net cash flows in relation to those planned at the stage of analysis and evaluation of the investment project. It should be emphasized that the discount rate is a derivative of the interest rate and may change as a result of macroeconomic factors. The structure of financing sources and the costs of obtaining capital, inflation and interest rates on loans, as well as income tax rates, profitability of alternative capital investments and other market factors should be taken into account.

Therefore, if the investment project was assessed under balanced macroeconomic conditions, assuming variable interest rates and stable annual cash flows for analysis, it may turn out that the aforementioned change in interest rates may lead to changes in the project and deterioration of its efficiency. There may be a situation where it will be necessary to verify the project based on the date of occurrence of the above-mentioned changes and re-analyse the entire project. Bearing in mind the factors influencing the discount rate, it can be assumed that in the conditions of the socio-economic crisis, the value of discount rates will increase as a result of changes in interest rates, inflation and investors' expectations regarding the amount of the risk premium. In this way, macroeconomic changes in the economy may lead to an increase in investment aversion in the private sector. In the public sector, investments are less susceptible to the impact of macroeconomic factors, although some of them may lead to a deterioration of project financing conditions.

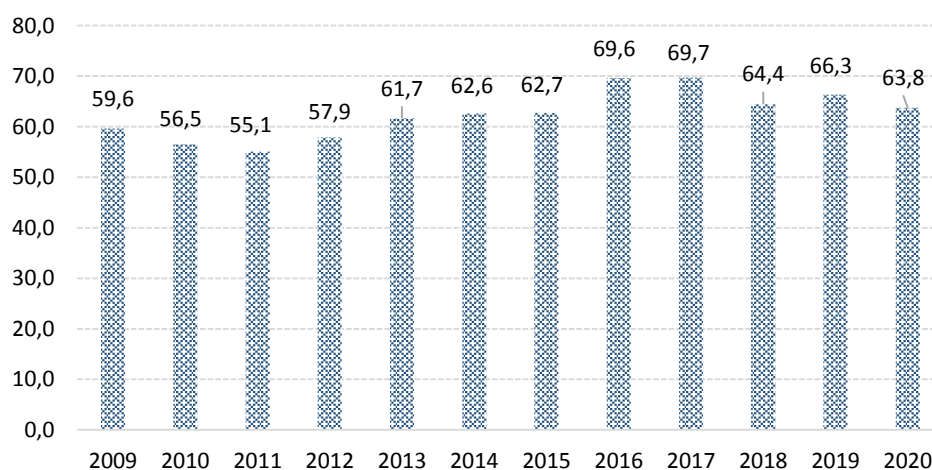
Figures 2 and 3 show, respectively, the investment outlays of the private enterprise sector against the total outlays in Poland in 2009-2020 and the share of private investments in total investments in the national economy in Poland in 2009-2020.



**Figure 2.** Investment outlays in the national economy and in the private sector in 2009-2020 (in PLN mil).

Source: own study based on <https://bdm.stat.gov.pl/> access on 28.09.2022, <https://dashboard.tech.ec.europa.eu>, 28.09.2022.

As regards total investments and investments in the private sector, in the discussed period, a fairly stable and systematic increase in outlays was recorded. Crisis phenomena caused a reversal of the upward trend in terms of investment outlays, such a situation took place in 2009-2010 and in 2020-2021. Despite these differences, investments in 2020 were higher than in 2009 by 51.5%. Investment expenditures in the private sector in provinces in Poland were at a different level. The highest value of outlays was recorded in the Mazowieckie province, where in 2009-2020 the investment outlays doubled. The research results show that in these years the crisis phenomena led to an absolute reduction in investment outlays. The situation was slightly different when it comes to total investment outlays. Although in the conditions of the occurrence of crisis phenomena, a slight reduction in outlays was recorded. Also in the years 2015-2000 there was a decrease in total investment outlays, which could have been caused by changes in the level of investment outlays in the public sector.

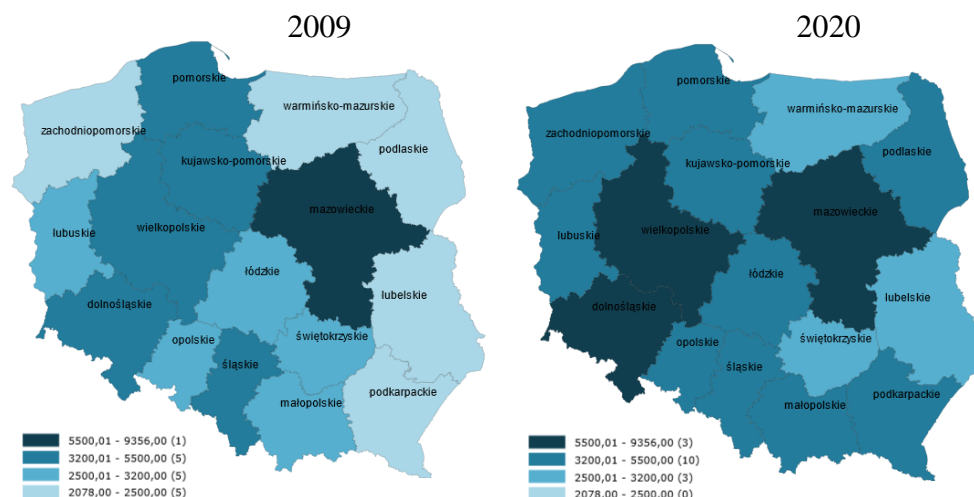


**Figure 3.** Share of private investments in investments in the total national economy in Poland in 2009-2020 (in %).

Source: Source: own study based on <https://bdm.stat.gov.pl/>, 28.09.2022, <https://dashboard.tech.ec.europa.eu>, 28.09.2022.

As shown in the graphic interpretation (Figure 3), in the years 2009-2020 the share of private investments in total investments was at a different level and was subject to changes caused by the occurrence of crisis phenomena. Such a situation took place in 2009-2011, when the share of private investment outlays decreased to the level of 55.1% and in 2020, when the first symptoms of the crisis and a decrease in the share of private investment in total investment were noted. It should be noted that the changes in the structure of total investment expenditure could have been influenced by phenomena in the public sector. As a rule, in such circumstances there is an increase in public expenditure, especially current expenditure, although this does not mean that public investment expenditure, which is less sensitive to changes in macroeconomic conditions and is subject to other conditions, is abandoned.

When it comes to capital expenditure in the private sector per capita, the lowest level was recorded in the Lubelskie province in 2009, PLN 2,078. then in the Warmińsko-Mazurskie province, PLN 2155 and in turn, in the following provinces: Podkarpackie, Zachodniopomorskie and Lubuskie, where the discussed outlays were at the level of PLN 2,310, 2,315 and 2,720 respectively. The above-mentioned regions were characterized by relatively lower development potentials and a lower level of economic development. In the years 2009-2020, an increase in investment outlays per capita was recorded, both in the country average and in individual provinces (Figure 4).



**Figure 4.** Investment outlays in the private sector per capita in 2009 and 2020 (in PLN).

Source: own map concept, presentation based on <https://bdm.stat.gov.pl/>, access on 15.10.2022, <https://dashboard.tech.ec.europa.eu>, access on 15.10.2022.

When examining the crisis phenomena in 2009-2012 and 2020-2022, the changes in the level of total investment outlays and investment outlays in the private sector were analysed by regions for 2009 and 2019, for 2009 and 2020, as well as for 2009 and 2010, and 2019 and 2020. This approach made it possible to indirectly take into account the impact of crisis phenomena on the value of investment outlays in the private sector, assuming that private investments responded most quickly to changes in the macroeconomic situation (Table 2).

**Table 2.**

*Indicators of changes in investment outlays in the years 2019/2009, 2020/2009, 2010/2009 and 2020/2019 by provinces in%*

Specification	Total		Private		Total		Private	
	2019/2009	2020/2009	2019/2009	2020/2009	2010/2009	2020/2019	2010/2009	2020/2019
<b>Polska</b>	45.9	40.8	62.4	50.7	-1.5	-3.5	-6.6	-7.2
<b>Dolnośląskie</b>	77.8	59.4	154.4	125.3	-5.6	-10.3	-13.0	-11.4
<b>Kujawsko-pomorskie</b>	8.8	16.6	-2.2	7.9	-5.8	7.2	-2.8	10.3
<b>Lubelskie</b>	64.4	65.1	38.9	36.6	3.4	0.4	-7.2	-1.7
<b>Lubuskie</b>	42.7	34.9	49.2	21.0	67.3	-5.5	75.8	-18.9
<b>Łódzkie</b>	41.6	32.6	61.6	38.0	2.5	-6.4	-14.7	-14.6
<b>Małopolskie</b>	57.2	56.3	64.6	61.6	6.3	-0.5	3.3	-1.8
<b>Mazowieckie</b>	54.5	48.5	70.7	64.1	-5.5	-3.9	-3.5	-3.9
<b>Opolskie</b>	80.5	54.0	94.4	49.7	4.1	-14.7	-3.6	-23.0

Cont. Table 2

<b>Podkarpackie</b>	66.7	53.0	80.5	43.9	19.0	-8.2	-3.1	-20.3
<b>Podlaskie</b>	83.9	84.9	61.1	48.2	7.8	0.5	-4.8	-8.0
<b>Pomorskie</b>	-7.2	-5.8	-1.2	-7.9	-27.2	1.5	-36.4	-6.7
<b>Śląskie</b>	34.0	20.5	60.6	36.2	-7.3	-10.1	-9.7	-15.2
<b>Świętokrzyskie</b>	2.8	1.4	-9.1	-10.6	8.0	-1.4	-5.8	-1.7
<b>Warmińsko-mazurskie</b>	43.4	42.7	65.8	42.6	9.8	-0.5	-5.5	-14.0
<b>Wielkopolskie</b>	58.1	47.0	62.7	53.8	1.8	-7.0	-5.4	-5.5
<b>Zachodnio-pomorskie</b>	33.0	75.2	59.3	95.7	-4.3	31.8	-12.5	22.9

Source: own study based on BDL data. Warszawa: GUS, 15.10.2022.

In 2009-2010, the value of investment outlays in the private sector per capita decreased in almost all regions. The exceptions were the changes concerning the Lubuskie province, where an increase in investment outlays by 75.8% was recorded. Investment outlays also decreased in 2020 compared to 2019. Investments in the private sector turned out to be sensitive to macroeconomic changes. The highest expenditure in 2020, compared to 2019, was recorded in the following regions: Podkarpackie, Opolskie, Śląskie and Warmińsko-Mazurskie. The decrease in the volume of investment outlays per capita in the private sector was relatively smaller in the following provinces: Lubelskie, Małopolskie, Mazowieckie, Świętokrzyskie and Wielkopolskie. It is difficult to clearly indicate one common reason for these changes, we are dealing here with the influence of a group of factors, however, provinces with a relatively low initial level of outlays and relatively weak dynamics of changes in terms of investment outlays showed a smaller slowdown in investment outlays in the following years.

As for the results of the research on the registered unemployment rate, in 2019-2021, the situation in four districts in the northern part of the Mazowieckie province should be indicated: Mławski, Ostrołęcki, Przasnyski, and also in the Żuromiński district. The lowest level of the indicator was recorded in Mławski district. The level of registered unemployment should be considered low considering that in the years 2020-2021 we had already dealt with the effects of the pandemic, which had negative effects on the side of enterprises and had an impact on the labor market. The situation was worse in Ostrołęcki and Przasnyski districts (Table 3).

**Table 3.**

*Registered unemployment rate in peripheral districts of the Mazowieckie province in 2018-2021 (in %)*

Specification		2019	2020	2021
Bordering provinces	Selected districts			
Warmińsko-Mazurskie	mławski	5.8	6.0	5.4
	ostrołęcki	9.0	9.7	9.0
	przasnyski	8.5	9.5	8.0
Podlaskie	losicki	4.2	5.0	4.8
	ostrowski	8.0	9.4	8.3
	siedlecki	4.3	4.8	4.5
	sokołowski	5.4	6.0	5.1
Lubelskie	garwoliński	8.4	9.4	9.0
	kozienicki	10.0	10.9	9.8
	lipski	9.8	10.6	9.6
	zwoleński	9.7	11.9	10.8

Cont. Table 3.

Świętokrzyskie	przysuski	17.6	17.1	15.3
	radomski	16.5	17.6	15.4
	szydłowiecki	23.3	23.7	22.3
Łódzkie	gostyniński	12.0	13.7	12.0
	grójecki	1.9	2.7	2.1
	sochaczewski	4.6	4.7	3.8
	żyrardowski	9.5	10.6	9.3
Kujawsko-Pomorskie	płocki	10.2	11.4	10.5
	sierpecki	15.0	15.3	12.6
	żuromiński	14.5	14.2	13.1
<b>Average value for the province</b>		4.4	5.2	4.6

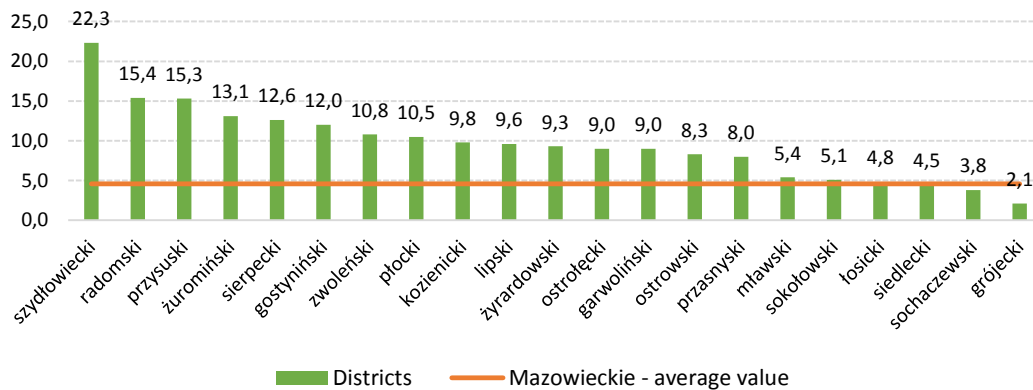
Source: own study based on BDL data. Warszawa: GUS, 31.08. 2022.

In the Ostrołęka district, the registered unemployment rate in the discussed period was between 9.0 and 10.1%, which meant that the Ostrołęka district, despite its relatively good spatial location, was characterized by relatively high unemployment rates. In the years 2019-2021, the average registered unemployment rate was close to 5%. And so, in 2019 it was 4.4%, followed by 5.2% and 4.6%. Despite the crisis phenomena, the registered unemployment rate in the Mazowieckie province was relatively low and showed resistance to crisis phenomena. Government support programs on a national scale, oriented at maintaining existing enterprises and jobs, were also important. A relatively low registered unemployment rate was recorded in peripheral districts bordering with Podlaskie province. A low level was recorded in the Łosicki district, where even in the years of crisis 2020-2021, the unemployment rate did not exceed 5%. A relatively high percentage of unemployment was recorded in the Ostrowski district, where in 2020 it was 9.4%. The indicators in the north-eastern part of the Mazowieckie province were at a relatively lower level. This was due to many internal reasons, and therefore to the local economy and local job creation potential.

temporarily in the Sierpc district and also relatively high in the Żuromiński district. In 2019-2021, the situation was slightly worse in the peripheral districts bordering with the Lubelskie province. In this part, the unemployment rate was around 10%. Attention should be paid to Zwoleniński and Kozienicki districts, where the registered unemployment rate was relatively high. The unfavorable situation as regards the peripheral districts of Mazovia shaped the areas adjacent to the Świętokrzyskie province. And so, in 2019 the highest unemployment rate was recorded in the Szydłowiecki district, 23.3%, in the following years it was slightly lower. Research shows that in the Szydłowiecki district, almost every fourth person was unemployed. Districts: Przysuski and Radomski also had a significantly higher level of the unemployment rate compared to the remaining peripheral districts and in relation to the province average. A high registered unemployment rate was recorded in districts bordering with the Kujawsko-Pomorskie province. The highest level of unemployment occurred

Unemployment in the peripheral areas of the Mazowieckie province was characterized by a noticeable spatial differentiation. In the areas bordering with the Warmińsko-Mazurskie, Podlaskie and partly Lubelskie provinces, the unemployment situation was slightly better. The situation was worse on the border of Mazowieckie and Lubelskie as well as Mazowieckie

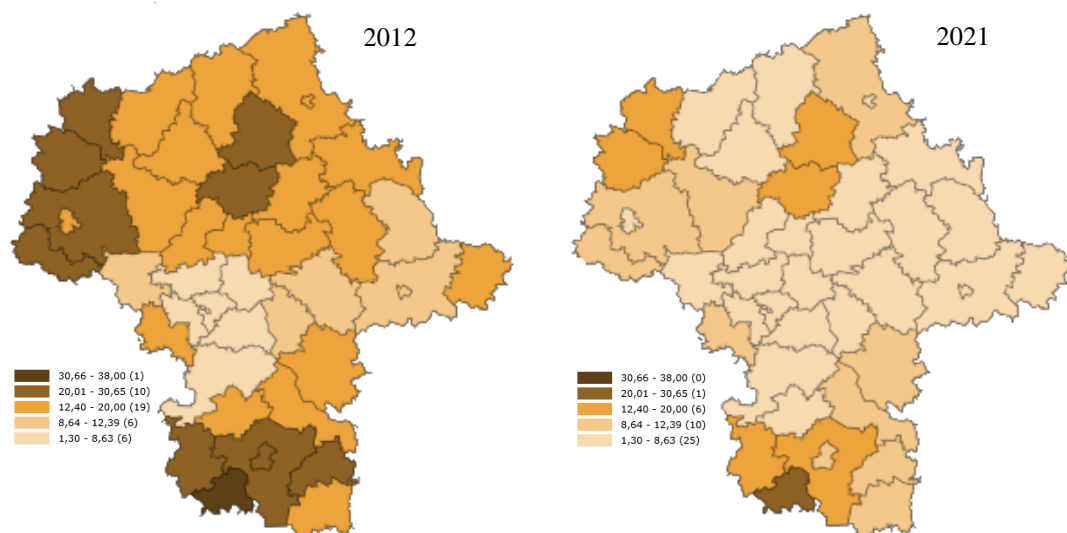
and Świętokrzyskie provinces, as well as in the part bordering with the Kujawsko-Pomorskie province. In the peripheral areas of the Mazowieckie province, the registered unemployment level was higher than the average for the entire province area. Part of the area is agricultural land, which means that part of the population does not run economic activity in the form of enterprises, but in the form of farms, and this is reflected in the statistics on unemployment (Figure 5).



**Figure 5.** Registered unemployment rate in peripheral districts of the Mazowieckie province in 2021 (in %).

Source: own study based on BDL data. Warszawa: GUS, 15.10. 2022.

The registered unemployment rate in the districts of the Mazowieckie province was in most units above the province average. In three districts: Grójecki, Sochaczewski and Siedlecki was lower than the average value. Figure 5 shows the registered unemployment rate for the years 2012 and 2021. The selected years illustrate the situation that was associated with the crisis phenomena in 2008-2012 and 2020-2022.



**Figure 5.** Registered unemployment rate by districts in Mazowieckie province in 2012 and 2021 (in%).

Source: own map concept, presentation based on <https://bdm.stat.gov.pl/>, 15.10.2022, <https://dashboard.tech.ec.europa.eu>, 15.10.2022.

An important measure of the assessment of entrepreneurship is the number of small and medium-sized enterprises (SMEs). In the years 2019-2021, the number of enterprises in the SMEs group was stable. Although there were changes in the number of economic entities, they were relatively small. Such a situation took place in the conditions of economic changes that appeared as a result of crisis phenomena. Interesting results were brought by a comparative study of the number of small and medium-sized enterprises in peripheral districts of the Mazowieckie province.

The numerical data (Table 4 table and a graphic illustration on the figure 6) prove that the share of small and medium-sized enterprises in the group of peripheral districts in relation to the total number of SMEs in the Mazowieckie province was low.

**Table 4.**

*Characteristics of SMEs in peripheral districts of the Mazowieckie province in 2019-2021*

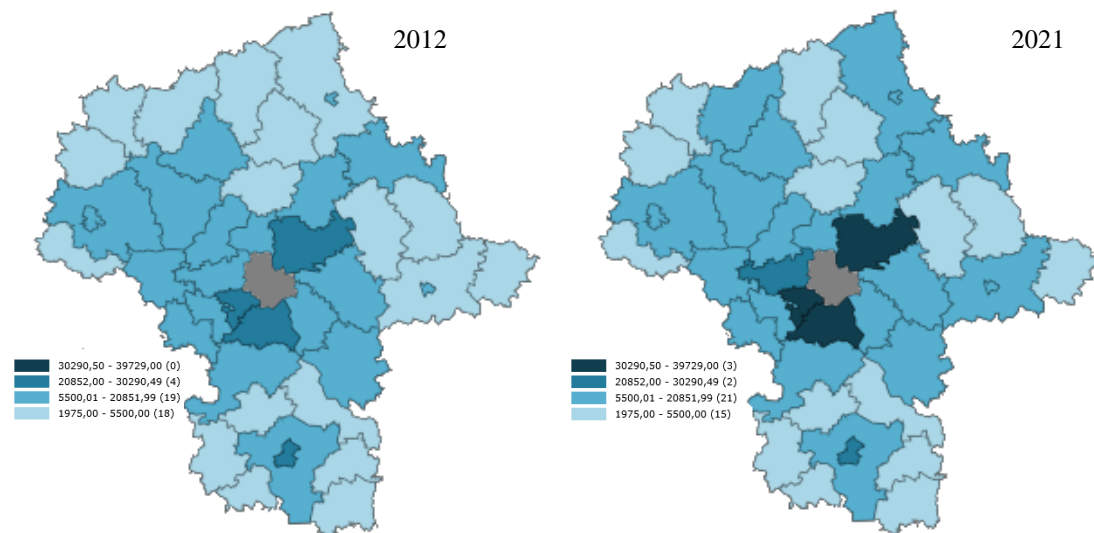
Specification		Number of SMEs in the size class up to 9 employees			SME share <sup>(a)</sup> in %		
Bordering provinces	Districts	2019	2020	2021	0-9	10-49	50-249
Warmińsko-Mazurskie	mławski	5 483	5 672	5 893	0.66	0.85	0.87
	ostrołęcki	5 880	6 160	6 523	0.73	0.59	0.29
	przasnyski	3 625	3 719	3 866	0.43	0.55	0.46
Podlaskie	łosicki	2 327	2 344	2 383	0.27	0.35	0.19
	ostrowski	6 430	6 601	6 782	0.76	0.60	0.58
	siedlecki	5 837	6 108	6 363	0.71	0.78	0.37
	sokołowski	4 002	4 088	4 199	0.47	0.50	0.42
Lubelskie	garwoliński	7 827	8 091	8 382	0.93	1.29	1.00
	kozienicki	4 105	4 217	4 368	0.49	0.64	0.64
	lipski	2 593	2 662	2 777	0.31	0.35	0.23
	zwoleński	2 307	2 361	2 497	0.28	0.33	0.23
Świętokrzyskie	przysuski	2 830	2 967	3 032	0.34	0.40	0.19
	radomski	11 777	12 326	12 935	1.44	1.60	1.18
	zydłowiecki	3 365	3 577	3 707	0.41	0.40	0.33
Łódzkie	gostyniński	3 502	3 584	3 648	0.41	0.52	0.50
	grójecki	9 115	9 433	9 802	1.09	1.16	0.94
	sochaczewski	8 836	9 052	9 255	1.03	1.17	1.18
	żyrardowski	8 609	8 851	9 188	1.02	1.03	1.00
Kujawsko-Pomorskie	płocki	7 853	8 234	8 592	0.96	1.23	0.81
	sierpecki	3 466	3 640	3 802	0.42	0.55	0.64
	żuromiński	2 724	2 774	2 821	0.31	0.29	0.25
<b>Mazowieckie – total</b>		824 528	857 513	897 840	100.00	100.00	100.00

<sup>(a)</sup> The share of small and medium-sized enterprises from individual size classes (according to the number of employees) registered in peripheral districts in the total number of enterprises of a given size class in the Mazowieckie province in 2021.

Source: own study based on the Local Data Bank of the Central Statistical Office, 31.10.2022.

In the size class of enterprises with up to 9 employees, the lowest share was recorded in Zwoleński and Łosicki districts, as well as in Żuromiński district, where the values fluctuated around 0.31%. In the group of enterprises employing from 10 to 49 employees, the share of enterprises registered in peripheral districts of the Mazowieckie province was also at a relatively low level. A bad situation took place in the Łosicki district, as well as in the Lipski, Zwoleński and Żuromiński districts. In these administrative units, the share of the discussed group of

enterprises in the total number of SME enterprises was below 0.3%. As for enterprises with 50-249 employees, the lowest level of the indicator was recorded in the Łosicki district, and then in the Ostrołęcki, Przysuski Lipski and Zwoleński districts, where the share in question was below 0.30%.



**Figure 6.** SMEs in the Mazowieckie province by districts in 2012 and 2021.

Source: own map concept, presentation based on source data of the Local Data Bank, Central Statistical Office, 8.10.2022.

In the years 2019-2020, there was initially an increase and then a decrease in the total number of SMEs. As for the causes of the poor situation in the field of entrepreneurship development, one of them is the peripheral nature of the areas of the Mazowieckie province, as well as the difficult administrative and economic links with the centres of economic growth. The border areas of the Mazowieckie province have difficult administrative links, which could constitute a form of support for the development of SMEs. Here it is necessary to point out again to the agricultural profile of part of the local economy. The development of entrepreneurship was also indirectly influenced by the effects of crisis phenomena, as well as the administrative restriction of economic activity. In the size class of enterprises employing up to 9 employees, in 2019-2021 a slow increase in the number of enterprises was recorded in all surveyed districts, which means that under the conditions of crisis phenomena, it was possible to maintain the number of existing enterprises in this group and even increase their number.



## 4. Summary

The analysis of the literature on the subject and empirical research have shown that in the face of crisis phenomena there were significant threats to the process of socio-economic development. Macroeconomic factors led to a change in the market situation in terms of opportunities to undertake new development projects. The comparative analysis showed the presence of internal differences in development in the Mazowieckie province in crisis conditions. Due to the presented mechanisms of the impact of macroeconomic factors within the implementation and undertaking of new investment projects, the peripheral areas of the region found themselves in a worse development situation due to less possibilities of using limited endogenous own resources.

A significant impact is exerted by factors that shape the basic values adopted in the investment profitability calculation using formulas that take into account changes in the value of money over time. The impact of macroeconomic factors therefore applies both to investments that are in the operational phase, as well as to investments that are at the stage of conducting feasibility studies. However, regardless of the degree of advancement of such projects, macroeconomic factors objectively change previous expectations regarding the achievement of a certain level of effectiveness through the mechanisms already indicated. This also applies to the peripheral areas of the Mazowieckie province. Where we are dealing with a relatively worse socio-economic situation, undertaking development investment projects may be difficult due to the limited possibilities of influencing such projects. This mechanism has a direct impact on the deterioration of the general situation in peripheral regions, which may be expressed in a slower GDP growth rate, higher unemployment and a number of other social factors.

On the basis of the collected empirical material, it was possible to confirm the existence of significant intra-regional differences, which intensified during the crises. The deteriorating macroeconomic situation additionally limited the already weak development impulses in the peripheral parts of the Mazowieckie province. Peripheral districts were characterized by a relatively low level of entrepreneurship development, although the number of SMEs in the group of companies employing up to 9 people in 2019-2021 slightly increased, as well as a higher level of unemployment. Research has shown that the Mazowieckie province is a diverse area in terms of development potential. This differentiation is present in comparisons of peripheral areas of the voivodship, distinguished in the study, and other areas of the region. It is necessary to strengthen the factors that would favour the diffusion of development impulses to peripheral areas. It is also justified to monitor peripheral areas and to use the available countermeasures to inhibit the deepening of development differences. Peripheral areas are at risk of widening development disparities, which can lead to more complex economic and social consequences. Currently, it is difficult to conduct in-depth research due to the rapid changes in source data in the conditions of the 2020-2022 crisis. For these reasons, research should be

continued and extended to multi-criteria analysis, which in the current conditions was significantly limited or sometimes impossible. Therefore, the submitted text represents a broader study that will be conducted in the future.

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