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Warsaw University of Life Sciences Press, Nowoursynowska 161, 02-787 Warsaw
tel. 22 593 55 20
e-mail: wydawnictwo@sggw.edu.pl
www.wydawnictwosggw.pl

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THE IMPACT OF THE COVID-19 PANDEMIC ON CHANGES IN THE EMPLOYMENT LEVEL OF PARENTS RECEIVING A CHILD BENEFIT FROM THE FAMILY 500+ PROGRAM IN POLAND

Dorota Kmieć✉

Warsaw University of Life Sciences – SGGW, Poland

ABSTRACT

Aim: The aim of the article was to assess the impact of the COVID-19 pandemic on the employment rate of parents receiving a child benefit from the Family 500+ program. **Methods:** The study used a set of scientific methods, including generalization, theoretical and methodological analysis and synthesis. The real value of the childcare benefit was calculated. **Results:** The introduction of the "Family 500+" program resulted in an increase in spending on family policy. These transfers contributed to the improvement of the financial situation of the families. Therefore, the role of the child benefit in reducing poverty among families with children is decreasing, which can be seen especially during the COVID-19 pandemic. At the beginning of the pandemic, the total employment rate of parents fell. Households with one child were particularly affected by the COVID-19 pandemic. **Conclusions:** Based on the obtained results, recommendations were presented for the social policy.

Keywords: labor market participation, child benefit, family policy, rural areas, Family 500+ program, social transfers

JEL codes: J13, J21, J22, I38

INTRODUCTION

The Family 500+ program is not a new program in Polish family policy, but it still raises many discussions on many of its aspects, including issues related to its purpose, costs, impact on the labor market, and especially on the professional activity of women. In the discourse, the impact of the program on the professional activity of men was rather not mentioned, and the professional activity of parents in rural areas is less often analyzed.

A number of changes and restrictions implemented due to the COVID-19 pandemic forced the population to immediately adapt to the new situation - the closure of schools and kindergartens, and the introduction of distance learning became a major organizational challenge for many families. The population living in rural areas for years has been characterized by a higher birth rate and a greater extent of poverty. The challenges faced by parents during the COVID-19 pandemic required a significant commitment to creating conditions for distance learning.

Dorota Kmieć https://orcid.org/0000-0002-5746-9841
✉dorota_kmiec@sggw.edu.pl

Especially younger children and children with special educational needs[1] required constant help and the presence of a guardian. Working and simultaneously taking care of children who previously attended educational institutions every day was a big challenge. The difficulties and limitations that have arisen in the pandemic have affected the demand for work and the professional activity of parents.

The aim of the article was to assess the impact of the COVID-19 pandemic on the employment rate of parents receiving a child benefit from the Family 500+ program. The basic source of information was the statistical data from Statistics Poland (GUS). Quarterly data for the years 2019–2021 were analyzed. The analysis of quarterly data is suitable for such analyses due to the seasonal nature of the Polish labor market. The study used data from the Labor Force Survey. In addition, data from the Social Insurance Institution (ZUS), OECD Social Expenditure Database and inflation forecast data from the National Bank of Poland were used.

In Poland, the idea of paying cash to parents as a form of family benefit appeared in 2011, and the originator was Julian Auleytner, who proposed the equivalent of EUR 100. In 2015, the Law and Justice party announced the Family 500+ program in the election campaign, which was introduced after the successful elections. The Family 500+ program was launched on April 1, 2016, and was intended to positively impact the fertility rate in Poland by "partially covering the expenses related to raising a child, including taking care of it and meeting its life needs". The benefit is payable to the mother, father, actual guardian or legal guardian of a child aged 0–17.

In the beginning, the program was addressed only to some families, as the benefit was due for the second child and subsequent children in the family. A benefit could be obtained for the first child in the family if the net income per 1 family member did not exceed PLN 800. From October 1, 2017, additional criteria were in force for single parents bringing up one or more children. To obtain the benefit, they were required to have an established maintenance benefit based on an enforceable title issued or approved by a court. In the case of matters related to child support that were not officially regulated, the benefit was not paid, even for the second child and subsequent children. This provision was later repealed (was paragraph 2, article 8 of the Act) [MRPiPS 2019].

The Act provided the possibility of receiving a childcare benefit in whole or in part in the form of material payments or in the form of paying for services in a situation where the parents wasted the money paid [Dz.U. 2016 poz. 195].

In April 2022, six years of the program's operation have passed. It is the most important social program in the history of Poland, which has changed the assessment of the state policy towards the family. In the CBOS research carried out from 1996 to 2013, the actions of the state government towards the family were assessed negatively or sufficiently. Almost a year after the introduction of the Family 500+ program, the state policy towards the family was rated as good or very good by more than half of the respondents (52%). In March 2019, after the announcement of extending the program to each child, the percentage of positive assessments of the family policy was a record high, reaching 62%. In 2021, the ratings were lower – 49% rated it as good and very good, but the percentage of people assessing family policy as unsatisfactory increased (from 7% in March 2019 to 17% in February 2021) [CBOS 2017, 2021]. The Family 500+ program will significantly increase spending on family policy. In previous years, expenditures did not exceed 2% of GDP, while in 2017, they amounted to almost 3% of GDP (Table 1).

From the very beginning of the program, the question was asked whether this program would have an impact on women's labor supply. According to Ruzik-Sierdzińska [2017], this benefit resulted in 20,000

[1] Special educational needs (SEN) – these are not only students with disabilities. Individual developmental and educational needs also result from maladjustment or the risk of social maladjustment, specific learning difficulties, chronic disease, and environmental neglect related to the student's family situation. Gifted students are also included in this group and required adaptation of teaching methods

Table 1. Public spending on family benefits in cash, services and tax measures in Poland, in percent of GDP, 2009–2017

Public spending	Years								
	2009	2010	2011	2012	2013	2014	2015	2016	2017
Total	1.77	1.75	1.67	1.71	1.78	1.74	1.93	2.94	2.99
Cash	0.75	0.78	0.71	0.79	0.82	0.78	0.93	1.80	2.00
Services	0.54	0.55	0.58	0.55	0.59	0.61	0.58	0.75	0.61
Tax breaks for families	0.48	0.42	0.38	0.37	0.37	0.35	0.41	0.4	0.38

Source: [OECD 2022].

to 33,000 women leaving the labor market in 2016. According to her, in the short term, an exit from the labor market may be neutral or even beneficial for the household, while a long break from work may make it more difficult to return to employment in the future and increase the risk of poverty in old age (shorter work experience means a lower pension in the future). The results of the research indicated a stronger impact of the benefit on the decisions of less educated women than on the more educated ones [Magda et al. 2018]. Myck's research [2016] revealed that the percentage of couples in which both partners work was expected to decrease, and the effect would be noticeable, especially in small towns and villages. The introduction of the program was accompanied by an increase in economic inactivity among people aged 18–44, including those living in rural areas, but this process began much earlier than the emergence of the idea of the 500+ child benefit. In the period when receiving the benefit for the first child depended on income, there were clear differences in the professional activity of parents. Parents receiving the 500+ childcare benefit with one child worked less frequently than parents with two children [Kmieć 2020]. The results suggest that the introduction of Family 500+ had no significant impact on the decisions of working parents [Premik 2022]. Decisions on economic activity or inactivity among parents are much more complex and are influenced by many more factors.

Changes in the Family 500+ program and the granting of a benefit for each child, regardless of family income, brought about the need to look at the behavior of entities in the labor market. The program still arouses and will arouse a lot of emotions and discussions. Krajewski and Zalega [2020] are of the opinion that "Family 500+" should be a subject of a thorough public debate in which we will all consider the pros and cons. Michoń [2021], analyzed statements on Internet forums and distinguished fourteen dominant conventional discourses, which were divided into three groups: (1) state/individual responsibility discourses, (2) policy-making discourses, and (3) discourses of (in)efficiency and (in)effectiveness. According to Michoń [2021], the key to gaining social support, and more broadly to legitimizing the welfare state in Poland, is caring for a positive image of parents entitled to the benefit.

THE PROBLEM OF POVERTY AMONG FAMILIES WITH CHILDREN

Other results of the program are also emphasized, such as the reduction of poverty among families with children. The fact is that married couples with three or more children are still in the most difficult financial situation compared to other types of households in Poland. The average monthly disposable income per person in this type of household was lower by 25.8%, and expenditure per person was lower by 24.1% than the national average (in 2020, by 28.9 and 26.3%, respectively). Introducing the Family 500+ child benefit undoubtedly improved their financial situation [GUS 2022]. The analysis carried out by Brzeziński and Najsztub [2017] suggests that even before the introduction of the child benefit, extreme poverty rates among households with children in Poland were at a comparable or lower level than among single-person households or couples without children.

The percentage of people at risk of poverty is higher in rural areas than in urban areas. Since 2016, a clear decrease in the share of people living below the subsistence minimum has been observed, both in rural areas and in towns, with the exception of large cities, where an increase in this indicator was recorded (Table 2). Undoubtedly, the changes in this indicator were influenced by the good situation in the labor market and the increase in wages and agricultural income. In the case of households with children, the child benefit and parental benefit should also be taken into account. Parental benefit has been paid since January 2016 and is payable to women who gave birth to a child and were not entitled to maternity benefits, e.g., students and wives of farmers. In 2018, the extent of extreme poverty started to increase. Then, in 2019, it decreased, which was mainly due to the fact that all children were covered by the program "Family 500+", regardless of family income. Undoubtedly, the outbreak of the COVID-19 pandemic and the restrictions on social and economic functioning affected the financial situation of households. In 2020, the range of extreme poverty increased, especially in rural areas and small towns, to 20,000 inhabitants (Table 2). This is a very important issue because poverty – as well as demographic potential, which in peripheral and remote regions is assessed as negative – seriously threatens the development of rural areas [Pomianek and Kapaj 2018]. The lack of adequate income causes a kind of feedback loop and is both a cause and a consequence of the deprivation of needs and also favors the unsustainable development of rural areas [Kalinowski 2018, Raczkowska and Wrzesińska-Kowal 2019].

The number of children in a household influences the risk of poverty. Statistics Poland regularly publishes data on the range of economic poverty, taking into account the number of children in a family, but without considering the division into urban and rural areas. The data shows that the risk of extreme poverty is higher in households with children. Households without children had the lowest poverty rate. In 2016, the poverty rate significantly decreased in households with at least two or three children aged 0–17 and in households with a disabled child. In 2018, 5.4% of the total population of Poland lived in extreme poverty, and the extent of extreme poverty increased compared to the previous year (Table 3). Changes in benefits introduced on July 1, 2019, related to the coverage of the first child, regardless of family income, undoubtedly contributed to a decrease in the extent of extreme poverty in 2019. However, the number of people in the most difficult financial situation increased in the following year. 2020 was a year in which there were many restrictions in the sphere of socio-economic life due to the announced state of the pandemic, which resulted in the deterioration of the financial situation of households.

Table 2. The extent of extreme poverty in Poland in 2013–2020 (in % of people in households)

Specifications	Years							
	2013	2014	2015	2016	2017	2018	2019	2020
Poland	7.4	7.4	6.5	4.9	4.3	5.4	4.2	5.2
Urban areas:	4.6	4.6	3.5	2.9	2.4	2.8	2.1	2.4
– more than 500 thousand inhabitants	1.0	1.0	1.1	1.1	1.5	0.9	1.0	1.6
– 200–500 thousand inhabitants	4.6	3.2	3.2	1.9	1.1	1.2	1.4	1.2
– 100–200 thousand inhabitants	3.5	3.7	3.1	2.8	1.8	2.7	2.1	2.0
– 20–100 thousand inhabitants	4.9	5.1	4.6	3.9	2.8	3.1	2.5	2.3
– less than 20 thousand inhabitants	8.2	8.5	5.4	4	4.1	5.1	2.8	4.4
Rural areas	11.6	11.8	11.3	8	7.3	9.4	7.5	9.5

Source: own study based on Statistics Poland [GUS 2016, 2017, 2020, 2021a].

Table 3. The extent of extreme poverty in households with children in 2015–2020 (% of people in households)

Specification		Years					
		2015	2016	2017	2018	2019	2020
Poland in general		6.5	4.9	4.3	5.4	4.2	5.2
Households	with at least 1 child aged 0–17	8.8	5.9	4.9	6.4	5.1	6.5
	with exactly 1 child aged 0–17	5.3	4.3	3.8	5.5	4	5.2
	with exactly 2 children aged 0–17	8.1	5.3	4.5	5.6	5.1	6.5
	with at least 3 children aged 0–17	16.7	9.9	7.6	9.7	6.8	8.7
	with at least 1 child under the age of 16 with a disability certificate	10.7	8.3	4.9	5.7	5.5	7
	without children aged 0–17	3.7	3.7	3.6	4	3.1	3.4

Source: own elaboration based on Statistics Poland data [GUS 2016, 2017, 2020, 2021a].

Sawicka and Stolarczyk [2018] pointed out that no one cheered the positive effects of the program related to the situation of families with children. Not only can positive changes be seen in the data of Statistics Poland, but the beneficiaries of this program themselves see its impact on improving the standard of living of families in Poland. Families, especially those with many children, appreciate the fact that the program gave them the opportunity to manage their money more freely [CBOS 2021]. After the program was introduced, spending on food and cultural activities increased, and the likelihood of experiencing difficulties in paying for utilities and medical care for treatment decreased compared to the control group, which was composed of families not eligible for the program [Milovanska-Farrington 2021]. Over the years, the approach to the program in Poland has changed. In 2016, 10% of people believed that the benefit should be directed to the poorest. In 2020, 20% of people had a similar opinion [CBOS 2021].

THE EMPLOYMENT RATE OF WOMEN AND MEN IN HOUSEHOLDS RECEIVING CHILD BENEFITS FROM THE FAMILY 500+ PROGRAM

The data show that since 2019, more and more parents receiving child benefits have been working. There is a clear difference in the level of indicators between the first and second quarter of 2019 when the benefit was granted for the second child and subsequent children, while for the first child, only if the income criterion was met. The changes introduced to the program from July 1, 2019, which consisted in covering children who were born first in the family, resulted in an increase in the number of benefits paid. In April 2022, the program covered more over than 6.5 million children. From the beginning of the program, PLN 178 billion was spent [Kropiwiec 2022]. At the same time, the program covered parents who previously had no right to apply for the benefit due to income; therefore, the employment rate of parents with one child also changed from 62.8% to 80.6% in 2019. It should be remembered that this increase is caused by changes in the law and not by the increase in the number of working parents with one child. Many of the barriers that affect labor supply still exist. In addition, local labor markets have their own specificity and different pace and directions of change.

The data shows that over such a short period of time, there has been an increase in the employment rate among people receiving the benefit. The introduction of lockdown in connection with the COVID-19 pandemic, as well as the introduction of remote learning in schools, was a great challenge for working parents, especially for younger children or children with disabilities who require more support in learning and time management. At the beginning of the pandemic, the employment rate of parents in total and in households with one child fell but increased in the following quarters (Table 4). State intervention in the form of

Table 4. The employment rate of parents belonging to households receiving the 500+ child benefit by the number of children under the age of 18 in 2019–2021 (quarterly data) (%)

Parents	Quarter of the year											
	2019				2020				2021			
	I	II	III	IV	I	II	III	IV	I	II	III	IV
Total	**77.0**	**78.0**	**81.0**	**82.4**	**82.0**	**81.7**	**83.0**	**83.5**	**84.0**	**87.0**	**85.3**	**85.6**
with one child below the age of 18	59.5	62.8	80.6	83.9	83.5	82.9	83.9	84.7	85.4	88.5	86.3	86.7
with two children below the age of 18	82.2	83.2	83.4	83.3	82.7	82.7	84.2	84.3	85.0	87.7	86.2	86.8
with three or more children below the age of 18	73.6	73.0	74.0	73.7	72.9	73.0	74.4	75.5	74.7	78.3	77.4	76.5
Men	**92.8**	**93.2**	**94.3**	**95.0**	**94.5**	**94.1**	**94.2**	**94.7**	**94.2**	**96.2**	**95.2**	**94.8**
with one child below the age of 18	80.2	84.8	93.0	93.7	93.5	92.7	92.8	93.4	92.8	95.1	94.0	93.5
with two children below the age of 18	95.1	94.9	95.5	96.3	95.4	95.0	95.6	95.9	95.5	97.4	96.4	96.2
with three or more children below the age of 18	93.7	93.4	93.0	93.9	95.4	95.7	94.4	94.9	95.2	95.9	95.7	94.6
Women	**62.9**	**64.3**	**69.0**	**71.1**	**70.8**	**70.6**	**72.8**	**73.6**	**74.9**	**78.9**	**76.7**	**77.7**
with one child below the age of 18	45.7	48.0	70.7	75.7	75.1	74.7	76.5	77.6	79.4	83.2	79.9	81.0
with two children below the age of 18	69.9	72.0	71.6	70.7	70.8	70.9	73.2	73.4	75.1	78.4	77.0	78.4
with three or more children below the age of 18	54.8	53.9	56.0	54.3	51.6	51.2	54.9	56.7	55.9	61.6	60.5	60.8
Urban areas	**79.4**	**79.9**	**82.6**	**84.2**	**84.2**	**83.8**	**85.3**	**85.6**	**86.5**	**90.0**	**88.3**	**88.9**
with one child below the age of 18	58.4	61.8	82.7	85.6	85.6	84.9	86.7	86.9	87.1	91.0	89.0	89.7
with two children below the age of 18	84.6	85.3	85.0	85.2	84.7	84.5	86.0	86.5	88.1	91.2	89.5	90.0
with three or more children below the age of 18	75.2	74.1	72.5	73.9	74.9	74.7	74.5	76.0	76.6	79.8	79.4	79.0
Rural areas	**74.3**	**75.8**	**79.1**	**80.0**	**79.1**	**79.0**	**79.8**	**80.7**	**80.7**	**83.0**	**81.2**	**81.3**
with one child below the age of 18	60.4	63.9	77.4	81.3	80.5	80.1	79.7	81.5	83.0	85.0	82.4	82.3
with two children below the age of 18	79.0	80.5	81.4	80.9	80.0	80.3	81.8	81.6	80.9	83.0	81.6	82.5
with three or more children below the age of 18	72.3	71.8	75.3	73.8	71.0	71.3	74.1	75.2	73.3	77.2	75.9	74.5

Source: own study based on Statistics Poland data

the adoption of a number of laws creating the Anti-Crisis Shields enabled enterprises to implement solutions aimed at protecting the jobs and incomes of the population. When schools and kindergartens were closed, a working parent of children under the age of 8 could apply for a care allowance, which helped to survive this situation without having to give up work. The pandemic caused changes in the work organization of many enterprises; many employees could perform their duties remotely. In the second quarter of 2020, work from home in connection with COVID-19 in the form of remote work was regularly performed by 1,493,000 people, which accounted for 9.2% of all employed persons. After lifting some of the "COVID-related" restrictions, 520,000, i.e., 3.3% of employees, regularly worked in the home office mode. In the fourth quarter, after a renewed increase in the number of cases and the introduction of consequent restrictions in the economy, the population usually working remotely again exceeded one million people (1,009,000), and the percentage of people working in this form reached 6.1% [GUS 2021b].

The labor market in Poland is seasonal. Typically, employment increases in the second and third quarters. Due to the seasonality of the Polish labor market, it is difficult to assess how much change occurring in the following quarters of 2020 is the effect of the impact of the epidemic situation and to what extent these changes are characteristic of the difference between "seasons", therefore it is necessary to compare the situation to the pre-pandemic period.

The economic activity of the rural and urban populations receiving the 500+ benefit increased. There is a higher percentage of the working urban population than the rural population, which results from the specific characteristics of rural areas. Due to legal changes, it is difficult to compare the first and second quarters of 2019 with subsequent quarters in the following years. The data shows that the situation of the urban population improved faster. In cities, especially medium-sized and large ones, there are more job opportunities, and the infrastructure providing care for the youngest children is more developed. In addition, the abolition of the income criterion in the program meant that some parents do not have to worry about losing the benefit if their income per person in the family increases, so they can take up work and retain the right to child benefit. Taking into account the number of children, the employment rate is the lowest in households with at least three children aged 0–17, both in rural and urban areas. It should be emphasized that the situation during the pandemic, especially during the lockdown, was particularly difficult for many households with children, especially in rural areas. In rural areas, the rural labor market is mainly related to agriculture. Men and women working on farms and agri-food processing plants are essential workers on the front lines of the pandemic, exposed to increased health risks and physical and mental exhaustion [Zawojska 2021].

In addition, it is important to remember that "working" and "having a job" does not mean being employed or working full-time. It should be emphasized that these are working people according to the definition used in LFS studies, where employees are: persons who, during the reference week, worked for at least one hour for pay or profit or family gain or persons who were not at work during the reference week but had a job or business from which they were temporarily absent.

CHALLENGES FOR FAMILY POLICY

The first important challenge is the valorization of the benefit. As a result of inflation, the real value of income from the 500+ program is decreasing year by year. Currently, the real value of the monthly benefit of PLN 500 is PLN 436.60. Taking into account inflation forecasts [NBP 2022], it was estimated that in the next year, the real value will be below PLN 400 and in 2026, it will amount to PLN 309. In order to maintain the purchasing power of this benefit, it should be indexed (Table 5).

The second important challenge is the increase in the number of people entitled to benefits that came from Ukraine. Russia's attack on Ukraine resulted in an influx of refugees, mainly women and children. Persons who legally crossed the Polish-Ukrainian border after February 23, 2022, in connection with warfare, obtained a PESEL number, opened a bank account in Poland, and have a Polish telephone number and e-mail address, can apply for this benefit. Only

Table 5. The real value of the child benefit from the Family 500+ program

Year	Consumer Price Index (previous year = 100)	The real value of the 500+ benefit (in PLN)	The real value of the 500+ benefit (PLN 500 = 100)
2016	99.4	503	101
2017	102	493	99
2018	101.6	485	97
2019	102.3	474	95
2020	103.4	459	92
2021	105.1	437	87
2022	114.5*	381	76
2023	113.1*	337	67
2024	105.9*	318	64
2025	103.0*	309	62

* National Bank of Poland forecast

Source: own calculations based on data from: [GUS 2022, NBP].

persons residing in Poland can receive them. Each trip longer than 30 days must be reported to Social Insurance Institution. In May 2022, the first payments from the program were made. According to the information provided by the Social Insurance Institution, 440,000 childcare benefits were granted for the 2022/2023 benefit period, which means an increase in state budget expenditure. The Social Insurance Institution withheld payment of over 80.000 for Ukrainian citizens who left Poland [ZUS 2022]. In October 2022, an agreement was signed on the allocation of USD 20 million by the United Nations Children's Fund (UNICEF) for the reimbursement of 500+ childcare benefits for Ukrainian children.

CONCLUSIONS

The introduction of the "Family 500+" program resulted in an increase in spending on family policy. These transfers contributed to the improvement of the financial situation of the families. In the analyzed years, the range of extreme poverty among families with children, especially those with three children, decreased. The most numerous families are in rural areas, and extreme poverty is greatest in rural areas, so these transfers play a special role in meeting basic needs. In 2018, the extent of extreme poverty started to increase in households with children.

When participation in the program depended on the income level, the lowest employment rate was among households with one child. After the change in the law regulations, many more children were covered by the program. This was the main reason for the increase in the employment rate among parents with one child. Restrictions and barriers for parents to access the labor market have not disappeared, so there are still some people, most often women, who leave the labor market due to domestic duties.

The professional activity of parents is also, to some extent, correlated with the number of children. The employment rate was higher in households with one child and two children than in households with at least three children. Of course, we use the definition of a working person according to the definition used in the LFS and not an employed person. Research shows that the percentage of working people decreased in the second quarter, but increased in the following quarters. The decrease in the percentage of working people can be linked to the situation of the COVID-19 pandemic. There is seasonality in the labor market in Poland - the demand for seasonal workers is increasing in many sectors of the economy, and at the same time, the legal provisions introduced to protect jobs and loss of income of employees during the COVID-19 restrictions inhibited changes in the employment of parents. From the beginning of the program, parents receive 500 PLN

a month. The benefit has never been indexed. Due to the decline in the real value of this child benefit, its role in reducing poverty is decreasing in households with children during the COVID-19 pandemic.

The deteriorating economic situation and the influx of a large number of refugees from Ukraine, which was attacked by Russia, and other current and unresolved problems should prompt a discussion on the valorization of the sources of financing for this program. Studies on the impact of the "Family 500+" program on the functioning of various business entities in various sectors, not only families with children, are buried.

Refugees from Ukraine received the right to apply for participation in the program. According to Social Insurance Institution, 440,000 were awarded childcare benefits for the period 2022/2023, of which over 80,000 were withheld in connection with leaving the territory of Poland. UNICEF pledged 20 million USD to reimburse benefits for Ukrainian children, which is an important help in financing this sudden increase in expenses.

The Family 500+ program should be revalorized so that it can fulfill its goals. In recent years, many changes have taken place in the economy, so there is also a need to adapt the social policy to new challenges.

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WPŁYW PANDEMII COVID-19 NA ZMIANY POZIOMU ZATRUDNIENIA RODZICÓW POBIERAJĄCYCH ZASIŁEK NA DZIECKO Z PROGRAMU RODZINA 500+ W POLSCE

STRESZCZENIE

Cel: Celem artykułu była ocena wpływu pandemii COVID-19 na wskaźnik zatrudnienia rodziców otrzymujących świadczenie wychowawcze z programu Rodzina 500+. **Metody:** W badaniu wykorzystano zestaw metod naukowych, w tym uogólnienie, analizę oraz syntezę teoretyczną i metodologiczną. Dokonano szacunku wartości realnej świadczenia wychowawczego. **Wyniki:** Wprowadzenie programu „Rodzina 500+" spowodował wzrost wydatków na politykę rodziną. Transfery te przyczyniły się do poprawy sytuacji materialnej rodzin. Rola świadczenia wychowawczego w redukcji ubóstwa wśród rodzin z dziećmi jest coraz mniejsza. co widać zwłaszcza podczas trwania pandemii COVID-19. Na początku pandemii. spadł wskaźnika zatrudnienia rodziców ogółem. Szczególnie odczuły tę zmianę gospodarstwa domowe z jednym dzieckiem. **Wnioski**: Na podstawie uzyskanych wyników przedstawiono rekomendacje dla polityki społecznej.

Słowa kluczowe: uczestnictwo w rynku pracy, pracujący, zasiłek rodzinny, polityka rodzinna, obszary wiejskie, program Rodzina 500+, transfery socjalne

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THE RATIONAL USE OF POLISH SOILS AS A CHALLENGE FOR SCIENCE, ADVICE, AND AGRICULTURAL PRACTICE

Stanisław Krasowicz, Mariusz Matyka✉, Andrzej Madej

Institute of Soil Science and Plant Cultivation – State Research Institute, Poland

ABSTRACT

Aim: To present the rational use of Poland's soils as a challenge for science, advice, and agricultural practice. **Methods:** Comparative analysis using tabular data and graphical presentations. **Results:** Compared to many European Union (EU) countries, Poland has a significant area of agricultural land, which, however, is systematically decreasing. It is of great importance to shape the environmental awareness of both farmers and society as a whole, aimed, among other things, at demonstrating all the functions of soils. **Conclusions:** Rational management of the soil environment should include recognizing all functions of soils, identifying threats, and delimiting areas sensitive to soil degradation processes. It is necessary to implement legal and financial instruments leading to the reduction or elimination of threats and the need to take into account regional specificities. Furthermore, the rational management of Poland's soils is a strategic objective and important call for the whole of society. The basic prerequisites for implementing this program are the comprehensiveness of the assessment and the cooperation of science and counselling with local and administrative authorities and the agricultural self-government.

Keywords: rational use of soils, agricultural production space, challenges, science, advice, agricultural practice
JEL code: Q24.

INTRODUCTION

The rational use of soils is of interest to various scientific institutions and reflects trends in the economy today [Hamidov et al. 2016, Sadowski 2017, Smędzik-Ambroży 2018]. Changes should be considered in dynamic (in years) and regional terms [Kopiński and Matyka 2016].

The area of soils used for agriculture is decreasing due to the allocation of significant areas for non-agricultural purposes mainly related to urbanization and transport [CSO 2000–2020]. These processes also affect very good and good soils, which poses a threat to the country's food self-sufficiency [Krasowicz 2012]. At the same time, the EU CAP rules and international conventions oblige to reduce threats to the natural environment. Rational management of Poland's soil environment is a strategic direction of development, as well as a challenge for science, consultancy, and agricultural practice. It is also a problem of great social importance.

The scientific research carried out in Poland (e.g., at the Institute of Soil Science and Plant Cultivation – State Research Institute in Puławy (IUNG-PIB) [Stuczyński et al. 2007]) provides the basis for rational management of the soil environment. They make it possible to diagnose the current state and indicate threats to the soil environment [Resolution 2015].

Stanisław Krasowicz https://orcid.org/0000-0003-3949-1444; Mariusz Matyka https://orcid.org/0000-0001-6269-1175; Andrzej Madej https://orcid.org/0000-0002-3369-1077
✉Mariusz Matyka e-mail: mmatyka@iung.pulawy.pl

The rational management of agricultural productive space includes the following aspects: (1) recognition of all soil functions; (2) identification of environmental threats; (3) designation of areas sensitive to environmental degradation processes; (4) introduction of legal and financial instruments leading to the reduction or elimination of threats; (5) implementation of the concept of multifunctional and sustainable rural development.

The processes of shaping the agricultural environment occur simultaneously with the processes of its use and protection and in connection with the realization of the various functions of soils. Threats to the soil environment result from agricultural and non-agricultural activities. The intensification of degradation processes in extreme cases may lead to the complete loss of the soil's habitat, production or retention functions [Jadczyszyn 2009].

Changes in the use of agricultural space are also a function of economic development, investment, agricultural policy and legally mandated landscape protection measures [Van Vliet et al. 2015, Chyłek et al. 2017]. The instruments of space protection should reduce the risk of economic expansion, favoring the preservation of the original functions and diversity of the landscape. It is widely accepted that agriculture and forest management are among the most important departments responsible for landscape protection and shaping [Gołębiewska et al. 2016]. Land use change processes are largely inevitable and determined by the necessary development of urbanization and transport for the economy. Nevertheless, their dynamics and spatial course should be continuously monitored [Siebielec 2017].

Agricultural production space provides opportunities for the realization of agricultural production and for meeting the demand for food, fodder, and raw materials for industry and energy. The rational management of agricultural productive space is a strategic direction (goal) of development and a necessity. As a problem of great social importance, it is also a challenge for science and advice-serving practice. The essence of rational use of agricultural production space boils down to obtaining a specific volume of crop production in accordance with the demand of the economy, characterized by appropriate quality parameters, and to limiting the adverse impact of agriculture on the natural environment [Gołębiewska et al. 2016]. Changes occurring in the use of agricultural space are also a function of economic development, investments, agricultural policy, and legally mandated landscape protection measures. Estimating the areas necessary to meet the needs of economic growth and urbanization while protecting the resources of agricultural space is becoming a significant problem [Staniszewski and Czyżewski 2019].

The possibilities of rational management of Poland's soil environment are determined by natural and organizational-economic conditions in the broad sense of the term. A comprehensive comparison and analysis of the above conditions is a complex but significant challenge. This makes it possible to assess the rationality of soil use in Poland. The study aimed to present the rational use of Poland's soils as a challenge for science, consultancy, and agricultural practice.

MATERIAL AND METHOD

The primary sources of information were the results of previous research conducted by the research institutes of the Ministry of Agriculture and Rural Development, institutes of the Polish Academy of Sciences, and universities. Statistical data from the Central Statistical Office (CSO) and research results of various authors presented in the literature were also used. A comparative analysis method using tabular data and graphical presentations was applied. A particular problem was the varied time horizon of the data used in the analysis. It should be emphasized, however, that the processes related to changes in the use of utilization agricultural area (UAA) and their quality are characterized by relatively low dynamics. For this reason, the varied time range of the data used did not significantly affect the quality of the analysis presented in the paper.

CHARACTERISTICS OF LAND RESOURCES IN POLAND

Ensuring Poland's net self-sufficiency in raw materials requires looking through the lens of the bioeconomy and biomass production opportunities. Biomass production for the economy can almost exclusively be

based on the use of the primary production factor, which – in agriculture – is land. Nationally, their area in 2019 – compared to the state in 2000 – decreased by 20% (3.7 million ha) from 18.4 to 14.7 million ha. Based on the trend equation, it can be concluded that the area of agricultural land was decreasing at a rate of approximately 182,000 ha – yr^{-1} (Fig. 1). The largest agricultural land resources were located in the Mazowieckie, Wielkopolskie, and Lubelskie Voivodeships (Fig. 2).

On the other hand, they are the smallest in the Lubuskie Voivodeship and in the southern part of the country except for the Dolnośląskie Voivodeship. Significant variations in the availability of agricultural land in the voivodeships resulted from their total area, natural conditions, the level of economic development and the degree of urbanization. Changes in land use are strongly regionally differentiated, with the greatest decrease in the area of agricultural land in voivode-

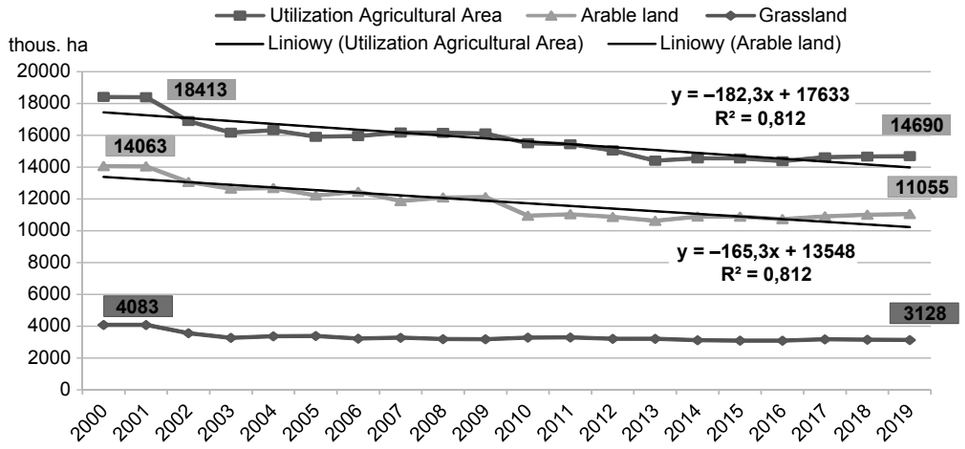

Fig. 1. Changes in the area of agricultural land in Poland between 2000 and 2019
Source: own elaboration based on CSO data [CSO 2000–2020]

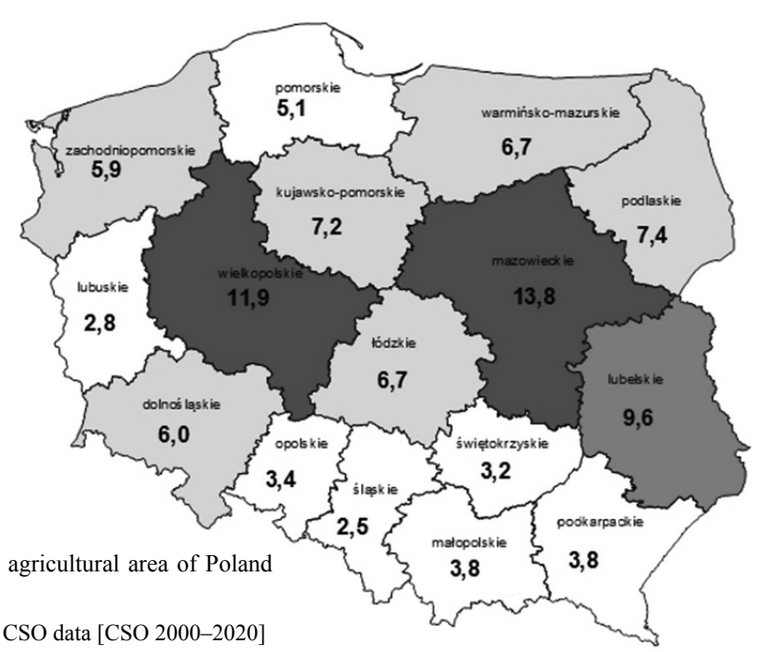

Fig. 2. Share of provinces in the agricultural area of Poland (average 2013–2015)
Source: Own calculations based on CSO data [CSO 2000–2020]

ships characterized by high agrarian fragmentation and extensive agricultural production (i.e., Śląskie, Małopolskie, Podkarpackie, and Świętokrzyskie).

On the other hand, in voivodeships characterized by a high concentration of agricultural commodity production (Kujawsko-Pomorskie, Wielkopolskie), the area of agricultural land did not decrease so significantly (Fig. 3).

The structure of land ownership in Poland is dominated by individual farms, which own around 91% of the stock of this production factor. Mainly, due to historical conditions, private ownership dominates in the eastern and central parts of the country. On the other hand, a significant share (about 25%) of land owned by the State Treasury was located in the Opolskie and Zachodniopomorskie Voivodeships [Wrzochalska and Kurowska 2023].

Arable land accounted for the predominant share (around 73%) in the land use structure between 2016 and 2020 nationally, while grassland and pasture accounted for 18.7%. Permanent crops had a small (2.7%) share in the land use structure [Kopiński and Matyka 2016].

Noteworthy, from the point of view of exploiting biomass production potential, is the share of fallow and set-aside land in the land use structure[1]. On a national scale, they represented a significant reserve (3.3%) that could be used to increase production volumes. The share of land not used for production in the years covered by the analysis varied considerably regionally [Czudec et al. 2017].

In addition to the amount of agricultural land, a significant factor determining the volume and efficiency of biomass production is its quality, which – in the case of Poland – is quite low. This is mainly conditioned by the type of parent rocks, more than 70% of which are light clays and boulder sands. Particularly unfavorable natural conditions for agricultural production are found in the Podlaskie Voivodeship, while the best are found in the Opolskie and Dolnośląskie Voivodeships. Apart from the natural properties of soils, the factor determining their agricultural usefulness is fertility, which is also shaped by the farmer's activity, influencing the reaction, macro- and micro-element abundance, and organic matter content [Stuczyński et al. 2007]. The basic indicator for assessing soil quality is the organic matter content. It determines soil's physical and chemical properties, such as sorption and buffering capacities, and biological transformation processes. High humus content in soils stabilizes their structure, reducing their susceptibility to compaction and degradation due to water and wind erosion [Stuczyński and Łopatka 2009].

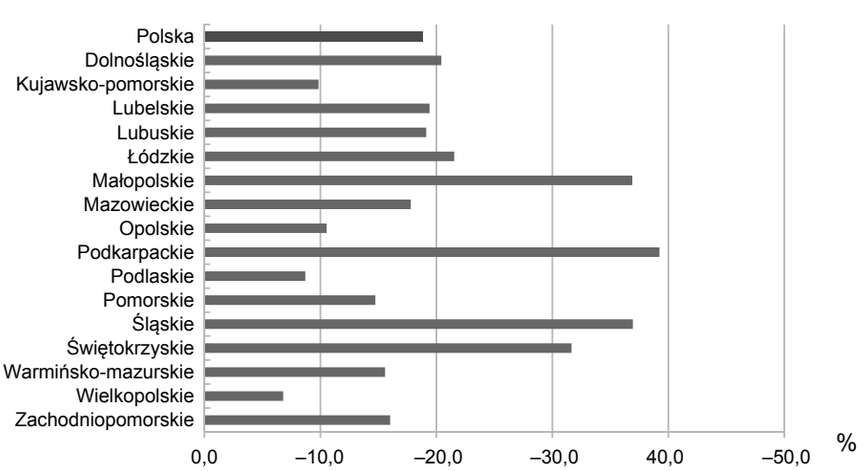

Fig. 3. Changes in the area of agricultural land in Polish voivodeships (on average in 2000–2020)
Source: own calculations based on CSO data [CSO 2000–2020]

[1] Set-aside – as defined by the CSO, this is other agricultural land (i.e., agricultural land that is not used and not maintained in good agricultural condition on 1 June of a given year).

The preservation of soil humus resources is important not only for maintaining the productive functions of soils, but also for the role of soils in sequestering CO_2 from the atmosphere – which contributes to reducing the greenhouse effect.

Loss of humus is an important indicator of deterioration of habitat conditions and soil fertility. The results of soil fertility determinations of agricultural land in Poland (in the 0–25 cm layer) indicate a large variation in humus content (0.5–10%). The average content is 2.2%. According to the division used in Poland, soils with a low humus content (<1.0%) constitute about 6% of the agricultural land, and those with an average (1.1–2.0%) consitute about 50%. Those rich in humus (>2.0%) constitute about 33% of the agricultural land of the country [Stuczyński et al. 2007].

Soils in Poland show great variation in susceptibility to compaction due to the variability in granulometric composition and low organic matter content [Siebielec 2017]. The total area of soils that are highly susceptible to compaction due to inappropriate tillage techniques, the use of equipment with excessive pressures, or the execution of work under conditions of excessive moisture constitutes about 15–20% of agricultural land.

Over 70% of Poland's arable soils are acidic to varying degrees (highly acidic – 13%, acidic – 26%, slightly acidic – 34%). The remaining 27% are neutral and alkaline soils. Acidic and very acidic soils account for about 40%. Improving the reaction of acidic soils is a key factor in changing their use and having a beneficial effect on crop yields [Kuś and Matyka 2013]. A significant threat to the quality of Polish soils is also associated with water erosion phenomena [Jadczyszyn 2009]. Approximately 29% of the country's area, including 21% of agricultural land (mainly arable land and about 8% of forest area), is threatened by water erosion, of which strong erosion is 4%, medium erosion is 11%, and weak erosion is 14% [Józefaciuk and Józefaciuk 1996].

The variation in natural production potential on a national scale is due to the spatial variability of landforms, soil cover, rainfall, and temperature. The poor quality of the productive space not only limits the selection and yield of crops, but has several adverse consequences in economic and environmental terms, potentially leading to land fallowing and landscape degradation. Light sandy soils with high permeability and low retention become very susceptible to soil drought [Stuczyński et al. 2007].

PREREQUISITES FOR THE RATIONAL USE OF SOILS

Compared to many European Union (EU) countries, Poland has a significant agricultural land area, which is systematically decreasing. The structure of soils according to their quality and agricultural suitability is specific. Good and very good soils (classes I–III) account for 26.0%, medium soils (classes Iva–IVb) 39.9%, while poor and very poor soils (classes V and VI) account for 34.1% of the total arable land. In the case of permanent grassland, only 15% is good soil, and about 42% each is medium and poor soil [Krasowicz and Kuś 2010]. The decrease in the area of utilization agricultural area (UAA) recorded in recent decades was due to the transfer of land for non-agricultural purposes, including afforestation and some changes in the classification of agricultural land. The agricultural area in ha per capita in 1980 was 0.53 and, in 2020, only 0.38 [CSO 2000–2020].

The expansion of the country's technical infrastructure, as well as urban and rural housing, will proceed at the expense of agricultural land. It can be expected that by 2030, agriculture will have lost 0.5–0.6 million hectares of agricultural land [Stuczyński and Łopatka 2009]. In addition, a disadvantageous phenomenon in recent years is the transfer for non-agricultural purposes of large areas of very good and good soils, classified as classes I–III. Until 1990, poor and very poor soils accounted for more than 60% of land transferred for non-agricultural purposes, while good soils accounted for less than 15%. Still, in recent years, these proportions have changed unfavorably.

In the post-war period in Poland, the total area of arable land under sowing decreased by about 4 million ha, or more than 25%. Currently, the sown area is 10.8 million ha [CSO 2000–2020].

Common Agricultural Policy (CAP) rules impose responsibility on agriculture for the use of natural environmental resources, including soil resources. In addition to its production functions, the soil environment

and its production functions also fulfil environmental and retention functions, shaping human-environment relations [Krasowicz and Kuś 2015]. In view of Poland's food security, the protection of soils of better quality should be a priority for sustainable development. It is necessary to disseminate more widely the knowledge that the rationale for protecting good soils in cities is not their production function, but their role in shaping ecosystem functions and the local climate.

The introduction of the market economy system and Poland's integration into the European Union have resulted in multidirectional changes in agriculture. They became apparent in the organization and intensity of plant and animal production and in the specialization of agricultural holdings. Czudec et al. [2017] showed that the relatively large scale of land-exclusion from agricultural use in the south-eastern macro-region is a derivative of the unfavourable area structure. In this region, farms – in terms of area, surface area, and dispersion of fields, as well as the scale and concentration of production – clearly differ unfavorably from analogous characteristics describing farms in western and northern Poland. The specificity of agriculture in these regions also determines its competitiveness and opportunities to increase innovation [Nowak 2017]. The diversity of natural conditions, mainly soil and agrometeorological conditions, as well as of organizational and economic conditions, is one of the determinants of the overall competitive potential and the degree of its utilization [Krasowicz and Kuś 2010, Krasowicz and Kuś 2015].

On the other hand, based on experiments carried out at IUNG-PIB and other research centres, it has been found that correct agrotechnics are conducive to maintaining or, even increasing, the content of organic matter in the soil to some extent. Moreover, it has been shown that the use of simplified tillage and plant cultivation does not lead to depletion of soil organic matter and bioavailable forms of phosphorus, potassium, and magnesium – provided that agrotechnology is applied taking into account soil liming, intercropping, manure fertilization, and straw ploughing [Kopiński and Matyka 2016].

Soil organic matter balances reflect the influence of various conditions and are of practical importance. In the last 20 years, the soil organic matter balance has been negatively affected by a reduction in the proportion of perennial forage crops in the sowing structure, a large reduction in livestock and stocking rates, and the increasing specialization of farms forced by economic factors. In addition to traditional methods, alternative sources in the form of various types of waste and new biotechnological solutions will play an important role in shaping the organic matter balance.

It is worth emphasizing that the issue of the rational use of soils is an expression of a new view of agriculture. For many years, agriculture was mainly assessed through the prism of its production functions. The increase in environmental awareness, discussions on climate change and how agriculture can adapt to it, the identification of threats – as well as the widespread acceptance of concepts such as sustainable development or bioeconomy – have resulted in fundamental changes in views on the use of the natural environment [Pajewski and Gołębiewska 2018, Sadowski 2017, Smędzik-Ambroży 2018, Staniszewski and Czyżewski 2018, Sulewski et al. 2020].

According to Zegar [2018, 2021], while performing an environmental function, agriculture also produces effects that should be considered public goods. Kapusta [2017] argues that, nowadays, no country should set itself up for complete self-sufficiency. This author points out that state security in the field of food is fulfilled when a country with the existing level of consumption maintains an equilibrium in the trade turnover of food products. However, the issue of the rational use of soils on which biomass is produced both for domestic purposes and for international trade cannot be overlooked [Kapusta 2017, Kopiński and Matyka 2016]. One promising approach that requires in-depth analysis is precision agriculture [Kuś and Matyka 2013]. Spatial variability of soil conditions and other factors important for plant growth causes unified management of agrotechnology to lead to inefficient use of inputs. The findings of studies comparing various tillage strategies can support advising actions by enabling evaluation of the directions of the influence of implemented solutions on the soil environment at the field level [Sadowski 2017].

Soils are subject to varying degrees of direct or indirect human disturbance, constituting a major global change driver. Factoring out natural from direct and in-

direct human influence is not always straightforward, but some human activities have a clear impact. These include land-use change, land management, and land degradation (erosion, compaction, sealing, and salinization). The intensity of land use also greatly impacts soils, and soils are subject to indirect impacts arising from human activity such as acid deposition (sulphur and nitrogen) and heavy metal pollution [Smith et al. 2016]. Therefore, it is of great importance to shape the environmental awareness of both farmers and society as a whole, aimed, among other things, at demonstrating all the functions of soils. Furthermore, it is necessary to systematically monitor the current state and dynamics of change and identify threats to the rational management of the soil environment. These are important challenges for science, consultancy, and practice [Gołębiewska et al. 2016, Pajewski and Gołębiewska 2018].

In economic analyses, the problem of rational use of soils is often overlooked or taken into account in a fragmentary way [Wrzochalska and Kurowska 2023]. Food security and the country's (net) raw material self-sufficiency are significantly determined by the rational use of soils as one of the main factors of agricultural production [Krasowicz 2012, Smędzik-Ambroży 2018].

According to IUNG-PIB, the most important measures to foster the rational use of soils in support of agricultural advice can be regarded as:

- adaptation of branches and directions of agricultural production to natural and organizational-economic conditions – regionalization of production;
- taking into account the specific characteristics and economic strength of different farm groups when choosing farming systems and levels of technology intensity;
- sustainable fertilizer management and integrated pest management;
- proper (rational) management of soil organic matter;
- implementing efficient and environmentally friendly production technologies;
- shaping the public's environmental awareness;
- promoting various forms of natural resource conservation.

CONCLUSIONS

1. The characteristics of Poland's soil environment and the most critical threats identified against this background made it possible to identify the necessary directions for institutional support. This support should have a wide range and include factual activities, counselling, and financial support. A multi-faceted assessment of the impact of different management systems on soil environment management is also necessary. It is also advisable to make fuller use of the results of scientific research.
2. Rational management of the soil environment should consist of recognizing all functions of soils: production, habitat, and retention, as well as identifying threats and designating areas vulnerable to soil degradation processes. It is necessary to implement legal and financial instruments leading to the reduction or elimination of threats and the need to take into account regional specificities.
3. Scientific agricultural science units and agricultural advisory services can diagnose the current state and support rational soil environment management processes.
4. The rational management of Poland's soils is a strategic goal and an important call for society as a whole. The basic prerequisites for implementing this program are the comprehensiveness of the assessment and the cooperation of science and consultancy with local and administrative authorities, as well as with the agricultural self-government.

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RACJONALNE WYKORZYSTANIE GLEB POLSKI JAKO WYZWANIE DLA NAUKI, DORADZTWA I PRAKTYKI ROLNICZEJ

STRESZCZENIE

Cel: Przedstawienie racjonalnego wykorzystania gleb Polski jako wyzwania dla nauki, doradztwa i praktyki rolniczej. **Wyniki:** Na tle wielu krajów UE Polska dysponuje znacznym areałem użytków rolnych, który jednak systematycznie zmniejsza się. Problemem dużej wagi jest kształtowanie świadomości ekologicznej zarówno rolników, jak i całego społeczeństwa ukierunkowane, między innymi, na ukazywanie wszystkich funkcji gleb. **Metody:** Analiza porównawcza z wykorzystaniem danych tabelarycznych i prezentacji graficznych. **Wnioski:** Racjonalne gospodarowanie środowiskiem glebowym powinno polegać na dostrzeganiu wszystkich funkcji gleb oraz wskazywaniu zagrożeń i wyznaczaniu obszarów wrażliwych na procesy degradacji gleb. Konieczne jest wdrażanie instrumentów prawnych i finansowych, prowadzących do ograniczenia lub wyeliminowania zagrożeń oraz konieczność uwzględniania specyfiki regionalnej. Ponadto racjonalne gospodarowanie glebami Polski jest celem strategicznym i ważnym wzywaniem dla całego społeczeństwa. Podstawowe warunki realizacji tego programu to kompleksowość oceny oraz współpraca nauki i doradztwa z władzami samorządowymi i administracyjnymi a także z samorządem rolniczym.

Słowa kluczowe: racjonalne wykorzystanie gleb, rolnicza przestrzeń produkcyjna, wyzwania, nauka, doradztwo, praktyka rolnicza

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SOCIOECONOMIC REASONS FOR DISCONTINUING ORGANIC FARMING: A POLISH CASE STUDY

Władysława Łuczka[1], Sławomir Kalinowski[2] ✉

[1] Poznan University of Life Sciences, Poland
[2] Institute of Rural and Agricultural Development of the Polish Academy of Sciences, Poland

ABSTRACT

Aim: This paper attempts to close the research gap on the reasons for discontinuing organic farming in Poland. The goal is to explore the aspects that make Polish farmers cease organic farming and the barriers and factors which condition their re-embarking on the organic path. **Methodology:** This paper relies on data from a survey of 134 Polish farmers who moved away from organic farming. This study was carried out with former farmers who ceased organic farming between 2014 and 2018. It comprised two stages: the first was an interview with a non-random group of 18 farmers who discontinued organic farming. The second stage used a diagnostic survey with an original questionnaire administered to farmers who shifted away from organic production. The survey was conducted in 2021. Initially, 534 questionnaires were sent by mail. As the return rate was low, the procedure was repeated twice. As a result, 134 questionnaires were received back out of 1,569. **Results:** The study found the following to be the key reasons for discontinuation: end of the five-year period of financial support, high production costs, insufficient levels of support, low yields, and un-profitable production. The "committed pragmatic farmers" was the most prevalent of the three types covered by the study. The drivers of their decision to go organic included both economic (financial support and incomes) and environmental aspects. However, the key reasons for ceasing organic farming were of a financial (end of the five-year support period) and institutional (burdensome bureaucracy and inspections) nature. **Conclusions:** Although certain countries witness considerable discontinuation rates, there is a relative scarcity of papers dealing with this issue. Poland is an example of a country which has seen an acceleration in the shift away from organic farming over the recent years, resulting in a drop in the area of organic farmland (by 185,000 ha from 2014 to 2018).

Key words: organic farming, reasons for discontinuing, financial support, institutional environment, barriers to shifting back, Poland

JEL codes: Q01, Q10, Q18

INTRODUCTION

One of the most pressing challenges facing the world today is finding viable solutions to counteract the effects of global environmental degradation. Several sectors must undergo environmentally oriented transformation processes to preserve the sustainability of natural resources for current and future generations. This is especially imperative for sectors that have a direct environmental impact due to the very nature of their operating and production activities. The systems poised to undergo an environmental restructuring in-

Władysława Łuczka https://orcid.org/0000-0002-1997-8119; Sławomir Kalinowski https://orcid.og/0000-0002-8068-4312
✉Sławomir Kalinowski e-mail: skalinowski@irwirpan.waw.pl

clude food economics, with a particular focus on agriculture, as it plays a special environmental role due to the direct link of agricultural production on ecosystems, food safety, and rural area conditions. Agriculture has long been based on the maximization of economic benefits (profits and income) at the expense of disequilibrium in ecological and social systems. That model was partly stimulated by an agricultural policy that supported the quantitative growth of agricultural production, resulting in agricultural practices becoming increasingly intensive and intensifying environmental degradation.

In order to reduce environmental harm, agriculture must be viewed as a sector which enables the operation of different methods of natural resource management, including not only those based on the primacy of short-term economic efficiency criteria, but also alternative options related to rational usage of natural resources. One of the key arguments for the new model of agriculture, one which enables the operation of farming systems with different goals and characteristics, focuses on the need to restrain the negative environmental impacts of industrial farming [Nicolopoulou-Stamati et al. 2016]. Another important argument looks at the need to increase the role of agriculture as a sector that provides public goods such as environmental well-being, biodiversity, and rural viability. The above testifies to the need for shifting away from an agricultural system based on the productivity paradigm to one committed to economic, environmental, and social balance. An important role in these processes can be played by organic farming, as suggested in the European Green Deal goals – which assume that the share of organic farmland in the European Union will grow to no less than 25% by 2030 [European Commission 2022, Kowalska and Bieniek 2022].

Organic farming embodies environmental, market, and social values [Seufert and Ramankutty 2017]. It is an agricultural production system that adheres most to the principles of a sustainable economy as it combines the most environmentally beneficial practices with high levels of biodiversity, natural resource protection, and high standards of animal welfare [Gomiero 2008, Lynch 2009, Scialabba 2010, Leifeld 2012, Lee et al. 2015, Skinner et al. 2019]. Consumers view it as a source of food that is healthier than that sourced from conventional farming [Smith and Paladino 2010], although the literature is not unanimous about it. Some studies found organic food to have a lower content of nitrates and nitrites [Rutkowska 2001] and a greater content of phenyl compounds [Carbonaro 2002] and pesticides [Tasiopoulou 2007].

Organic production principles and standards have a variety of economic and environmental consequences. The yields of organic farming are 30–50% lower than those of conventional farming, making production less profitable. This is one of the key barriers to organic farming development in the context of the growing competitiveness of different agricultural systems [Maeder et al. 2002, Adanacioglu and Olgun 2021, De Ponti et al. 2012, Ponisio et al. 2015, Seufert et al. 2012, Muça 2022]. Smaller production volumes per unit of land mean that organic farming can be of limited importance globally as one of the alternatives to conventional farming.

Organic farms do not use chemical inputs such as mineral fertilizers or plant protection products and have a lower livestock density, which affects energy consumption levels, making it less than in other agricultural systems. This is especially important in the context of today's energy crisis and the need to make each sector of the economy more energy-efficient. As demonstrated in one study [Gomiero 2011], organic farming uses 10 to 70% less energy per unit of land and 15 to 45% less energy per ton of production than conventional agriculture. Higher energy consumption per production unit was recorded only for organically grown potatoes and apples. A study carried out in Germany [Kustermann and Hülsbergen 2008] found that energy consumption per hectare was much smaller (2.75 times) in organic farms than in conventional ones. Other research projects focused on fodder plants and cereals revealed that organic farms used 50% less energy than their conventional peers [Hoeppner et al. 2006]. As corroborated by various studies, organic farming demonstrates lower energy consumption than the conventional plant production system – especially when it comes to field crops (cereals, legumes, oilseeds, and forage) – on both a per-hectare and per-unit basis. However, the comparison was inconclusive for poultry and fruit farming [Pimentel et al. 2005, Halberg et al. 2008, Alonso and Guzmán 2010, Lynch

et al. 2011]. Different results were obtained in a study into direct energy consumption (fuel, electricity, heat, and other direct energy sources) in organic and conventional farming systems [Redlichová et al. 2021]. It follows from a Czech research project that organic farms use, on average, more direct energy per production unit than conventional ones. Direct energy consumption per EUR 1-worth of production was demonstrated to be 1.7 times greater than in conventional agriculture. However, the study adopted a narrow approach limited to direct energy consumption – which reflects only a part of energy uses related to organic and conventional farming systems.

In recent years, the organic sector has increased in importance in line with the growing demand for environmental public goods and high-quality food. This is reflected in the sector's 15-20% annual growth rate. Between 2004 and 2019, the area of organic farmland worldwide increased from circa 30 million ha to 72.3 million ha, and the total area of organic agricultural land grew by 69% over the last decade [Willer et al. 2021]. In 2019, the global market for organic food was worth EUR 106 billion, with more than half (68%) being shared between three countries: the US (EUR 44.7 billion), Germany (EUR 12 billion), and France (EUR 11.3 billion). Market growth is mostly witnessed in the US, European Union (EU) countries, and China. In EU countries, it was worth EUR 41.4 billion in 2019, with a 39% share in the global market for organic food. Despite the relatively high growth rates recorded in the market for organic food, some countries witnessed a decline in the number of organic farms in certain periods.

LITERATURE REVIEW

While there is a noticeable increase in organic farming in many countries, the phenomenon of reverting to conventional farming persists. For example, in Germany, between 2007 and 2010, every 11th organic farm converted back to conventional farming [Heinze and Vogel 2012]. The average withdrawal rate from organic farming by producers in the EU was 7.3% in 2005 [Llorens Abando and Rohner-Thielen 2007]. The development of organic farming is influenced by the increase in the number of new organic farms and the number of entities opting out of this form of agriculture. Therefore, designing an effective policy to promote organic farming requires understanding the factors driving development and the reasons for abandonment.

The shift away from organic farming is not a commonly addressed problem. One of the major reasons for that is the difficulties in accessing contact details of farms that discontinued organic production – hence, studies mostly focus on existing organic farms rather than on those who cease. The most frequently addressed aspects of existing holdings are the determinants of conversion [Kallas et al. 2010, Sapbamrer and Thammachai 2021], socioeconomic characteristics of farmers [Flaten et al. 2010, Azam and Banumathi 2015], farmers' typology [Darnhofer et al. 2005, Läpple and Van Rensburg 2005], and attitudes towards and motives behind going organic [Cranfield et al., 2010; Sriwichailamphan and Sucharidtham 2014]. In turn, when it comes to farmers who discontinued organic production, studies focus on the reasons for discontinuation [Sierra et al. 2008, Alexopoulos et al. 2010, Ferjani et al. 2010, Koesling et al. 2012, Heinze and Vogel 2017] and emphasize the complexity and diversity of farmers' decisions to shift away from the organic system. As shown in a study by Rigby et al. [Rigby et al. 2001], factors such as age, education, gender, farm size, and membership in producer associations impact how likely a farmer is for re-embark on the organic path. Klonsky and Smith [Klonsky and Smith 2002] found that smaller farms and vegetable producers are more likely to discontinue organic production. Regouin [2002] identified several reasons for moving away from the organic system, including the discontinuation of farming operations, the absence of outlets, insufficient production profitability, and restrictive regulations. A number of studies [Rigby et al. 2001, Ploomi et al. 2006] demonstrated that the decision to discontinue was driven by insufficient levels of subsidies and profitability and by amendments to regulations and requirements [Sierra et al. 2008, Kirner et al. 2006]. According to a comprehensive literature review by Sahm et al. [2013], such decisions are a combined effect of multiple factors, with economic ones being of key importance.

The shift away from organic farming was witnessed

in Poland, too. In the years immediately following the accession to the European Union and the introduction of financial support under the CAP, there was rapid quantitative growth of organic farming. It primarily means that despite an increase in the number of organic farms and in the area of organic farmland, the supply of organic products remained low. In 2004–2019, the share of organic farms covered by support measures in the total number of organic farms fluctuated between 87.1% (2018) and 98.3% (2011 and 2012) [Zieliński 2021]. Over that period, the share of agricultural land supported under the CAP in total area of organic farmland varied in the range of 74.8% (2019) to 95.2% (2010). The growth in the number of organic farms and agricultural land area was particularly sharp between 2004 and 2013. In that period, the growth rates were 619% for the number of organic farms (going up from 3,705 to 26,598) and 710% for the area of organic farmland – from 82,730 ha (0.5% of the total area of agricultural land in Poland) to 669,969 ha (3.7%).

The situation changed in 2014 with the breakdown in the organic farming growth trend; that year marked the first drop in the number of organic farms and in the area of organic farmland. From 2014 to 2019, the net decline in organic farms was between 1,500 and 2,000, totaling 8,000 [IJHARS 2021]. In 2013-2018, the area of organic farmland decreased by 185,000 ha, from 670,000 ha (in 2013) to 485,000 ha. In 2019, following a five-year decline, the area under organic crops grew to reach 509,000 ha, whereas the number of farms dropped to 18,600. The increase in the area of organic farmland with a concurrent drop in the number of farms may be indicative of a restructuring towards a greater average farm size. Of note is the spatial differentiation of the phenomenon of withdrawing from organic farming (Table 1).

Table 1. Number of organic farmers and agricultural area under organic farming in 2013–2019 in voivodeships

Voivodeships	Number of organic farmers			Agricultural area under organic farming		
	2013	2019	Decrease in absolute numbers	2013	2019	Decrease in absolute numbers
Dolnośląskie	1,189	690	499	37,455	28,898	8,557
Kujawsko-Pomorskie	415	387	387	11,152	7,733	3,419
Lubelskie	2,129	1,951	178	40,819	28,829	11,990
Lubuskie	1,422	860	562	54,693	40,835	13,858
Łódzkie	528	509	19	10,342	9,290	1,520
Małopolskie	1,838	721	1,111	17,005	9,747	7,258
Mazowieckie	2,609	2,241	368	63,445	43,490	19,955
Opolskie	88	63	25	3,542	3,271	271
Podkarpackie	1,750	1,040	710	29,506	13,757	15,749
Podlaskie	3,407	2,864	543	63,548	51,642	11,906
Pomorskie	893	525	368	28,721	20,819	7,902
Śląskie	242	129	113	7,220	3,557	3,663
Świętokrzyskie	1,207	637	570	15,123	8,894	6,229
Warmińsko-Mazurskie	4,235	3,239	996	116,199	107,507	8,692
Wielkopolskie	1,006	727	279	41,616	27,734	13,882
Zachodniopomorskie	3,640	2,054	1,586	129,586	101,639	27,947
Poland	26,598	18,637	7,961	669,969	507,637	162,332

Source: [Condition… 2015, A report… 2021].

The largest decreases in organic agricultural land were recorded in the following voivodeships: Zachodniopomorskie, Mazowieckie, Podkarpackie, Wielkopolskie, and Lubuskie. Together, these five voivodeships accounted for 56% (91,000 hectares) of the total decline in organic agricultural land in 2019. The high rate of abandonment of organic farming during the years 2014–2019, indicated by a decrease in the number of farms by 30% and the agricultural land area by 24%, raises a research question about the reasons behind the significant regression of organic farming in Poland.

In the rapid development period of Polish organic farming (2004–2013), it was easy to access organic payments under the Rural Development Program (RDP) upon meeting minimum organic requirements. Also, the amount of support was decoupled from the organic production volume. With extremely beneficial and readily available payments, organic farming embarked on a path of rapid quantitative growth. That system also contributed to some adverse developments, such as hundreds of hectares of non-producing walnut orchards and permanent pasture which served no actual purpose [NIK 2019]. The pre-2013 conditions for support are a testament to the inefficiency of then-applicable mechanisms stimulating the development of organic farming, in a context of some farmers failing to duly comply with organic production standards and making insufficient use of the potential for increasing the supply of organic products in the market [Golinowska 2013]. The deficiencies of the agricultural policy implemented at that time to stimulate the development of organic farming are also reflected by low production volumes, insufficient supply, and permanently high price levels despite the sharp increase in the area of organic farmland.

The regression period 2014–2020 witnessed the introduction of changes to the criteria for supporting organic farming under the RDP. The primary purpose of these amendments was to increase the supply of products and to couple the cultivation of organic fodder plants on arable land and permanent pastures with animal production. From 2015, no less than 30% of harvested organic agricultural crops, vegetables, herbs, and fruits had to be processed, sold or delivered to other farms. As regards forage crops cultivated on arable land and permanent pasture, a requirement was introduced that all harvests be fed to animals or be delivered for sale or to other farms, and the minimum livestock density was initially set at 0.3 LU/ha of agricultural land (0.5 LU/ha of agricultural land from 2019). Polish organic farming demonstrates low production volumes (Table 2), with a prevailing share of cereals for grain production (41%), and a small amount of rye and winter cereals and mixtures of oats and spring cereals.

Table 2. Structure of organic crop production in Poland in 2019

Specification	Tons	%
Cereals for the production of grain	271,901	41.0
Mixtures of rye and winter cereals	103,480	15.6
Mixtures of oats and spring cereals	62,652	9.4
Dried leguminous plants and protein crops for the production of cereals	25,567	3.9
Grain maize yield and mixture of corn cobs	17,031	2.6
Root crops	17,069	2.6
Barley	5,428	0.8
Fresh vegetables	70,398	10.6
Strawberries	7,443	1.1
Temperate climate fruits	82,460	12.4
Total	663,708	100.0

Source: own study based on Eurostat 2023

Previous instruments used in stimulating the growth of organic production proved to be inefficient and failed to trigger the expected supply effect, which is one of the key problems facing the Polish market for organic food [Hermaniuk 2016, Górska-Warsewicz 2021]. In Poland, organic food accounts for a small percentage of total food sales. In 2019, the estimated value of the market for organic food was EUR 31 million (i.e., 0.5% of the total food market), making Poland the world's 19th-largest organic food market. In the last few years, it has grown at a two-digit rate between 10% and 20%, reaching as high as 30% in 2020. Nearly every fifth Polish resident (23%) buys organic food but spends a small amount (around EUR 8 per year) on it [Rynek żywności 2019]. The insufficient supply of processed domestic products is an intrinsic characteristic of the Polish market [Kociszewski 2014, Smoluk-Sikorska 2021]. The growing demand side of the market is not enough to stimulate domestic organic production, especially processed products. The shortages in the organic supply chain are the consequence of multiple socioeconomic and technical barriers, the identification of which has so far only been addressed in a few studies [Kołoszko-Chomentowska and Stalgiene 2019, Łuczka and Kalinowski 2020, Drygas et al. 2019]. Their authors pointed out key obstacles such as overly burdensome bureaucratic procedures which condition the grant and maintenance of organic production certificates and a strong instability of eligibility requirements for organic payments. The studies also indicate the institutional barriers to the development of organic farming in Poland, attributable to the Ministry of Agriculture and its agencies.

Despite some adverse developments witnessed over the last years in Polish organic farming (i.e., the decline in the number of farms and the area of agricultural land), the market for organic food is expected to grow steadily at an annual rate of up to 20% by 2030. It will be driven by a growing consumption of organic food and the improved availability of organic products [MRiRW 2021]. In that period, the potential of Polish organic farming is expected to be used with a focus on the domestic market to trigger a stronger-than-ever supply effect. It means the need to reverse the unfavorable developments that have occurred over the recent years, namely the decline in the area of organic farmland and the number of farms. It is, therefore, important to investigate why farmers discontinue organic farming and the factors that make them re-embark on the organic path. The research gap in this field was the reason to continue the study to answer the following questions:

1. What are the socio-demographic characteristics of farmers who shifted away from organic farming?
2. What are the main reasons for discontinuing organic farming?
3. What factors play a positive/negative role in their future re-embarking on the organic path?

Answering these questions has both a cognitive and a practical dimension as it may provide an important source of information for strengthening the internal and external factors having a restrictive effect on the shift away from organic farming. This is Poland's first research project undertaken to explore the discontinuation of organic farming among three types of operators: "committed", "pragmatic", and "committed pragmatic" farmers.

MATERIALS AND METHODS

This study was carried out with former farmers who ceased organic farming between 2014 and 2018. It comprised two stages. The first was an interview with a non-random group of 18 farmers who had discontinued organic farming (selected from a contact list kept by the General Inspectorate of Agri-Food Trade Quality). The purpose of the interviews was to preliminarily explore the motives behind the decision to convert to organic farming and to convert back from it, as well as the barriers to re-embarking on the organic path. The information collected this way provided an initial basis for preparing the actual survey. The second stage used a diagnostic survey with an original questionnaire administered to farmers who had shifted away from organic production.

The survey was conducted in 2021. Initially, 534 questionnaires were sent by mail. As the return rate was low, the procedure was repeated twice. Consequently, 134 questionnaires were received back out of the total of 1,569. Access to contact details of farms who had discontinued certified organic production was granted by the General Inspectorate of Agri-Food

Trade Quality for the duration of this study. The recipients of survey questionnaires were farms compliant with the requirements of the relevant regulation [Regulation EU 2018]. The questionnaires were sent to farms located in all voivodeships (as per their spatial distribution over the Polish territory).

The questionnaire was composed of 23 questions divided into two groups. The first one included the basic characteristics of farms (gender, age, education, farm size, farming experience, and farming type) and addressed the farmers' socio-demographic profile. The second consisted of questions about the motives for going organic, the relationships with the market and sales aspects, the reasons for discontinuing organic production, and the factors encouraging the farmers to re-embark on the organic path. Some questions were open and allowed the interviewees to extend and comment on certain answers.

The survey questionnaire identified three types of organic farmers based on the prevailing motives and goals of going organic. Identifying organic farmer types was partly based on the division used by Fairweather [1999] and Darnhofer et al. [2005]. Fairweather [1999] identified five types: "committed conventional" farmers, "pragmatic conventional" farmers, "environment-conscious but not organic" farmers, "pragmatic organic" farmers, and "committed organic" farmers. The farmers' preferences and goals, impact on farming methods, and strategies and values were the criteria used in defining the types listed above. The same typology was employed in Darnhofer et al. [2005].

This survey identified three types of organic farmers: "committed" (1), "pragmatic" (2), and "pragmatic committed" (3). An explanation of the criteria used in identifying the types could be found in the questionnaire. According to the assumptions, the "committed" (ideological) type means farmers who prioritize environmental, ethical and health values and standards in their decision-making process. Type I is remarkably environmentally aware and follows a unique environmental ideology. The "pragmatic" type of farmer, in contrast to the "committed" type, consists of those who prioritize economic benefits such as profitability, cost management, and price premiums. They focus on maximizing their income and revenue when choosing their farming methods. On the other hand, the third type, known as "pragmatic committed", is a blend of both previously mentioned types. These farmers don't have a dominant motive in their decision-making process. Instead, they simultaneously pursue both environmental and economic goals, shaping their farming methods to harmonize with both of these objectives.

Based on the presented descriptions, the survey asked the farmers to associate themselves to one of the three farm types. In this study, the largest share of farmers (56%) declared to be "pragmatic committed", 26% viewed themselves as "pragmatic", whereas "committed" had the smallest share of 18%.

Men accounted for more than half (57%) of the interviewees (Table 3). The share of men was particularly high (75%) in the "pragmatic" type. The average age of the interviewees was nearly 55 years. A large part (47%) of the "committed" type were people close to retirement age (aged over 60), which – in Poland – is 60 years for women and 65 years for men. The demographic structure of the respondents can significantly impact the distribution of answers to many questions asked in the survey. 47.6% and 31% of the interviewees had a tertiary and a secondary education, respectively. These figures can be considered high – especially the tertiary education rate. The greatest share (57%) was represented by farmers with a relatively short record of organic farming (up to five years, which coincided with the period of accessing financial support under the RDP). Ranked second were farmers with a track record of 6 to 10 years (31%); those with a 16-year or longer history ranked at the bottom (12%). The oldest farm was established in 1980. The average area of farms surveyed was 19 ha, which is 9 ha less than the average size of organic farms in Poland (28 ha) and 8 ha more than the average size of all farms.

Over half of farmers surveyed (57%) switched to conventional methods after discontinuing organic farming. It is, therefore, reasonable to believe that their decisions could be impacted by a cost-and-benefit analysis of choosing an alternative agricultural system in the context of evolving farming conditions. For some of the farmers covered by this study, the analysis indicated that superior benefits can be derived from conventional farming.

Table 3. Selected characteristics of farmers covered by the study

Specification	Characteristics	Share (%)	Committed (Type 1)	Pragmatic (Type 2)	Pragmatic committed (Type 3)
Gender	Women	42.6	38.9	24.0	50.9
	Men	57.4	61.1	76.0	49.1
Age	< 30	3.0	–	4.1	3.8
	31–40	9.1	5.9	12.5	9.4
	41–50	25.3	17.6	25.0	30.2
	51–60	29.3	29.4	29.2	32.1
	>60	33.3	47.1	29.2	24.5
Education	Primary/junior high	3.9	5.6	8.0	1.8
	Basic vocational	17.5	22.2	28.0	9.3
	Secondary	31.0	38.9	20.0	33.3
	Tertiary	47.6	33.3	44.0	55.6
Area of the farm (ha)	< 5	11.8	11.1	8.0	13.2
	5.01–10	22.5	27.8	20.0	18.9
	10.01–25	34.3	27.8	32.0	30.2
	>25	31.4	33.3	40.0	37.7

Source: own study based on survey data.

RESULTS

The results of this study suggest that different aspects guided farmers in making their decisions to go organic. The interviewees were asked to indicate the key motives behind switching to organic farming and could add individual causes not specified in the survey. The questionnaire included both economic and non-economic motives. The former includes financial support for organic farming, profitability, production costs, and price premiums – whereas the latter comprise environmental protection, interest in organic farming, family health, and environmentally friendly production processes.

The study found high levels of support (42%) and environmental protection (38%) to be the respondents' key reasons for going organic. Note, however, that generous support was important only to farmers classed as "pragmatic" and "committed pragmatic" (indicated by 72% and 52% of interviewees, respectively). "Pragmatic" farmers also attached great importance to low production costs (indicated by 52%). The "committed" type declared family health (42%) and environmental protection (33%) as the key motives. Conversely, they found economic reasons (such as high support for organic farms, low production costs and owned resources of land and labor) to be irrelevant.

The top two reasons for discontinuing organic farming (indicated by the same percentage of respondents) are the end of the five-year support program (42.3%) and burdensome bureaucracy and inspections (42.3%) (Table 5). Other prominent causes are insufficient support (33%), low yields (30%), and low production profitability (28%). The distribution of replies relating to the causes for the discontinuation varied in the function of farmer types identified in the study. In the "pragmatic" group, the largest share of respondents (60%) indicated the end of the five-year support

Table 4. Key motives behind going organic

Specification	Total	Type Committed (Type 1)	Pragmatic (Type 2)	Pragmatic committed (Type 3)
High support for organic farms	44.2	–	72.0	51.9
Environmental protection	38.1	33.3	28.6	45.2
Interest in organic farming	34.1	16.7	18.2	47.8
Family health	31.7	41.7	28.6	32.3
Low production costs	30.8	–	52.0	33.3
Environmentally friendly production processes	27.0	8.3	28.6	35.5
Green lifestyle and philosophy	22.1	11.1	8.0	35.2
Land and labor resources	17.1	–	18.2	21.7
Concern for animal welfare	15.9	25.0	7.1	16.1
High price premiums for organic food	14.4	5.6	24.0	13.0

Source: own study based on survey data.

program and low production profitability (52%). For the "pragmatic committed" type, the top two reasons were burdensome bureaucracy and inspections (50%) and the end of the support program (48%). In turn, the "committed" farmers found the key motive to be bureaucratic regulations and inspections (28%).

Many farmers found the increase in payment rates under the 2014–2020 RDP insufficient to operate an organic farm in the context of growing requirements. This is corroborated by the distribution of the respondents' replies on how they view the organic farming support system (Table 6). The vast majority of farmers agreed that the amount of payments was small, both generally (41%) and with respect to certain crops (48%) (Table 5). Conversely, they differed in their opinions on organic requirements and standards, ranging from "excessive" (48%) to "adequate" (48%). Most interviewees (58%) had a negative view of livestock density requirements and found them useless. This can suggest they lack sufficient understanding of the organic farming concept, which is largely underpinned by sustainable management of feed and

Table 5. Main reasons for discontinuing organic farming

Specification	Total	Committed (Type 1)	Pragmatic (Type 2)	Pragmatic committed (Type 3)
End of the five-year support program	42.3	11.1	60.0	48.1
Burdensome bureaucracy and inspections	42.3	27.8	44.0	50.0
Insufficient financial support	32.7	22.2	40.0	35.2
Low yields	29.8	11.1	40.0	35.2
Low production profitability	27.9	5.6	52.0	27.8
Frequent amendments to organic regulations	18.3	5.6	20.0	22.2
Low price premiums for organic products	17.3	5.6	8.0	27.8

Source: own study based on survey data.

fertilizers. Nearly half of the farmers surveyed believe the support-related administrative procedures to be overly complicated and time-consuming (46%).

The farmers surveyed had a limited connection to the market. While most of them declared to sell organic products (67%), the share of organic sales in their total sales was extremely small – the greatest part (38.6%) of interviewees indicated a minimum level (i.e., up to 20% (Table 7)). However, two types of farmers ("pragmatic committed" and "pragmatic") reported a high share of 43 and 46%, respectively. It means that nearly half of the respondents recorded a very small percentage of revenue from organic sales. The "committed" type was more advantageous, with every third farmer (the highest share) falling in the bracket of 81 to 100%.

The study asked the farmers about the reasons for the insufficient sales of organic products, assuming

Table 6. Opinions on the organic farming support system under the RDP

Specification		
Evaluation criteria (in %)		
Organic requirements and standards		
Excessive 48.1	Adequate 48.1	Insufficient 3.8
Payment level		
Adequate 11.1	Insufficient for some crops 47.8	Generally insufficient 41.1
Support-related administrative procedures		
Too complicated and time-consuming 45.7	Needed yet time-consuming 40.2	Do not pose a problem 14.1
Livestock density condition		
Needed 26.3	Needed yet excessive 15.8	Useless 57.9

Source: own study based on survey data.

Table 7. Share of revenue from organic sales in total sales

Specification	Total	Committed (Type 1)	Pragmatic (Type 2)	Pragmatic committed (Type 3)
0–20%	38.6	25.0	42.9	45.7
21–40%	21.5	8.3	28.6	22.9
41–60%	9.2	16.7	7.1	5.7
61–80%	9.2	16.7	7.1	5.7
81–100%	21.5	33.3	14.3	20.0

Source: own study based on survey data

that it could impact their decision to discontinue organic farming. In the long run, insufficient supply can undermine the economic purposefulness of operating an organic farm. Nearly half of the farmers surveyed (41%) declared producing for their own needs as the cause of supply deficiencies (Table 8). Other reasons were the small production scale (20%) and marketing problems (12%). Production for their own needs was identified as the cause of insufficient supply by two farmer types: "pragmatic" and "committed" (the greatest share of 47% was recorded in the "pragmatic" group).

One of the goals of this study was to explore the factors which condition the farmers' re-embarking on the organic path. The survey confirmed that the financial aspect (in the form of support) was of greatest importance (Table 8). Nearly every third interviewee (29%) indicated higher financial support as a factor that conditions their switch back to organic farming. It was of major importance to "pragmatic" farmers (30%) and smaller importance to the "committed" group (25%). The second important factor in shifting back to organic farming is the development of local outlets (22%). They play a crucial role in short supply chains in which producers have a greater share in the margin and in the final price of products offered. Moreover, the development of local markets contributes to reducing food miles, which is advantageous to the environment and is particularly valued by highly environmentally aware farmers [Kawęcka and Gebarowski 2015, Łuczka 2021, Wojciechowska-Solis 2022].

Many farmers covered by this study do not see any opportunity for switching back to organic farming. The top three barriers they identified are the difficulties related to the administrative burden (28%), insufficient financial support (23%), and great volatility of organic farming regulations (20%) (Table 10). Low

Table 8. Reasons for the insufficient supply of organic products to the market

Specification	Total	Committed (Type 1)	Pragmatic (Type 2)	Pragmatic committed (Type 3)
Producing only to address the farmers' own needs	41.1	44.5	46.6	37.5
Small production scale	19.6	22.2	13.3	25.0
Problems in selling the products	11.8	11.3	6.7	12.5
The farmers never considered marketing their products	9.8	11.1	20.0	4.2
Lack of demand in the local market	5.9	11.1	6.7	4.2
Other	11.8	–	6.7	16.6

Source: own study based on survey data.

Table 9. Factors encouraging the farmers to re-embark of the organic path

Specification	Total	Committed (Type 1)	Pragmatic (Type 2)	Pragmatic committed (Type 3)
Greater financial support	28.7	25.0	30.4	29.7
Development of local outlets for organic products	22.1	25.0	17.4	23.0
Increase in demand for organic products	16.4	20.0	13.1	14.9
Increase in organic food prices	15.6	15.0	21.7	13.5
Reduction of bureaucratic procedures	9.0	10.0	4.3	10.8
Other	8.2	5.0	13.1	8.1

Source: own study based on survey data.

Table 10. Barriers to switching back to organic farming

Specification	Total	Committed (Type 1)	Pragmatic (Type 2)	Pragmatic committed (Type 3)
Difficulties related to the administrative burden	27.7	36.4	25.0	28.0
Insufficient financial support for organic farming	23.1	18.2	25.0	24.0
Great volatility of organic farming regulations	20.0	18.2	16.7	24.0
Low profitability of organic production	13.8	13.2	14.5	15.0
Narrow development prospects for the farm	7.7	–	8.3	8.0
Development of conventional farming	6.2	9.0	8.3	4.0
Transferring the farm	1.5	–	4.2	–

Source: own study based on survey data.

levels of organic farming support and a heavy bureaucratic burden are the two answers given as both a reason for discontinuing organic farming and a barrier to switching back. It means that the interviewees attach great importance to institutional conditions for developing Polish organic farming. Many farmers surveyed have a negative opinion on the level of payments and expect it to grow.

DISCUSSION

In this survey, there was a difference in age and farm size between the interviewees and the total population of Polish organic farmers. According to some studies, these characteristics can play an important role for farms that discontinued organic farming [Rigby et al., 2001; Gambelli and Bruschi, 2010]. In this study, the average age of the farmers was 55 years, seven years above the average for the general population of organic farmers. The survey does not corroborate the thesis that older farmers are less inclined to discontinue organic farming.

The holdings covered by this survey were 9 ha smaller than the average area of Polish organic farms. This is consistent with Ferjani et al. [2010], which suggests that farmers who shifted away from organic production operated on a smaller area than the average size of organic farms. It can be explained by smaller farms being less profitable than larger holdings. The increase in organic requirements under the 2014–2020 RDP, especially with respect to livestock density, affected the costs of small farms and made their profitability more likely to drop to a level unacceptable to some farmers. In these circumstances, discontinuing the farming business could have been a reasonable thing to do – especially in the case of small farms without animals. The above is corroborated in a study by Ziętara and Mirkowski [2021], who claim that the decline in the number of organic farms and in the area of organic farmland in Poland was caused by high requirements for animal husbandry and related organizational difficulties – in particular, in farms with a smaller production potential whose users often have an additional off-farm job.

For the respondents, high levels of support and environmental protection were the key reasons for going organic. From the perspective of motives that guided their choices, the farmers formed a heterogeneous group, as also confirmed by other studies [Läpple 2013, Flaten et al. 2006]. While the financial motive was important to the "pragmatic" and "pragmatic committed" types, it was of no relevance at all to the "committed" group. This study suggests that the farmers' pragmatism, manifested in their being guided by financial considerations, can make them more willing to discontinue organic farming in the case of a deterioration in access to payments or a decline in profitability. This is consistent with the findings of many authors [Flaten et al. 2010, Rigby et al. 2001, Plomi et al. 2006, Kaltoft and Risgaard 2006], who identified small financial benefits as one of the key reasons why farmers switch back to the conventional system.

The outcomes of this study suggest that the farmers believe the reasons for shifting away from organic farming to be mostly related to external factors. It is confirmed by the distribution of replies to the question on the reasons for discontinuing organic production and on how the respondents view the organic farming support system. Of the reasons for ceasing, particular attention is given to the institutional environment and its underlying support system, administrative procedures, and regulations. The study confirmed the assertion that the decline in the area of organic farmland in Poland was related to the farmers being primarily focused on financial support during the applicability of low environmental requirements [Brodzińska 2017, Jezierska-Thöle and Biczkowski 2017, Zuba-Ciszewska et al. 2019, Łuczka et al. 2021]. Support was easily available under the 2004–2007 and the 2007–2013 RDPs, which encouraged farmers seeking short-term goals to undertake an organic commitment. It corroborates the opinion that financial support has a substantial impact on the decisions of Polish farmers regarding both the conversion to and the shift away from organic farming [Luty 2016, Drabarczyk and Wrzesińska-Kowal 2015, Komorowska 2015]. The farmers' support-seeking attitude resulted in a passive consumption of subsidies, which did not create conditions for stimulating the endogenous development of organic farms and strengthening their long-term sustainability framework. The dynamic quantitative growth of organic farming was short-lived because it only coincided with the period of easily attainable environmental requirements for many farmers. In that case, the decisions of support-seeking farmers are a mere consequence of the support policy [Brodzińska 2014]. Some studies suggest that changes in that policy affect the farmers' decision to continue or cease organic farming [Nieberg and Kuhnert 2007].

This is corroborated by the Polish experience related to the development policy for organic farming. It was amended in 2014 with new requirements, especially the need to market a part of harvests to trigger a supply effect and to ensure a minimum level of livestock density in farms cultivating fodder plants on arable land and permanent pasture. The new regulations forced farmers to rethink their choices because many of them, particularly the "pragmatic" group, believed that the organic payment rates were insufficient to run an organic farm in the face of the new regulations. In their subjective view, the marginal costs caused by new requirements were greater than the marginal benefits derived from increased organic payments. This study shows that the farmer community were unanimous in how they saw support for organic farming. According to nearly half of farmers, the rates of organic payments are insufficient, the administrative procedures are overly complicated and time-consuming, and the livestock density requirement is useless. In turn, they were more moderate in assessing the organic requirements and standards, with equal numbers of interviewees finding them to be excessive and adequate. Although the farmers consider the levels of support to be low, it is not reflected in official statistical data – which suggests that organic payments have a large share in the incomes of Polish organic farms (as they account for 80% of incomes derived from agricultural production) [Orłowska 2019, Gołaś 2016].

This study confirmed that organic farms faced the problems of insufficient sales and market connections. Nearly half of farmers, especially the "pragmatic committed" and "pragmatic" groups, recorded a minimum sales volume, contributing up to 20% to total incomes. Other studies also discovered the small amount of marketable organic production, indicating a large percentage of non-commercial holdings and farms which marketed no more than 20% of their produce [Nowogródzka et al. 2013]. The small volume of sales results in an unbalanced market that fails to meet domestic organic food demand [Bryła 2016]. Despite having a quantitative growth trend, organic farming only produces tiny quantities of goods, while the market for organic food expands as a result of goods being imported from Germany, the Czech Republic, Denmark, and many other nations. Considering its potential, the level of consumer environmental and health awareness, and the rising income of the people, the sector's development chances are not being fully utilized because organic food makes up just about 2 to 3 percent of agricultural production.

Financial support for organic farms is strictly related to administrative procedures, which are extensively formalized and time-consuming while generating additional costs and, therefore, can have an adverse

effect on the development of organic farming. As demonstrated in several studies, excessive formalization of the conditions for organic farm certification and inspection, together with frequent amendments to regulations, contributes to farmers discontinuing organic production [Flaten et al. 2021, Kaltoft and Risgaard 2006]. This study confirmed that farmers' negative views of administrative procedures for farm certification and inspection can affect their shift away from organic farming and may also pose a barrier to returning. These reasons were particularly important to farmers classed as "pragmatic" and "committed pragmatic".

In the future, the situation of organic farming could be considerably improved by the implementation of the new strategic plan supporting the goals of the Common Agricultural Policy under the European Green Deal. It simplifies the certification and inspection procedures (especially for small farms) and increases the level of subsidies to organic crops in Poland by 30% (on average), which can encourage farmers to go organic. From 2022, small farms can apply for a group certification procedure and may choose a flat-rate organic payment. Note, however, that to ensure sustainable development of organic farming, it is important not only to drive an increase in the area of land under crops, but also to promote improvements in the farms' economic condition, support the demand side of the market, and build consumer trust. These measures will enhance the farms' market potential through investments in the processing sector and by shortening the supply chain while also making greater efforts to increase consumer awareness and enhance farmers' and consultants' knowledge.

IMPLICATIONS FOR AGRICULTURAL POLICY

Our research reveals that a considerable number of Polish farmers quit operating organic farms, with the figure exceeding 8,000 between 2014 and 2019, as a result of agriculture policy's volatility in carrying out its stated objectives. Therefore, we believe that the reversal of regressive processes and the reduction of resignation from organic farming is conditioned by improving the efficiency of the organic farming development policy in Poland. The experience gained so far proves the high variability of the institutional environment in which organic farms functioned. The quality of the conditions shaped by agricultural policy is crucial for the future of organic farming due to the important role of public support in stimulating its development. Empirical research shows that for Polish farmers, ecological subsidies as compensation for lost benefits related to the choice of an ecological farming system are one of the most important factors shaping their profitability. These subsidies are significant for organic farms involved in open-field production and mixed-plant animal production. Without subsidies, these farms can only generate a small income compared to conventional farms [Zieliński 2022], meaning that these farms are fully dependent on state aid. For this reason, this support is crucial for most organic farms, and the rules governing granting such aid, including the conditions for granting it as such, should be as stable as possible. Future rules changes should be announced appropriately in advance, enabling farmers to estimate future costs of adaptation to new conditions of agricultural activity. Otherwise, institutional risk increases due to the uncertainty of changes in state policy and regulations. This is confirmed by our research, which indicates that farmers identified the instability of regulations and administrative procedures as one of the main reasons for abandoning organic farming.

Attaining the subsequent stages of development for organic farming set by the European Green Deal is a challenge for agricultural policy. The implementation of the goal set for Polish organic farming to achieve at least 7% of the total agricultural land area by 2030 requires improvement of the current agricultural policy – not only increasing its stability and efficiency in achieving the goal, but also reducing regulatory and administrative barriers to running organic farms.

CONCLUSIONS

Understanding why farmers resign from organic schemes could be a major source of information for decision-makers in further improving organic farming development policy. This can empower them to make more efficient decisions that stimulate the institutional environment to generate favorable conditions for the sustainable development of organic farming. Future policies designed to promote organic farming

are recommended to include a support mechanism that reduces regulatory barriers and is committed to both environmental and market-driven objectives.

The authors of this paper realize certain limitations present in the research procedure utilized. One of the ways to enhance the scope of investigations into future studies is by exploring whether current organic farmers intend to continue or shift away from operating a certified farm.

To better understand the dynamics of organic farming development, it is also necessary to explore in detail the connections between organic agricultural producers and their institutional environment. Furthermore, it would be advisable to conduct a qualitative investigation into the reasons for shifting away from organic farming with subject matter experts, particularly with the representatives of agricultural consultancy centers, agricultural chambers, industry unions and associations, and local governments. This would provide an opportunity to increase awareness and knowledge of the topic, which continues to be insufficient.

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EKONOMICZNO-SPOŁECZNE PRZYCZYNY REZYGNACJI Z ROLNICTWA EKOLOGICZNEGO: POLSKIE STUDIUM PRZYPADKU

STRESZCZENIE

Cel: Praca stanowi próbę wypełnienia luki w badaniach dotyczących przyczyn zaprzestania uprawy ekologicznej w Polsce. Celem artykułu było rozpoznanie przyczyn rezygnacji polskich rolników z prowadzenia gospodarstwa ekologicznego oraz barier i czynników warunkujących powrót do rolnictwa ekologicznego. **Metody:** W pracy wykorzystano dane z badania przeprowadzonego wśród 134 polskich rolników, którzy zrezygnowali z uprawy ekologicznej. Badanie zostało przeprowadzone wśród rolników, którzy zaprzestali ekologicznej uprawy w okresie między 2014 a 2018 rokiem. Składało się z dwóch etapów: pierwszy to wywiad z grupą 18 rolników, którzy zrezygnowali z uprawy ekologicznej. Drugi etap to badanie za pomocą kwestionariusza ankietowego, który został wypełniony przez rolników, którzy zrezygnowali z produkcji organicznej. Badanie zostało przeprowadzone w 2021 roku. Pierwotnie wysłano 534 kwestionariusze. Ponieważ odsetek zwrotu był niski, procedura została powtórzona dwukrotnie. W rezultacie otrzymano 134 zwrotnych kwestionariuszy spośród ogólnej liczby 1569. **Wyniki:** Badania dowiodły, że najważniejszymi przyczynami rezygnacji z prowadzenia gospodarstwa ekologicznego było: zakończenie pięcioletniego okresu finansowego wsparcia, wysokie koszty produkcji, zbyt niski poziom wsparcia, niskie plony oraz nieopłacalność produkcji. Wśród trzech badanych typów rolników, dominował typ „pragmatyczny zaangażowany", który

w wyborze ekologicznej metody gospodarowania kierował się zarówno motywami ‚ekonomicznymi w postaci finansowego wsparcia i przychodów, jak i motywami środowiskowymi, ale wśród przyczyn rezygnacji z prowadzenia gospodarstwa główne znaczenie miał czynnik finansowy (zakończenie pięcioletniego programu wsparcia) i instytucjonalny (uciążliwa biurokracja i kontrole). **Wnioski:** W badaniach dotyczących rolnictwa ekologicznego ważne znaczenie ma problem przyczyn rezygnacji niektórych rolników z prowadzenia gospodarstwa ekologicznego. Jest stosunkowo niewiele opracowań z tego zakresu, pomimo że skala rezygnacji z rolnictwa ekologicznego w niektórych krajach jest znaczna. Polska jest przykładem kraju, w którym zjawisko wycofania z rolnictwa ekologicznego w kilku ostatnich latach nasiliło się i spowodowało spadek powierzchni użytków ekologicznych. W latach 2014–2018 spadek ten wyniósł 185 tys. ha.

Słowa kluczowe: uprawa ekologiczna, przyczyny zaprzestania, wsparcie finansowe, środowisko instytucjonalne, bariery powrotu, Polska

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FUNCTIONING OF SELECTED BEEKEEPING FARMS IN POLAND DURING COVID-19 PANDEMIC

Mariusz Maciejczak✉, Igor Olech, Katarzyna Kalinka

Warsaw University of Life Sciences – SGGW, Poland

ABSTRACT

Aim: The purpose of this study was to examine the impact of the COVID-19 pandemic on selected beekeeping farms, as well as to compare the experience of chosen Polish beekeepers with the impact of the pandemic on beekeeping in other countries, as shown in the literature. **Methods:** The study was conducted using a literature review and questionnaire interview (n = 36) among beekeepers in the Mazowieckie and Warmińsko-Mazurskie provinces according to a 5-level Likert scale. Responses on industry topics were correlated with opinions on the positive and negative impact of the pandemic on beekeeping using the Pearson correlation. **Results:** Approximately 60% of respondents said that the pandemic had little or even no impact on their beekeeping activities. This may have been related to the peculiarities of Polish beekeeping, which is not dependent on seasonal labor. There were also moderate correlations between negative opinions on the impact of the pandemic and a lack of contact with other beekeepers and the seasonality of production and related sales as well as between opinions on the time-consuming nature of production and the positive impact of the pandemic on the beekeeping market. **Conclusions:** It was stated that beekeepers proved to be more resilient to supply chain breakdowns compared to beekeeper experiences in countries such as Canada and the UK. The nature of beekeepers' marketing channels may affect the speed with which they can sell their goods. The impact of the pandemic on Polish beekeepers has not been previously studied.

Keywords: apiculture, beekeeping, COVID-19, Poland
JEL codes: D22, O13

INTRODUCTION

The COVID-19 pandemic affected most, if not all, of the economy. While most industries suffered due to a halt in investment and consumption, some benefited from changing consumer behavior patterns. Industries can even be divided into "winners" and "losers" of the pandemic. The economic perturbations had a mixed impact on various agri-food industries [Zawojska 2021]. For example, while in the food economy the pandemic negatively impacted the fully closed HoReCa industry [Grębowiec 2021], the food industry itself experienced the smallest decline [Rokicki 2020]. Moreover, increased attention to health has had a positive impact on, for example, apple sales [Grębowiec 2021]. However, the production of these exemplary apples would not be possible without bees, which pollinate entomophilous plants such as apple trees [Majewski 2016]. To accurately assess the impact of a pandemic on the agri-food sector, it is necessary to study each of its components separately. Our study focuses on the impact of the pandemic and its consequences on the selected producers within the beekeeping industry in Poland.

Mariusz Maciejczak, https://orcid.org/0000-0002-0630-5628; Igor Olech, http://orcid.org/0000-0003-1920-8760
✉mariusz_maciejczak@sggw.edu.pl

AIM AND METHODS

The main objective of the article was to determine the impact of the 2020–2021 COVID-19 pandemic on selected beekeepers in Poland. To achieve this goal, a literature review was conducted on both the Polish beekeeping industry and the consequences of the pandemic for the beekeeping industry in other countries. For the 2021 study, an online survey was conducted on the operation of the honey distribution chain in the Mazowieckie and Warmińsko-Mazowieckie provinces. Its purpose was to determine how beekeepers store, transport, and sell their products, including during the pandemic period. The survey was created in an online form, and 36 beekeepers participated. The sample was collected according to the purposive selection method, and the selection criterion was conducting the business activities of beekeeping during the pandemic. Beekeepers are a small group of agricultural producers, so the sample did not meet the requirements of representativeness, but it was considered that its randomized size was sufficient to draw appropriate conclusions, which are informative. However, they cannot be generalized to Poland as a whole.

It included both single-choice (with a 5-point Likert scale) and multiple-choice questions. Finally, one open-ended question was posed. All questionnaires were filled out correctly, making it possible to use them all in the study. Responses on the impact of the COVID-19 pandemic on the honey market and distribution (both expressing negative and positive impacts of the pandemic) were correlated using Pearson's correlation coefficient in two tables, dividing the impacts into positive (Table 1) and negative (Table 2).

CHARACTERISTICS OF THE BEEKEEPING SECTOR IN POLAND

Beekeeping is usually viewed in terms of supplying consumers with bee products (most commonly honey). However, the key role of beekeeping is not so much to meet the demand for honey and other products, but to pollinate entomophilous plants, as more than a 1/3 of crop production in agriculture requires pollination by bees [Koltowski 2007, Majewski 2017]. In addition to honey, beekeeping products include wax, propolis, and pollen. They have specific applications in both cosmetics and the pharmaceutical and food industries.

The number of bee colonies changes many times during the year, which contributes to high fluctuations in honey production in Poland. This is dependent on weather and environmental conditions. The mortality of bees is affected by pesticides used in agriculture, heavy rain, and cold winters, while their survival is supported by the beekeeper's care: preparing the bees for wintering, feeding them, and protecting them from parasites. Good, sunny weather and moderate rain can also have a positive effect on the amount of honey harvested. As data from the Veterinary Inspection shows, there were 1.68 million bee colonies in Poland in 2019, increasing by 2.7% compared to the previous year. The Lublin province had the highest number of bee colonies (11.7% nationwide), while Podlaskie had the lowest number (2.7%). Poland has about 5.4 bee colonies per square kilometer. The highest number of bee colonies is found in the Lesser Poland province, which is twice as high as the national average (5.4%). The smallest was recorded in the Podlaskie Voivodeship.

In 2019 the largest honey production took place in the Lublin province – 2.25 t, and the smallest in the Podlaskie province – 0.3 t. An average of about 13kg of honey was spun in amateur apiaries, while about 22kg was spun in commercial apiaries. In amateur apiaries, the most honey was obtained by beekeepers from the Lower Silesian province, while in commercial apiaries, the most honey was harvested in the Lublin province [Semkiw 2019]. The highest honey prices were in retail sales. The exception was multi-flower honey, whose price was about PLN 1 lower than in direct sales. Direct and retail sales placed 87.7% of honey from apiaries on the market. The rest was destined for purchase. Honey production in Poland from 2016 to 2021 is presented in Figure 1.

In 2019, per bee colony, honey production costs amounted to about PLN 365 in commercial apiaries, while costs in amateur operations amounted to PLN 296. Variable costs had the strongest impact on the operation of a beekeeping farm. The highest of these was labor costs (this applied to every farm). In amateur apiaries, the profitability of production

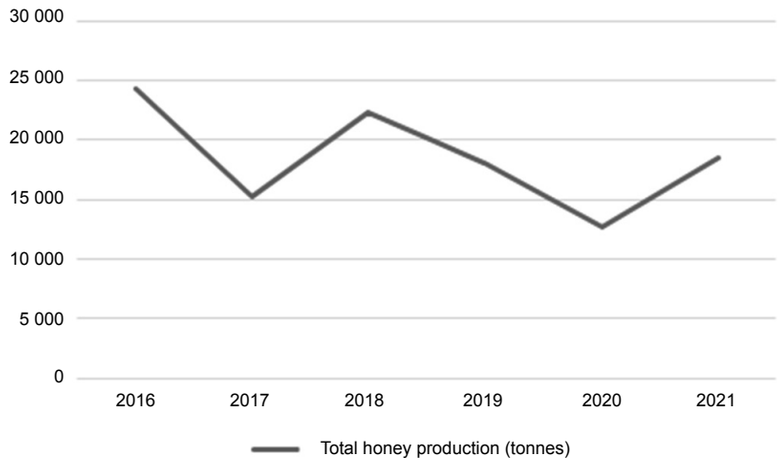

Fig. 1. Honey production in Poland (t) from 2016 to 2021
Source: own compilation, based on [Semkiw 2016, 2017, 2018, 2019, 2020, 2021].

was affected by the cost of winter feeding for bees, while in the case of commercial apiaries, the costs associated with transportation dominated. Production costs per unit, i.e., per kg of honey from small apiary farms, were about PLN 23, and in large apiaries, about PLN 16, due to economies of scale (Fig. 2).

There was a deficit of 16.8 million euros in foreign trade in honey in 2018. Exports amounted to about 36.4 million euros, and their weight value was about 14.7 thousand tons. The value of its imports at the same time was about 53.2 million euros, and its volume was about 25.7 thousand tons. Between January and October 2019, about 13.7 thousand tons of honey were exported from Poland, while imports exceeded 24 thousand tons. The main markets for Polish beekeeping products are EU countries, primarily Germany and France.

Honey is mostly imported to Poland from Ukraine and China. The Polish market offers honey from both domestic and foreign producers. Due to the taste and nutritional qualities (depending on the origin and plants from which they are produced), there is also

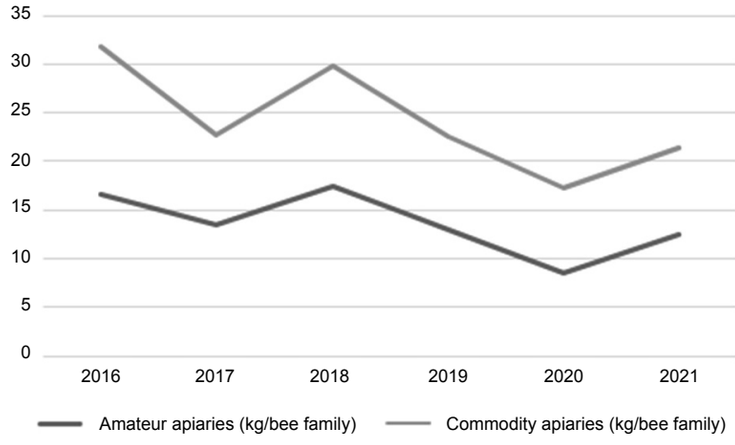

Fig. 2. Honey production (kg per bee family) in Poland between 2016 and 2021
Source: own compilation, based on [Semkiw 2016, 2017, 2018, 2019, 2020, 2021].

a demand for exotic honey in Poland [Kiczorowska 2017, Kobylińska 2021]. Economic fluctuations due to foreign trade and seasonality have a significant impact on beekeeping production in Poland. For these reasons, institutional support for beekeeping is essential. For small as well as large producers, special programs are created to support their activities through funds from state budgets as well as the EU, aimed at their modernization and restructuring [Semkiw and Ochal 2009].

IMPACT OF THE COVID-19 PANDEMIC ON THE GLOBAL BEEKEEPING INDUSTRY

Due to health concerns arising from the COVID-19 pandemic, honey consumption has increased [Attia et al. 2022, Lau et al. 2022, Özmen Özbakir et al. 2022]. While lockdowns have also had a positive impact on the bees themselves due to the reduction of toxic emissions into the environment, they have also harmed the bees' work. For example, the wandering hives could not be transported and thus assist in the pollination process [Özkirim 2020, Das and Bhuiya 2020, Attia et al. 2022]. The economic impact of lockdowns on beekeepers' operations in many places [Das and Bhuiya 2020, Bixby 2021, Lau et al. 2022] and their financial situation, especially in developing countries, was also negative [Das and Bhuiya 2020, Lazor-Chavero et al. 2022].

In the US, Canada, or the UK – which do not have enough bees of their own – hives are seasonally imported from other countries to pollinate farmland, or queens bred in other countries are imported. This was not always possible during the lockdown restrictions in place [Bixby et al. 2021, Attia et al. 2022]. Due to the COVID-19 pandemic, foreign workers were unable to migrate to countries using seasonal labor in apiaries [Bixby et al. 2021, Attia et al. 2022]. In Poland, however, the employment of outside workers in beekeeping is rare, and beekeepers are usually assisted by members of their families. Thus, the need to bring in hives and workers seasonally has not negatively affected Polish beekeeping as it has in the southern United States [Lau et al. 2022].

Studies point toward the negative effects of lockdowns on beekeeping, and thus on food security – not only for well-known reasons, such as reduced trade, decreased purchasing power, or reduced access to labor [Lau et al. 2022], but also, for example, a reduction in the positive impact of bees on the resilience of other animals such as rabbits, poultry, fish [Attia et al. 2022], or reduced pollination of plants [Das and Bhuiya 2020, Bixby et al. 2021]. Although difficult to quantify, the latter factor, in particular, is important for maintaining food security [Majewski 2017].

POLISH BEEKEEPING INDUSTRY DURING THE COVID-19 PANDEMIC PERIOD

The coronavirus pandemic has affected the beekeeping industry in Poland as well, particularly through closed borders or markets, postponed training or thematic meetings, and restrictions on movement. In addition – despite the increasing number of beekeepers and the ongoing fragmentation of the sector [Semkiw 2020, Roman and Szewczyk 2022], and increased demand for honey – there was a smaller honey harvest in 2020, with most beekeepers managing to harvest only spring honey. Initially, this was a consequence of winter losses, as then honey harvesting was impossible due to drought conditions, and the bees required feeding [Semkiw 2020]. During the season, honey was quickly bought out of stores, so it was difficult to access during the winter. In addition, consumers during the pandemic were more likely to reach for sweet foods, including honey – also due to the belief in its health-promoting properties. At the same time, customers avoided large gatherings of people and bought honey directly from beekeepers. Consumers are also more likely to buy honey the traditional way than at discount stores due to the belief that the honey sold there is inferior or adulterated.

Many honey blends that can be bought in supermarkets come from China. Their imports reduced honey prices in 2018–2019. Before the pandemic, its prices were 13.9% lower in discount stores, 8.9% lower in supermarkets, 5.7% lower in hypermarkets, and 2.8% lower in cash & carry stores. In convenience stores, on the other hand, honey fell slightly, as the decrease was only 1.2%. In direct sales from apiaries, honey prices were stable or increased slightly [wiadomoscihandlowe.pl 2020]. However, due to the pandemic situa-

tion, honey prices in China increased, also affecting honey prices in Poland. Climatic conditions, as well as the pandemic situation, affect prices, and consumers are also able to pay more for it [Miody Manuka 2021], which can positively affect the margins of Polish beekeepers, also by making Polish consumers accustomed to local products.

IMPACT OF THE COVID-19 PANDEMIC ON THE OPERATIONS OF SELECTED BEEKEEPING FARMS IN POLAND

The effects of the pandemic on the beekeeping industry in Poland have varied. On the one hand, fear of contact negatively affected sales of bee products. On the other hand, customers, seeking natural treatments and antiviral prophylaxis, increased demand for honey. Half, or 53.1% of beekeepers, said the pandemic had a small impact on honey sales, 28.1% thought it had a medium impact, 12.5% thought it had a large impact, and 6.3% said it had no impact at all (Fig. 3).

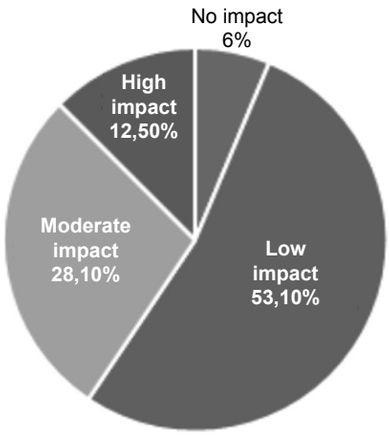

Fig. 3. The impact of the COVID-19 pandemic on honey sales

Source: the Authors.

Moderate correlations were observed in negative opinions on the impact of the pandemic with responses to the questions, 'Possibility of commodity exchange with other beekeepers', and 'Seasonality of production'. The correlation with the question on the exchange can be explained by the inability of beekeepers to integrate due to the lockdown and the limitation of meeting opportunities between them (Table 1).

There was a moderately positive correlation between positive opinions about the impact of the pandemic on beekeeping activities and opinions about the time consumption of production in beekeeping. This could have been associated with higher demand and

Table 1. Correlation of opinions on the positive and negative impact of the pandemic on honey supply, with opinions on positive factors affecting this market

Factors and their correlation with the impact on the beekeeping market	Positive	Negative
Subsidies for the purchase of beekeeping equipment for the procurement process	–0.0768	0.1100
Possibility to exchange goods with other beekeepers	0.1595	**0.4725**
Seasonality of production	0.3891	**0.5716**
Family assistance in running the apiary	0.3146	0.0651
Production takes place during warm seasons	0.1785	0.2843
The medicinal properties of honey have a positive effect on its sale	0.0324	-0.2412
Family's assistance in the sale of honey	0.2254	0.1169
The customer comes to the apiary to purchase	0.3065	0.0586
COVID-19 has a positive impact on the honey market	1.0000	0.4486
Subsidies positively affect the honey market	0.2921	0.1186

Source: the Authors.

Table 2. Correlation of opinions on the positive and negative impact of the pandemic on the Polish beekeeping industry, with opinions on the positive factors affecting this market (1–10) and on the beekeeper's assessment of their supply chain

Factors and their correlation with your supply chain	Positive	Negative
High prices of medicines for bees	–0.0791	0.1058
The need for specialized equipment	0.3603	0.3098
Climate change hurts production	0.2763	0.2904
Mass bee die-off limits honey harvests	0.3637	0.2906
Time-consuming production	**0.5503**	0.3896
The natural crystallization process makes it difficult to sell honey	**0.5163**	**0.5958**
Seasonality of bee production harms sales	0.2382	**0.5781**
Fake honey on the market makes it difficult to sell at a sufficient price	0.1920	0.1981
COVID-19 harms honey sales	0.4486	1.0000
Sugar price fluctuations harm the honey market	0.1903	0.2182
The honey supply chain at my apiary is efficient enough	–0.0259	0.0843

Source: the Authors.

higher prices also related to the consumer response to the pandemic. However, price increases were not as high as producers expected [Semkiw 2020]. A moderately positive correlation was also observed between opinions about the difficulty of selling honey due to its natural crystallization process with both negative and positive opinions about the impact of the pandemic on honey supply chains. Finally, a moderately positive correlation emerged from the survey between opinions about the negative impact of the seasonality of bee production on sales and negative opinions about the impact of the pandemic on honey supply chains (Table 2).

DISCUSSION

Similar to studies conducted in Louisiana and Texas [Lau et al. 2022], Polish beekeepers suffered from a lack of opportunities to integrate at industry events during lockdowns. In the same way, there was no problem with lack of access to seasonal workers or seasonally imported queens – as, for example, in Canada or the UK [Bixby 2020] because Polish beekeepers usually support themselves with the labor of their family members, and queens are bred locally. There were no strong correlations between opinions on the COVID-19 pandemic (either on its positive or negative impact on honey supplies). Nevertheless, there was a correlation between the usual exchange of goods between beekeepers and negative opinions on the impact of the pandemic. Opinions on time spent on production correlated moderately with opinions on the positive impact of the pandemic on beekeeping, which may be due to beekeepers' sense of adequate financial compensation for their work due to increased demand for their product during the lockdown – and thus, the increased price of honey [Semkiw 2020]. The study also found moderate correlations between beekeepers' opinions on the impact of the pandemic (both positive and negative) and their negative assessment of honey crystallization. This variation may have been due to the beekeepers' different marketing opportunities. For example, the positive assessment of the pandemic's impact on sales may have been due to the increased demand for honey during the pandemic by those beekeepers who had this outlet assured. At the same time, those beekeepers who did not have developed outlets may have been forced to stockpile products, which consequently crystallized. To confirm such a relationship, however, further research is required.

CONCLUSIONS

Despite the severe consequences of the pandemic, such as the instability of markets and the rising cost of maintaining hives, beekeeping is still popular in Poland, and the number of honey producers is growing each year. The variation in the opinions of its producers on the impact of the pandemic may be due to the size of their apiaries and the stability of their distribution channels. Our research showed too weak a correlation in the subjective opinion of surveyed beekeepers of their supply chain with the positive and negative impact of the pandemic on them to confirm such a relationship. It is interesting to investigate the correlations between the positive opinion of the impact of the pandemic and positive opinions of the impact of seasonality on beekeeping, as well as correlations between negative opinions of the impact of the pandemic with negative opinions of the impact of seasonality on beekeeping. A limitation of our study is the lack of representativeness of the sample to understand the correlations between the types of apiaries and the impact of the pandemic on them. Therefore, further research in this aspect is needed.

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FUNKCJONOWANIE WYBRANYCH GOSPODARSTW PSZCZELARSKICH W POLSCE W CZASIE PANDEMII COVID-19

STRESZCZENIE

Cel: Celem artykułu było zbadanie wpływu pandemii COVID-19 na wybrane gospodarstwa pszczelarskie, a także porównanie doświadczeń wybranych polskich pszczelarzy z wpływem pandemii na pszczelarstwo w innych krajach, przedstawionych w literaturze. **Metody:** Badania przeprowadzono za pomocą przeglądu literatury i wywiadu kwestionariuszowego (n = 36) wśród pszczelarzy z województwa mazowieckiego i warmińsko-mazurskiego. Pszczelarze udzielali odpowiedzi według 5-stopniowej skali Likerta. Odpowiedzi dotyczące tematów branżowych skorelowano z opiniami na temat pozytywnego i negatywnego wpływu pandemii na pszczelarstwo za pomocą współczynnika korelacji liniowej Pearsona. **Wyniki:** Około 60% respondentów stwierdziło, że pandemia miała niewielki lub wręcz żaden wpływ na ich działalność pszczelarską. Mogło to być związane ze specyfiką polskiego pszczelarstwa, które nie jest uzależnione od sezonowej siły roboczej, zazwyczaj wykorzystując pracę własną. Stwierdzono również umiarkowane korelacje pomiędzy negatywnymi opiniami na temat wpływu pandemii i braku kontaktu z innymi pszczelarzami a sezonowością produkcji i związanej z nią sprzedaży, oraz pomiędzy opiniami na temat czasochłonności produkcji a pozytywnym wpływem pandemii na rynek pszczelarski. **Wnioski:** Stwierdzono, że pszczelarze okazali się bardziej odporni na załamania łańcucha dostaw w porównaniu z doświadczeniami pszczelarzy w takich krajach jak np. Kanada czy Wielka Brytania. Charakter kanałów marketingowych pszczelarzy może wpływać na szybkość sprzedaży ich towarów. Wpływ pandemii na polskich pszczelarzy nie był wcześniej badany.

Słowa kluczowe: pszczelarstwo, pszczoły, COVID-19, Polska

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TOURISM CHALLENGES IN THE RURAL AREAS OF THE AUTONOMOUS REPUBLIC OF ADJARA

Roman Mamuladze, Manuchar Loria, Guladi Tkhilaishvili✉, Meri Gabaidze

Batumi State Maritime Academy, Georgia

ABSTRACT

Aim: The article describes trends in the economic development of Georgia with particular emphasis on the role of tourism in the socio-economic development of the Autonomous Republic of Adjara. The paper aims to study the tourism development perspective in Adjara to improve the living conditions of the local population that lives in the highlands and to achieve equal social and economic growth throughout the country. **Methods:** The study used the literature review and mass statistics data analysis methods. In addition, the results of a survey conducted in September 2022 on a sample of 351 respondents (visiting Adjara for tourism purposes) were presented. **Results:** Rural tourism is currently being discussed extensively by state organizations and other public cooperation partners as an additional source of revenue in the Rural Tourism Supply Chain in the highland areas and for regional development. The work discusses the potential and the quality of tourist products. It has identified the region's current trends and issues of tourism development, the main challenges in rural tourism, and the role of transport systems in developing rural tourism sustainability. **Conclusions:** The article summarizes the recommendations for local officials in rural tourism sustainability and the importance of their development. Adjara's highlands have quite a challenging landscape. Local government should ensure the acceleration of the infrastructure projects of the Adjara highlands and the arrangement of internal roads, parking lots and infrastructure corresponding to modern standards.

Keywords: rural tourism, logistics, regional development
JEL codes: L83, L92, R58

INTRODUCTION

The mountainous landscape is around 65% of Georgia's total land area. Different communities have more diverse ecological, economic, and agricultural resources in exceptionally high mountain ranges. One of the causes of recent population migration from the highlands is worsening social, economic, and living conditions that have been a central trait of the highlands.

The Autonomous Republic of Adjara is mountainous and faces the same socio-economic challenges as other mountainous regions of Georgia. It remains one of Georgia's most significant regions and includes most areas of the highlands.

Numerous regulations have been extended to more than 200 villages in the Autonomous Republic of Adjara, located 1000m above sea level. Moreover, the Georgian Parliament enacted the Law "On the Development of Mountainous Regions" in 2015 [Legislative

Roman Mamuladze, https://orcid.org/0000-0001-7913-6880; Manuchar Loria, https://orcid.org/0000-0002-1849-9562; Guladi Tkhilaishvili, https://orcid.org/0000-0002-5583-4905; Meri Gabaidze, https://orcid.org/0000-0003-4603-4735
✉g.tkhilaishvili@bsma.edu.ge

Herald of Georgia 2015]. As a result, various social advantages were developed for the people living in mountain villages. The "2019–2023 Strategy for the Development of Georgian Highland Villages" was formed in 2019 [Strategy 2019]. According to the document, the number of people living in highland settlements declined by 28% between 2002 and 2014, but the same document mentions that mountainous Adjara is the residence of 47.8% of the overall population of the highlands of Georgia.

AIM AND METHODS

The article aims to analyze the tourism development perspective in Adjara to improve the living conditions of the local population that lives in the highlands and to achieve equal social and economic growth throughout the country. This has also been one of Georgia's regional development policy objectives [Ministry of Development and Infrastructure of Georgia 2022].

From the 1st to the 30th of September 2022, a survey was conducted in which 351 respondents participated. The target group was visitors (local and foreign) and residents who often visited the Adjara highlands for tourism purposes. The responses were examined according to the quantitative and qualitative analyzes. Received data were studied based on statistical forecasting technical tools for exponential growth. The survey included both geographic and demographic questions, but due to the lack of significant differences, it has not been reflected in the paper.

SELECTED ISSUES OF THE ECONOMIC DEVELOPMENT OF GEORGIA

The economic policy of the Government of Georgia and the implemented measures in Adjara, like other highland settlements of Georgia, is characterized by several socio-economic problems. Despite the Georgian government's economic strategy and implemented actions, Adjara, like other highland villages in Georgia, is plagued by various socio-economic issues, including the inefficient exploitation of possibilities, mainly the tourism potential of rural areas. Without proper resources, it's challenging to encourage tourism in highland areas without adequate transportation and logistical infrastructure.

According to World Bank statistics [World Bank 2022], Georgia's nominal GDP in 2021 was 15,892 USD million, while the volume of real GDP was USD 18,700 million. Figures 1 and 2 describe 2021. Real GDP growth was 10.4%, exceeding both the

Fig. 1. GDP Per Capita of Georgia – growth rate (%)
Source: [World Bank 2022].

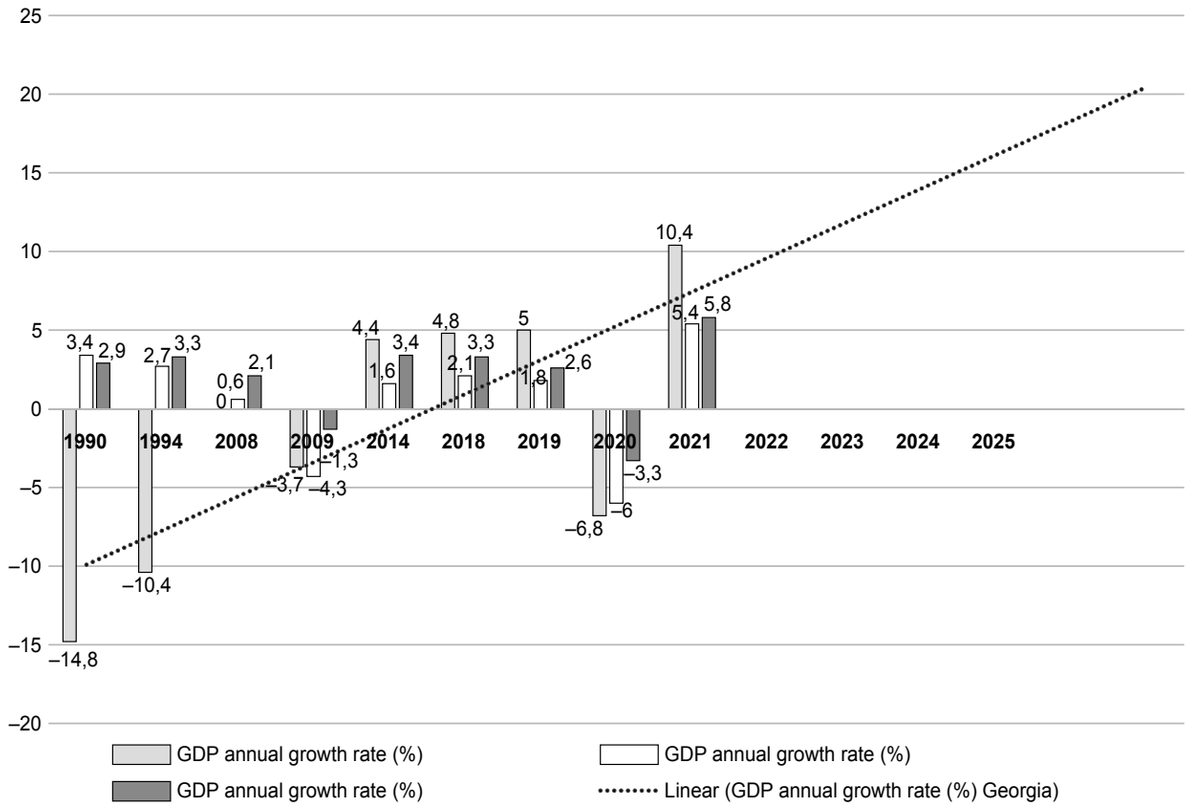

Fig. 2. GDP per capita of Georgia – growth rate (%)
Source: [World Bank 2022].

equivalent indicator of the European Union and the global GDP growth rate (according to the same World Bank, real GDP growth in the European Union was 5.4%, while global GDP growth was 5.8%). Despite this, Georgia is still in the most challenging phase of economic growth and needs to meet societal needs. This indicator ranked Georgia 119th out of 206 nations worldwide [World Bank 2022].

According to Figure 2 – per the World Bank data – the volume of GDP per capita in 2021 was 4,927 USD, which is significantly lower than the comparable indicator of both the European Union and the world (according to the World Bank data, the GDP per capita in the European Union was 32,755 USD, while the world indicator was 11,057 USD, putting Georgia in 126th place).

Despite the optimistic developments, the Georgian labor market remains challenging. Even though the unemployment rate in 2021 was 10.7%, down from 18.5% in 2020, the country remains substantially behind the rate of the European Union and the national labor market (in 2021, the European Union's unemployment rate was 7%, and the global unemployment rate was 6.2%).

The Autonomous Republic of Adjara is essential to Georgia's economic growth. The graph shows the volume and percentage contribution of various indicators from the Autonomous Republic of Adjara in the country's overall indicators. The presented indicators (Fig. 3) show that the area of Adjara is 4.16% of the total area of Georgia, and about 9.5% of the total population of Georgia lives in Adjara. GDP generated in Adjara is about 10% of Georgia's GDP. However, the standard of living (GDP per capita) is somewhat lower than the country's overall indication (in 2021, Adjara AR's GDP per capita was

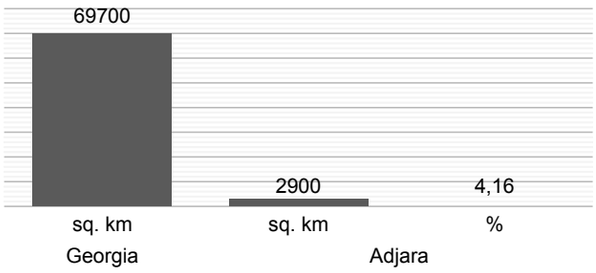

Fig. 3. Significance and share of the indicators of the Autonomous Republic of Adjara in the overall indicators of the country (2021)

Source: [GDP 2021], National Statistics Office of Georgia.

10,890.6 GEL, while the country's general indicator was 13,234.1 GEL).

In such circumstances, achieving rapid economic development for the country and the local area is essential, which may be accomplished through the rapid growth of various critical sectors. Tourism represents one of Georgia's priority economic growth sectors. The capital of Adjara – Batumi, was declared a winner at the World Travel Awards in 2019 for Europe's Developing Tourist Destination – and the World Travel Awards will be held in Batumi in 2023, indicating the importance of tourism within Georgia's various sectors of the economy [Business Media Georgia 2022]. Thus, Batumi was named the world's emerging tourist destination at the 2022 World Tourism Awards event [Government of the Autonomous Republic of Adjara 2022].

Generally, many farming families have adopted the tourism sector, renting or purchasing village properties to run rural tourism enterprises. Rural tourism is transitioning from large-scale to broader, higher-quality, and more efficient growth concerning governmental support, public involvement, market demand, and product supply [Luo et al. 2022].

As a result, tourism occupies a prominent position in the various action plans developed by the Georgian government. For example, according to the "Tourism Strategy of Georgia 2025", developed by the Georgian government, "by 2025, Georgia will be recognized as an advanced, all-season, high-quality tourism country, characterized by its cultural and natural treasures, world-class services, and a long history of hospitality" [Strategy 2015].

Data presented in Figure 4 shows that the share of the economic activity of accommodation facilities and food supply activities in the Autonomous Republic of Adjara in 2020 is twice as high as the share of the same indicator throughout the country. The volume of GDP generated in the Autonomous Republic of Adjara in the economic activity of providing accommodation and food supply activities amounted to 220.4 million GEL in 2021, which is 5.8% of Adjara's GDP, while the volume of GDP created in the country in the same period is 49,266.7 million GEL, is 2.8% of the national GDP.

According to estimates for 2022, tourism has the most promising opportunity. Generally, Georgia gained 2.9 billion USD from tourism from January to October 2022, 183.2% more than the same period in 2021 and 100.2% higher than in 2019 [National Tourism Administration of Georgia 2022].

The "Tourism Strategy of Georgia 2025" [Strategy 2015] document states that it is intended to boost tourism income from the present level to 6.6 billion USD, grow the sector's direct share of the gross domestic product to 7.9%, and increase the number of foreign visitors to 11 million [Ouariti and Jebrane 2020].

The potential of the Adjara highlands is tremendous and must be used in every manner possible. Specific actions must be implemented to expand the resort infrastructure further and transform it into the most important tourist destination. It is worth emphasizing that, in the mountains, each year, tourist growth is better than the previous year. Still, it is necessary to work on rural legislation to promote economic possibilities and employment in rural areas.

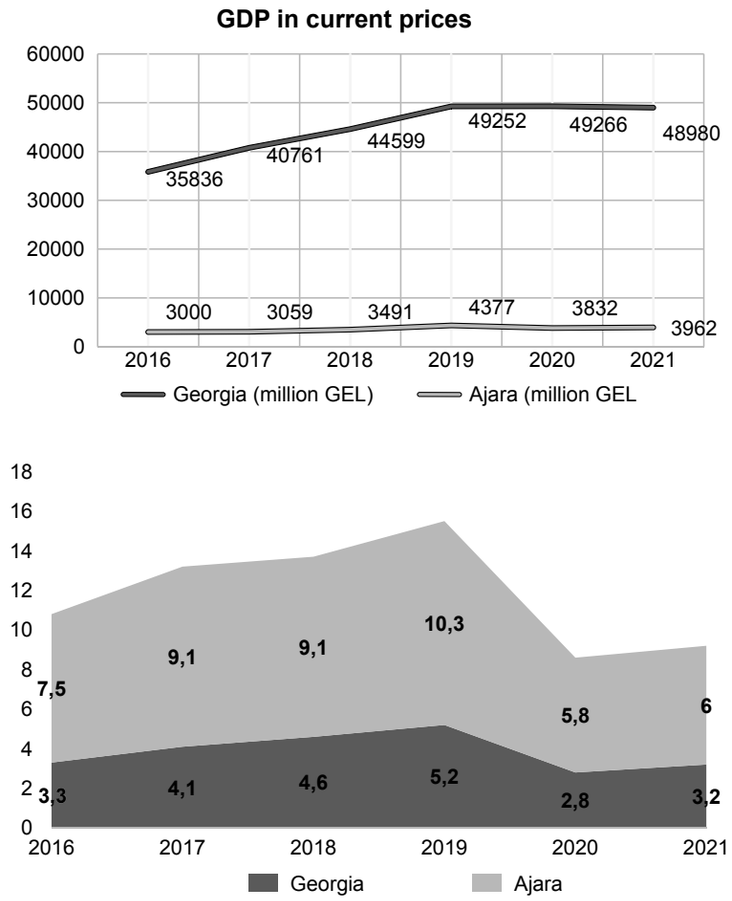

Fig. 4. The volume of GDP is created in the economic activity of accommodation facilities and food supply activities in the Autonomous Republic of Adjara and the country in general.
Source: [National Tourism Administration of Georgia 2022].

In addition to the marine resort, the terrain of the Autonomous Republic of Adjara has excellent potential for developing highland and ski resorts. The weather in Adjara's highlands is humid. Winters are cold and lengthy, whereas summers are brief and pleasant. Mineral water resort development has developed in the mountainous Adjara in recent years. They provide therapeutic, recreational, and cultural purposes, and they are available all year long. The infrastructure development of the Autonomous Republic of Adjara's mountain ski resorts is underway. Shuakhevi and Khulo municipalities are building the following resorts: "Gomarduli" resort in Shuakhevi, "Kedlebi", "Goderdzi" and "Beshumi" summer resorts in Khulo [Tshekladze et al. 2021].

Fig. 5 shows the results of the research conducted through the questionnaire prepared by the Authors (grade 1 represents – very bad, grade 2 – bad, grade 3 – average, grade 4 – good, and grade 5 – very good). Based on this, we can observe the following opinions:

1. Awareness of tourist potential in the Adjara highlands – For this question, 58% of respondents rate the tourism potential in the highlands with Grade 3. 9% of the surveyed respondents rate it with Grade 4, 22% rate it with Grade 5, and 11% of the respondents rate the potential with Grade 2. The question mentioned by the respondents is evaluated at an average level.

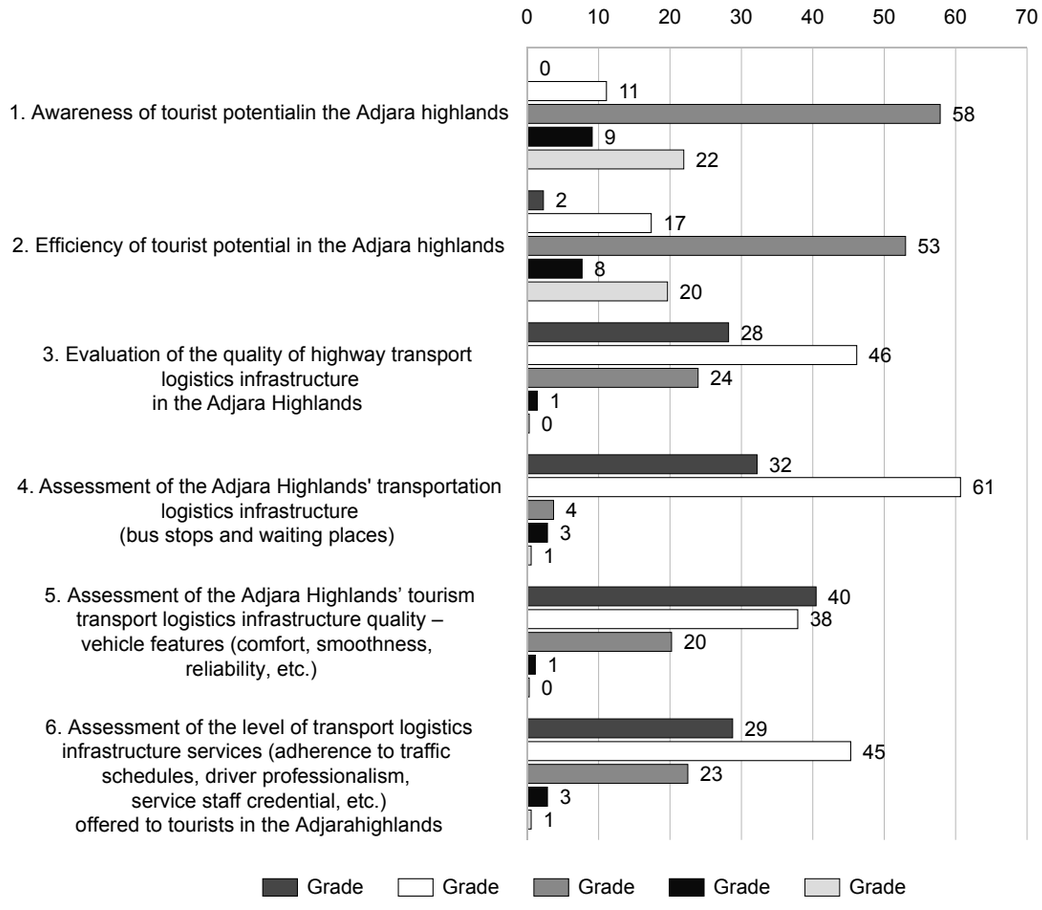

Fig. 5. Revealing the challenges in the development of tourism (%) (grade 1 – very bad; grade 5 – very good)
Source: The Authors' research on [Batumi 2022].

2. Efficiency of tourist potential in the Adjara highlands – On average, 53% of respondents rate the use of tourism potential with Grade 3, 22% with Grade 5, 8% with Grade 4, and 2% with Grade 1. The question mentioned by the respondents is evaluated at an average level.
3. Evaluation of the quality of highway transport logistics infrastructure in the Adjara Highlands – 46% of respondents rate it with Grade 2, 28% rate it with Grade 1, on average, 24% rate it with Grade 3, and only 1–2% rate it positively with Grades 4 and 5. The question mentioned by the respondents is evaluated at a lower–than–average level.
4. Assessment of the Adjara Highlands' transportation logistics infrastructure (bus stops and waiting places) – 61% of respondents evaluate this question with Grade 2, 32% with Grade 1, and 4–5% with Grades 3–4–5. The question mentioned by the respondents is assessed at a very low level.
5. Assessment of the Adjara Highlands' tourism transport logistics infrastructure quality – vehicle technical features (comfort, smoothness, reliability, etc.) – The evaluation of the mentioned question becomes even worse with 40% of the respondents evaluating it with Grade 1, 38% with Grade 2 and 20% evaluate the rest with Grades 3–4–5. The question mentioned by the respondents is assessed at a low level.
6. Assessment of the level of transport logistics infrastructure services (adherence to traffic schedules,

driver professionalism, service staff credentials, etc.) offered to tourists in the Adjara highlands – The results are almost the same in this question, i.e., 45% of the respondents rate it with Grade 2, 29% rate it with Grade 1, and 23% rate the rest with Grades 3–4–5. The question mentioned by the respondents is evaluated at a low level.

DISCUSSION

The Adjara region has the potential to provide rural and ethnographic development potential in practically every village, fostering economic and social advancement for all citizens with financial support from the EU, KfW, IUCN, GEF/UNDP and others, and improving the sustainable management of protected areas in Adjara, such as – Mtirala National Park (NP), Kobuleti Protected Area (PA), Kintrishi PA, Machakhela NP, Batumi Botanical Garden, Green Lake, Goderdzi Fossil Forest, and coastal sandy dunes etc.

Nonetheless, low-quality transport logistics infrastructure and logistics services are critical components in defining the low quality of Adjara's rural tourist services. Tourism infrastructure in a rural area includes a supply chain that comprises transportation, social, and environmental infrastructure to support the development of appealing tourism goods. The tourist transport infrastructure consists of a collection of interrelated and interdependent socio-economic elements that support the efficient operation of the tourism industry. The mentioned system aims to improve the efficiency of tourist and other concomitant traffic flows [Number of cars 2022].

According to the report published by the National Statistics Office of Georgia, there are 1.47 million vehicles in Georgia, of which 83% are over ten years old. Statistics show that in contrast to other regions, relatively new cars are driven in Tbilisi. A total of 509,000 vehicles are registered in the capital, of which 308,000 cars are over ten years old, which is 75%. The most aging vehicle fleet is registered in Guria, where 92% (34,000) of 37,000 vehicles are over ten years old.

Of the existing vehicle fleet, 1.31 million vehicles are owned by individuals, companies own 162,000, and 92% (34,000) are over ten years old.

Transport logistics infrastructure in the field of tourism has two main factors:

- The transport component of the logistics system that supports tourism primarily comprises the moving capacity of the road, rail, water, and air transport, as well as transportation networks (highways, railway lines), airports, railway and bus stations, passenger terminals, and so forth;
- The logistical infrastructure's information compiler considers local and global communication networks, technological resources, software availability, databases, and their management systems in the context of tourism.

Thus, Adjara's highlands have a challenging landscape. The "Batumi-Akhaltsikhe" road, which is an essential national road, traverses the Adjara mountains. Additionally, each municipality has an internal public road that is 2367.8 km long, particularly in the municipalities of Keda (660.2 km), Shuakhevi (957.9 km), and Khulo (749.7 km). The development of the automotive infrastructure is budgeted for 63,898,700 GEL [Resolution 6; Resolution 371].

CONCLUSIONS

The study and analysis of statistical data made it possible to formulate the following conclusions:

- Currently, Georgia's economy cannot meet the demands of Georgian society, which may become an obstacle to economic development. Still, a prominent place is given to tourism, especially in the economic development of the Autonomous Republic of Adjara, including the highlands and rural tourism in general.
- At the present stage, the low quality of transport logistics systems and services hinders tourism development in the Adjara highlands (rural areas).
- Local government should ensure the acceleration of infrastructure projects in the Adjara highlands and the arrangement of internal roads, parking lots and infrastructure corresponding to modern standards.
- There is a need for more support from the state to transport companies in terms of updating the passenger transport fleet.

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WYZWANIA TURYSTYCZNE NA OBSZARACH WIEJSKICH ADŻARSKIEJ REPUBLIKI AUTONOMICZNEJ

STRESZCZENIE

Cel: W artykule opisano kierunki rozwoju gospodarczego Gruzji, ze szczególnym uwzględnieniem roli turystyki w rozwoju społeczno-gospodarczym Adżarskiej Republiki Autonomicznej. Celem artykułu jest określenie perspektyw rozwoju turystyki w Adżarii w celu poprawy warunków życia miejscowej ludności zamieszkującej wyżyny oraz osiągnięcia równego wzrostu społeczno-gospodarczego w całym kraju. **Metody:** W badaniu zastosowano metodę przeglądu piśmiennictwa i analizy danych statystyki masowej. Ponadto przedstawiono wyniki badania przeprowadzonego we wrześniu 2022 roku w grupie 351 respondentów (odwiedzających Adżarię w celach turystycznych). **Wyniki:** Turystyka wiejska jest obecnie szeroko omawiana przez organizacje państwowe i innych partnerów współpracy publicznej jako dodatkowe źródło dochodów w Łańcuchu Dostaw Turystyki Wiejskiej na obszarach górskich i w rozwoju regionalnym. Omówiono potencjał i jakość produktów turystycznych oraz zidentyfikowano aktualne trendy i problemy rozwoju turystyki w regionie, główne wyzwania turystyki wiejskiej oraz rolę systemów transportowych w rozwoju zrównoważonego rozwoju turystyki wiejskiej. **Wnioski:** W artykule podsumowano zalecenia dla samorządowców w zakresie zrównoważonego rozwoju turystyki wiejskiej oraz znaczenie ich rozwoju. Wyżyny Adżarii tworzą dość trudny krajobraz. Lokalne władze samorządowe powinny zapewnić przyspieszenie realizacji projektów infrastrukturalnych wyżyn Adżarii oraz uporządkowanie dróg wewnętrznych, parkingów i infrastruktury odpowiadającej współczesnym standardom.

Słowa kluczowe: turystyka wiejska, logistyka, rozwój regionalny

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UNUSED LABOR RESOURCES AND BARRIERS TO TAKING UP EMPLOYMENT BY PEOPLE WITH DISABILITIES

Paulina Stolarczyk✉

Warsaw University of Life Sciences – SGGW, Poland

ABSTRACT

Aim: The study concerns unused labor resources such as people with disabilities. The aim of the article is to present the situation of people with disabilities in the labor market and barriers to taking up employment. People with disabilities are in a more difficult situation in the labor market than non-disabled people, which is confirmed by the values of labor market measures. The barriers that make it difficult and sometimes impossible to find a job have been identified and characterized. **Methods:** The article uses secondary and primary data. Primary data came from research carried out in the Mazowieckie Voivodeship. The participants of the study were people with disabilities of working age. The article uses descriptive statistics methods. The results were presented in tabular and graphic form. **Results:** The most important findings include the observation that the most common reason for people with disabilities not taking up work is poor health, which makes it impossible to take up employment. The second main reason is the fear and reluctance to lose the disability benefit, e.g., disability pension. An important finding is also that people with a minor disability have far fewer barriers than people with a moderate disability. **Conclusions:** The hypothesis that people with disabilities are a resource of unused labor due to external factors independent of themselves, such as the lack of job offers and the reluctance of employers to employ people with disabilities, has been positively verified. People with disabilities are unused labor resources that need to be activated.

Keywords: people with disabilities, unused labor resources, labor market, professional activity
JEL codes: J21, J71, J1, I14

INTRODUCTION

The phenomenon of an aging population puts many countries in a difficult situation. If measures are not taken early enough to improve the use of labor resources in the economy, it may turn out that economies will fall into serious turbulence, unable to provide adequate goods and services necessary for society. In connection with negative demographic trends, actions should be taken to activate people with disabilities as a social group that are capable and predisposed to work. Potential employees who meet these criteria may also be people with disabilities who have a job adapted to their limitations.

That is why it is important to identify the causes of their inactivity and to take measures to increase their chances of entering the labor market and prevent social exclusion. People with disabilities belong to a group of people who are in a special situation in the labor market. People with disabilities also want and often can be professionally active. People with disabilities are untapped resources in the labor market.

Paulina Stolarczyk, https://orcid.org/0000-0001-8094-1174
✉paulina_stolarczyk@sggw.edu.pl

The labor force is a concept usually considered in relation to people of working age. In the literature, Owsiak and Czekaj [1992] state that the labor force consists of people of working age, capable of performing work and socially useful. On the other hand, work is considered to be one of the three basic factors of production (next to land and capital) [Jagoda and Klimczak 2011]. The demand for labor is related to the demand for labor resources (potential), which in the macroeconomic aspect applies to the entire economy, while in the microeconomic sense, it concerns the workplace and the demand for employees in terms of both quantity and quality [Kotlorz 2007]. The labor force (human capital) is a "commodity" which, as a result of its purchase (use) by the employer, is still the property of the person performing the work (employee) [Francik and Pocztowski 1993]. A person makes a decision to start work as well as to look for a job or to end it [Szałkowski 1992].

The situation of people with disabilities in the labor market (aspects of professional activity and inactivity) has been an area of interest for many researchers. Barriers to professional activity are dealt with by Garbat [2013]. The phenomenon of disability (type of limitations, their duration and severity) and its impact on the labor market were analyzed by Jones [2021]. Researchers also note the shrinking workforce. Integration and activation of people with disabilities can be a solution to the shortage of labor [Birau et al. 2019]. Studies are also undertaken on good practices of employing people with limited mobility, which A. Woynarowska points to through the implementation of projects focused on the appropriate beneficiary group. These activities are carried out by various entities operating in the economy [Woynarowska 2020]. The forms (types) of disability vary according to the type, severity and duration. The approach of labor market policies to provide the necessary incentives and support for non-disabled people with a degree of disability could be more adapted and flexible. One of the newer studies shows that people with disabilities were even more excluded from the labor market during the COVID-2019 pandemic, despite the widespread provision of remote work [Blanck 2022].

The aim of the study is to present the situation of people with disabilities in the labor market in Poland and the barriers to taking up employment with a more detailed analysis covering the Mazowieckie Voivodeship. A review of the literature on the subject allowed the formulation of the following hypothesis: People with disabilities are an unused workforce resource due to external factors beyond their control, such as the lack of job offers and the reluctance of employers to hire people with disabilities.

MATERIAL AND METHODS

The paper uses secondary data from the Labor Force Survey of the Central Statistical Office. Data from 2021 and 2022 (Q1–Q3) were used for the analysis. Due to the implementation of the methodological changes in the survey, the LFS results from previous years cannot be compared with data from the last two years [GUS 2020]. The study also uses primary data from own research carried out in the Mazowieckie Voivodship. The original data were collected using a survey questionnaire which was addressed to people with disabilities in the Mazowieckie Voivodeship via the Internet, public institutions (PUP, PCPR, MOPS, GOPS) and non-governmental organizations. The 301 questionnaires were accepted for analysis. Persons taking part in the study had an appropriate document confirming their disability. The study involved 154 women and 147 men of working age with a certified degree of disability. Respondents answered many questions about work, such as taking up work, a lack of work and obstacles to commencing employment. One of the issues was to identify barriers that prevent the provision of work – which is the focus of this study – assuming that these barriers are one of the key factors causing the non-use of people with disabilities. Descriptive statistics methods were used in the study. The collected data were presented in tabular and graphical forms.

RESULTS AND DISCUSSION

The basic labor market measures, such as the unemployment rate, the activity rate and the employment rate, were used to present the current situation. Indicators were compared in two groups, i.e., among people with disabilities and within a community

Table 1. Basic measures of the labor market situation in Poland in 2021–2022 (in %)

		Activity rate	Employment rate	Unemployment rate	Activity rate	Employment rate	Unemployment rate
		Persons with disabilities			Persons total		
2021	I quarter	18.5	17.2	7.5	57.3	55.0	4.0
	II quarter	19.4	18.1	6.7	58.0	56.0	3.5
	III quarter	20.1	19.1	4.6	58.3	56.5	3.0
	IV quarter	20.3	19.1	5.6	58.2	56.6	2.7
2022	I quarter	20.4	19.0	6.7	58.0	56.3	3.0
	II quarter	20.3	19.1	5.3	57.8	56.4	2.5
	III quarter	20.0	19.2	4.1	57.6	56.0	2.7

Source: own study based on LFS.

without a certified degree of disability (non-disabled community). Table 1 presents the basic labor market measures.

Table 1 presents how the unemployment rate, economic activity and employment developed in Poland in individual quarters of 2021 and 2022. In 2021, the economic activity rate in both groups increased from quarter to quarter, while in 2022, the situation was the opposite, and this figure decreased slightly from quarter to quarter. When comparing the situation of people with disabilities with people in general, large disproportions and differences in professional activity can be observed. The activity rate is almost 3 times lower among people with disabilities – in the third quarter of 2022, it amounted to only 20%. The unemployment rate is higher among people with disabilities than in the group of non-disabled people, and this difference in the last analyzed quarter of 2022 amounted to 1.4 p.p. The employment rate is also almost 3 times lower among people with disabilities and amounted to 19.2%. In the non-disabled population, employment oscillates around 56%. The values of the indicators show a more difficult situation for people with disabilities in the labor market. Low activity and employment rates and higher unemployment rates are associated with a high degree of professional inactivity. In the last quarter of 2022, there were 2,253,000 economically inactive people among people with disabilities compared to 565,000 economically active [GUS 2023].

Respondents participating in the study had the opportunity to choose (mark) several answers relating to the question of why they do not take up employment. Figure 1 shows the barriers that people with disabilities in the Mazowieckie Voivodship encountered in the process of looking for employment or not taking up this activity at all. The biggest problem they faced was poor health. This variant was marked by as many as 119 people, i.e., 29% of responses. The second most important reason for not taking up a job was the reluctance of employers to hire people with a certificate – this was indicated by 49 respondents (approximately 12%). The third most frequently mentioned barrier was the fear of losing benefits, e.g., disability pensions. This is an important aspect from the point of view of employment policy in Poland, and active and passive tools are addressed to people with disabilities. The next most frequently indicated answer was the lack of information on job offers addressed to people with disabilities (42 answers). Architectural obstacles had little effect on the discouragement associated with starting work. Respondents also did not take up a job because they did not want to work – the statement "I do not want to work" was marked by 25 people. Respondents had the opportunity to enter other variants not mentioned in the questionnaire. They indicated such barriers as: lack of experience, participation in the education process or in occupational therapy workshops. In addition, in both

questionnaire variants, namely in those with answers that could be marked and with the answers listed by the respondents, a fear of losing the disability benefit appeared.

There are two main systems of jurisprudence in Poland, i.e., disability and non-disability jurisprudence. They operate on the basis of different standards, are very poorly related to each other and are not very compatible [Mokrzycka 2012]. The Social Insurance Institution participates in the judicial decisions on disability issues related to the receipt of benefits in the form of a pension for total incapacity for work. On the other hand, non-disability jurisprudence is used to obtain the degree of disability and related disability rights [Strmiska-Mietlińska 2015]. People with disabilities are often afraid of losing their disability pension. From 1 March 2022, the lowest disability pension for total incapacity for work and the social pension is paid in the gross amount of PLN 1,338.44 (i.e., PLN 1,217.98 net). From 1 December 2022, the pensioner may additionally earn extra money: not more than PLN 4,536.50 gross per month – after exceeding this amount, the benefit collected is reduced. The next threshold is PLN 8,424.90/month gross – after exceeding this amount, the benefit collected is completely suspended [PZN 2022]. Both the pension and the amount to which one can "earn extra money" are not large. In the current situation, with such high inflation, this may contribute to a reduction in the quality of life of people with disabilities, and in the long run, to an increase in poverty.

Studies by other authors confirm that health, the possibility of losing benefits, as well as the fear of the unknown in connection with employment are the reasons for the professional inactivity of disabled people [Kobus-Ostrowska 2018]. In addition, Giermanowska [2021] indicates not only the reasons on the part of the employee, but also the employer. Employers are often afraid that they will incur additional costs in connection with the employment of a person with disabilities – related to employee rights, e.g., additional leave or shorter working time (7 hours) etc. [Skóra et al. 2022]. As indicated by Gąciarz and Giermanowska [2009] and Giermanowska [2014], employers are afraid of excessive bureaucracy and control as well as lower work efficiency. A lack of knowledge about disabilities and the functioning of people with disabilities was observed, which raised concerns among employers related to other employees possibly lacking acceptance and reluctance to cooperate with disabled people. It would seem that the problem of prejudices and stereotypes in relation to people with different characteristics than the whole society is no longer relevant. However, those taking part in the survey also noticed signs of discrimination not only on the part of legislators, but also on the part of society.

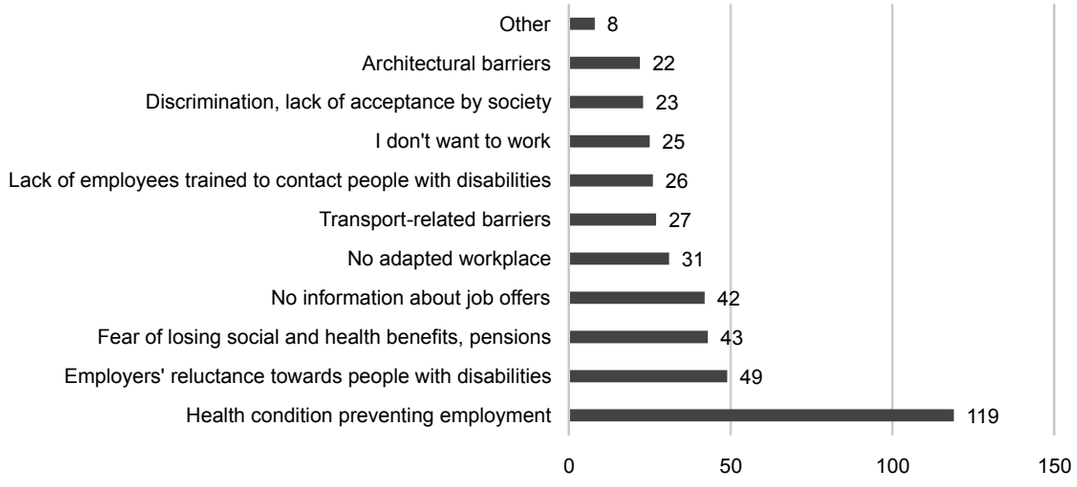

Fig. 1. Barriers to taking up employment by people with disabilities in Mazowieckie Voivodship
Source: study based on own research.

Due to the fact that the surveyed people consider poor health as the greatest barrier, the indicated answers were compared with the degree of disability of the respondents. In Poland, after the age of 16, one of three degrees of disability can be obtained, i.e., minor, moderate and severe. Depending on the degree of disability, persons are entitled to appropriate rights, e.g., shorter working hours, the right to additional holiday leave, the right to an additional break at work, and the right to take leave at work [https://niepelnospraw.gov.pl/p,62, disabled-employee, 16.02.2023]. Employers who hire people with disabilities also have appropriate improvements (facilitations) in this respect, e.g., reimbursement of the costs of creating a workplace, financing the wage costs of a disabled person, exemption from payments to PFRON, and reimbursement of the costs of equipping a workplace or training an employee with a disability [BON]. Respondents had a disability degree certificate issued by the Poviat Family Support Center and by the Social Insurance Institution (208 people had a certificate issued by the PCPR and 93 people by the Social Insurance Institution). There were 141 people with a moderate degree, 9 with a minor degree, and the rest with a severe degree of disability. Such a list is presented in Table 2.

The data presented in Table 2 show that people with a minor degree of disability did not notice any barriers to taking up work. Only three people with this degree marked variants such as: lack of health, the reluctance of employers and lack of information about job offers addressed to this group of society. People with a severe and moderate degree of disability most often did not take up work due to poor health. The lack of information about job offers for people with disabilities was a problem for people with a moderate degree. An important aspect of not taking up a job was the fear of losing an allowance, disability pension or another benefit. It should be noted that people with a moderate degree of disability are the most common active participants in the labor market among disabled people. This may be due to the fact that their health condition allows them to be employed at least partially, if not fully. This group of people is provided with facilities related to their professional activity, e.g., the adaptation of the workplace, in justified cases certified by a doctor – a seven-hour working time, as well as additional leave for treatment purposes. On the other hand, a person with a minor degree of disability is usually not entitled to such rights, and people with a severe degree are very often completely unable to

Table 2. Barriers to taking up work and the degree of disability

	Degree of disability		
	Severe	Moderate	Minor
Employers' reluctance towards people with disabilities	14	34	1
No adapted workplace	15	16	0
Architectural barriers	11	11	0
Transport-related barriers	10	17	0
Lack of employees trained to contact people with disabilities	12	14	0
No information about job offers for people with disabilities	10	31	1
Discrimination, lack of acceptance by society	11	12	0
Health condition preventing employment	66	52	1
Fear of losing your pension, benefit	11	32	0
I don't want to work	9	16	0
Other	3	5	0

Source: Study based on own research

work. What is worrying, however, is the reluctance of people with disabilities to work, as expressed in the answer, "I do not want to work". There were 25 such answers, including more than half of the people with a moderate degree of disability, i.e., people potentially able to take up employment appropriate to their condition. The mere fact of having a disability makes it difficult for young people who have reached working age to enter the labor market. There are studies that confirm that the fact of young people having a disability is negatively perceived by employers [Achterberg et al. 2009]. A disability that appeared in childhood or early youth has an impact on time and taking up a professional activity. As emphasized by other researchers, disability should be approached broadly, focusing on remaining or partial working capacity rather than on incapacity for work [Eichhorst et al. 2010]. Such an approach to people with disabilities brings many benefits both for people with disabilities themselves as well as for the entire society and the entire economy. Professional activity is an extremely important area of rehabilitation for people with disabilities, but it also prevents social exclusion.

CONCLUSIONS

People with disabilities can take up employment in the open labor market. Their competition with non-disabled people requires an appropriate policy on the part of the state, e.g., appropriate regulations creating a coherent system of incentives for employers and support in the field of, for example, bureaucracy, which contributed to the reluctant employment of people with limitations. Active involvement of labor market institutions focused on active policy is also important. Labor market policy supporting professional activation should include assistance in adapting the workplace to the individual needs of people with disabilities or providing them with the necessary help. Increasing the amount that could be earned or not taking away the benefit in the form of a disability pension would also be a good solution because people with disabilities allocate funds to improve health and living conditions. Another important issue is to convince (encourage) people with disabilities themselves to take up a professional activity, not only in the form of contract work but also self-employment. People with disabilities have health problems and are afraid of losing their pension, as well as the reluctance of employers to hire them are the biggest barriers that contribute to not taking up work. Educating society, increasing openness to various people in society, and sensitizing to the needs of other people whose disability is sometimes not visible to the naked eye, are good practices that should be followed. A positive aspect is the incorporation into Polish legislation of the provisions of the Convention on the Rights of Persons with Disabilities, which refer to the implementation of the rights of persons with disabilities, including the right to employment. The aim of the research was to present the current situation of people with disabilities in the labor market and to identify the barriers that make it difficult or impossible to take up employment. The completed research confirms the assumed hypothesis that people with disabilities are an unused labor force.

The research carried out as part of the article indicates the importance of the issue of the activity of people with disabilities in the labor market. Their activity or inaction affects the economy. The phenomenon of professional inactivity and the unused potential of the labor force of people with disabilities may contribute to the lack of workforce, particularly in terms of the ongoing unfavorable demographic changes.

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NIEWYKORZYSTANE ZASOBY PRACY ORAZ BARIERY W PODEJMOWANIU ZATRUDNIENIA PRZEZ OSOBY Z NIEPEŁNOSPRAWNOŚCIĄ

STRESZCZENIE

Cel: Opracowanie dotyczy niewykorzystanych zasobów pracy, jakimi są osoby z niepełnosprawnością. Celem artykułu jest przedstawienie sytuacji osób z niepełnosprawnościami na rynku pracy oraz barier w podejmowaniu zatrudnienia. Osoby z niepełnosprawnościami są w trudniejszej sytuacji na rynku pracy niż osoby sprawne, potwierdzają to wartości mierników rynku pracy. Określono i scharakteryzowano bariery, które utrudniają, a niekiedy uniemożliwiają podjęcie pracy. **Metody:** W artykule wykorzystano dane wtórne oraz dane pierwotne. Dane pierwotne pochodziły z badania własnego zrealizowanego na obszarze województwa mazowieckiego. Uczestnikami badania były osoby z niepełnosprawnościami w wieku produkcyjnym. W artykule zostały wykorzystane metody statystyki opisowej. Wyniki zostały przedstawione w formie tabelarycznej i graficznej. **Wyniki:** Do najważniejszych wyników należy spostrzeżenie, że najczęstszymi przyczynami niepodejmowania pracy w przypadku osób z niepełnosprawnościami jest słaby stan zdrowia uniemożliwiający podjęcie zatrudnienia. Drugą główną przyczyną jest obawa i niechęć przed utratą świadczenia z tytułu niepełnosprawności np. renty. Istotną obserwacją jest również to, że osoby z lekkim stopniem zdecydowanie mniej barier mają niż osoby ze stopniem umiarkowanym **Wnioski:** Hipoteza, zgodnie z którą osoby z niepełnosprawnościami stanowią zasób niewykorzystanej siły roboczej z powodu czynników zewnętrznych, niezależnych od nich samych takich, jak brak ofert pracy i niechęć pracodawców do zatrudniania osób z niepełnosprawnościami, została pozytywnie zweryfikowana. Osoby z niepełnosprawnościami są niewykorzystanymi zasobami pracy, które należy zaaktywizować.

Słowa kluczowe: osoby z niepełnosprawnościami, niewykorzystane zasoby pracy, rynek pracy, aktywność zawodowa

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THE NEXUS BETWEEN FOREIGN DIRECT INVESTMENT AND NOMINAL EXCHANGE RATE, REAL GDP, AND CAPITAL STOCK IN TANZANIA

Harold Utouh[1] ✉, Augustino Tile

Mzumbe University, Morogoro, Tanzania

ABSTRACT

Aim: The paper aims to examine the relationship between FDI and the nominal exchange rate, real GDP, and capital stock in Tanzania using quantitative research methods and an econometric analysis. The analysis aims to provide insights into the factors that affect FDI and contribute to the existing literature on the relationship between FDI and economic growth. **Methods:** This study examines the relationship between FDI inflow, real GDP, capital stock, and the normal exchange rate in Tanzania using a robust research methodology. The study employs STATA 15 software and Akaike's Information Criteria (AIC), Schwarz Information Criteria (SC), Final Prediction Error (FPE), and the Hannan Quinn (HQ) Information Criteria. In addition, the autoregressive model, the Johansen co-integration test, and the Toda-Yamamoto Granger causality (modified WALD) test were employed to determine the optimal lag. **Results:** The results indicate a bidirectional relationship between the nominal exchange rate and FDI in Tanzania, with FDI inflows influencing the nominal exchange rate volatility and vice versa. Furthermore, the results indicate that real GDP, capital stock, and the nominal exchange rate exert a unidirectional influence on FDI influx in Tanzania. **Conclusions:** The nominal exchange rate and capital stock have positive and negative correlations with foreign direct investment. Like many other African economies, Tanzania remains vulnerable to external forces despite making significant strides in stabilizing the exchange rate. It is recommended that the Central Bank of Tanzania – along with those of other African nations with similar economic structures – maintain a stable nominal exchange rate level as an incentive for foreign investors in order to increase the inflow of foreign direct investment.

Key words: Toda-Yamamoto Granger causality, autoregressive model, FDI inflow, real GDP, nominal exchange rate, capital stock

JEL codes: B42, C22, C32, F43

INTRODUCTION

Global predispositions and activities present both significant challenges and opportunities for individual economies. However, regarding macroeconomic variables, foreign direct investment (FDI) is one of the most important determinants of Gross domestic product (GDP), capital stock, employment, inflation, and exchange rate. Additionally, there is a consensus among economist, development practitioners and academia that FDI brings much-needed capital investments to developing countries to achieve economic growth and development. Globally, FDI has become increasingly important in developing nations, particu-

Harold Utouh https://orcid.org/0000-0002-1883-2433; Augustino Tile https://orcid.org/0009-0008-9112-7467
✉Harold Utouh hutouh3@gmail.com

larly in Africa, prompting policymakers to claim that FDI has improved progress and promoted growth in low- and middle-income countries (LICs) [Zekarias 2016, Shafique and Hussain 2015]. FDI is thought to help economic advancement and development by increasing job creation, managerial skills, and technology transfer [Prakash and Assaf 2001, OECD 2002, Chandana and Peter 2006, Kurtishi-Kastrati 2013, Badr and Ayed 2015, Bibi et al. 2018].

As many developing nations view FDI as an important part of their economic development strategy, FDI inflows have substantially increased worldwide in recent decades. Mergers and acquisitions, which included private-to-private transactions and acquisition through privatization in developing countries, became an increasingly important vehicle for FDI. As a result, several countries have improved their business climate to attract more FDI [Mussa 2015, Letswa et al. 2018, Kurtishi-Kastrati 2013, Bitzer and Görg 2009]. Driven by this, one of the fundamentals of the New Partnership for Africa's Development (NEPAD) aimed to increase FDI inflows to the region [Yin et al, 2021] as a number of African countries and other developing nations regard FDI as an indispensable source of capital and it complements local private investment. It is usually associated with increased job opportunities and enhanced knowledge transfer, as well as promotes economic growth, though a number of firm-level studies refute the notion that FDI increases economic growth [Clark et al. 2011, Grekou and Owoundi 2020, Kuruvilla and Arudsothy 1995].

As per WIR, FDI inflows into Africa decreased by 21.5% from USD 53.2 billion in 2016 to USD 41.8 billion in 2017. This decrease was primarily due to a decrease in foreign investment, particularly from Southern Africa – which continues to struggle in the commodity sector and is experiencing political unrest. Most countries performed differently than others. Many administrations have responded to the current macroeconomic situation; East Africa saw the lowest levels of FDI inflows across Africa, a 3.3% decrease in 2017 [BOT 2018], from a record of USD 2.6 billion in 2016. However, FDI inflows into the East African Community increased by 16.2% in 2017, totaling around USD 3.0 billion. Uganda is the second-largest recipient of FDI inflows among Community Member States after Tanzania. Due to anticipated sustained economic expansion, FDI inflows to Africa were expected to increase in 2018. Macroeconomic fundamentals, commodity prices, and regional cooperation have all improved since the signing of the African Continental Free Trade Agreement [BOT 2018].

According to the World Investment Report of 2018, Tanzania's global share of FDI inflows remained constant between 2013 and 2017 (at 0.1%), while its share in Africa averaged 3.0%. From Fig. 1, the overall trend indicates that FDI inflows to Tanzania are expected to fall to USD 1.2 billion in 2017.

Fig. 1 demonstrates that FDI in Tanzania has exhibited both rising and falling trends since 1990, and more recently, in 2019, the trends indicate that FDI is declining – which may be attributed to various reasons such as low GDP, unstable exchange rate in the country during that period, and the trends show to have sustained. If this trend continues for several years, it may lead to several negative effects since FDI is vital for most developing nations, including Tanzania.

Various factors are considered to influence or attract the flow of foreign capital into developing countries. According to Saidi et al. [2020] and Wako [2021], institutional quality-supported transportation facilities and logistics infrastructure increase FDI attractiveness, influencing economic growth. The global trend shows that FDI is primarily determined by market size, economic growth rate, GDP, nominal exchange rate, infrastructure, natural resources, and political stability [Yimer 2017, Anarfo et al. 2017, Jugurnath et al. 2016, Sane 2016, Hoang and Bui 2015, Omankhanlen 2011, Campos and Kinoshita 2003].

Scholars have recently focused on the effects of capital stock, nominal exchange rate, and real GDP on FDI. Chadee and Schlichting [2017] examined various aspects of FDI in the Asia-Pacific region and concluded that it benefited the entire region's macroeconomy. Borensztein et al. [2018] conducted a study in five developing countries and concluded that FDI benefits least-developed countries (LDCs) only if the existing human capital in these countries can adopt modern technologies and able to perform some technological innovation. Using a two-stage growth accounting model to assess the relationship between recent rapid

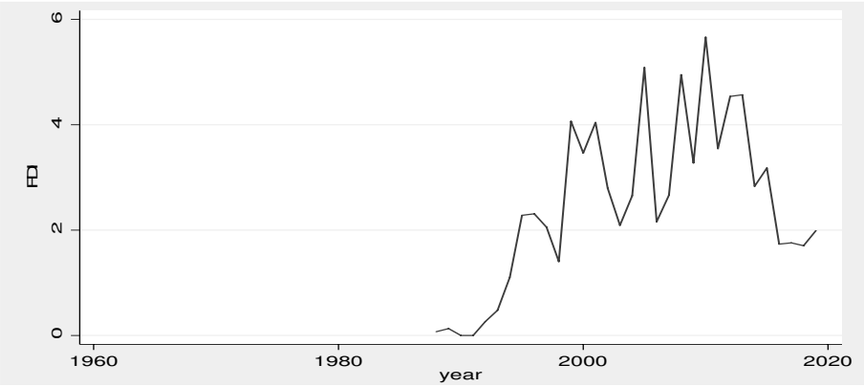

Fig. 1. Trends of FDI inflow in Tanzania from 1960 to 2019
Source: author's calculation.

economic growth in China and the role of FDI inflows, Whalley and Xin [2010] concluded that the sustainability of both China's exports and the overall trend performance of growth may be jeopardized if FDI inflows plateau in the future. However, Karimi and Yusop [2019] used a basic OLS regression to examine the Malaysian growth-FDI scenario and discovered that various factors may influence whether FDI helps or hinders economic growth.

Previous studies conducted in Tanzania that are important in informing FDI policy have focused on economic growth, wage differentials, employment, technology spillover, and foreign trade effects; however, the linkage between FDI and nominal exchange rate, capital stock, and real GDP has been pitifully studied, and conclusions on this matter are still mitigated. Worded differently, previous studies that used cross-country data, such as Msuya [2007] and Mpanju [2012], did not focus solely on Tanzanian FDI inflows and their relationship to other variables.

This study focuses on the relationship between the nominal exchange rate, capital stock, and real GDP on FDI by examining the direction of causation between the variables using a vector autoregressive econometric model, and it seeks to significantly contribute to the existing body of literature by employing an econometric methodology (Toda and Yamamoto – T-Y) to analyze the direction of causality between the four variables and the Johansen test was used for the co-integration test (long run relationship) of the variables of the study. To the best of our knowledge, the methodology used for testing causality (T-Y) is crucial for addressing the weaknesses of the Granger causality test because (T-Y) can test the long-term relationship over a longer period of time than the Granger causality test can (as per the study period from 1990 to 2019), and it does so by applying more variables independently than previous research on the topic.

THEORETICAL FRAMEWORK

This study is built on dynamic macroeconomic and capital market theories. According to the active approach, changes in the macroeconomic environment, including GDP, domestic investment, real exchange rate, productivity, and openness, are all drivers of FDI flows and dictate when investments should be made. FDIs, according to this theory, serve as a long-term function of multinational strategy [Dankwa et al. 2018, Jugurnath et al. 2016]. One of the oldest theories, Capital Market Theory (CMT), holds that interest rates determine FDI [Jugurnath et al. 2016]. CMT concentrates on three factors that entice FDI to developing nations: 1) an undervalued exchange rate, which allows for lower production costs in the host country; 2) long-term investments in developing nations, the most common of which are FDI rather than stock purchases; 3) control of the hosting economy assets, which is linked to a lack of knowledge about host country securities [Kofarbai 2015].

EMPIRICAL REVIEW

Shetty, Manley, and Kyaw [2019] investigated the effects of exchange rate volatility on FDI mergers and acquisitions. The analysis of abnormal returns in their study confirms no consistent relationship between real exchange rate volatility and bidder returns when looking at the relationship between cross-border mergers and acquisitions of 591 US firms from 2001 to 2010. Nonetheless, they discovered a statistically significant positive impact of bidder returns on exchange rate volatility. Furthermore, they discovered a significant relationship between bidder experience abroad and bidder returns, as well as deal size and bidder return.

Behname [2012] investigated the impact of FDI on economic growth in Southern Asia from 1977 to 2009. The Im, Pesaran, and Shin [2003] unit root test revealed that the variables were stationary in level, and the Hausman [1978] test demonstrated the need to apply the random effects model. After estimating the model, they concluded that FDI has a positive and significant impact on economic growth, and variables such as capital formation, economic infrastructure, capital formation, and human capital positively impact GDP. However, technological gap inflation and population growth harm economic growth.

The study by Mtumwa [2019] examined the relationship's relevance using time-series data spanning the years 1980 to 2016. Infrastructure development, macroeconomic variables, and the exchange rate all had a significant effect on the flow of FDI to Tanzania. Surprisingly, a country's degree of openness was found to have little effect on FDI influx. Natural resource availability and market size were discovered to significantly affect the flow of FDI. These results can primarily assist Tanzanian policymakers in making informed decisions when developing policies to attract more FDI to the country.

Masanja [2018] investigated the degree to which FDI influences Tanzanian economic growth by employing (OLS) estimation techniques and macroeconomic time series data from 1990 to 2013. The independent and dependent variables were regressed. The findings indicate that FDI has positive but contributed insignificantly to the nation's economic growth during the specified period. The results contradict the conventional wisdom about FDI-led growth. Hitherto, a large concentration of FDI in the manufacturing and mining sectors, but less in tourism and agriculture, which have a trickle-down effect on the rest of the economy, could be the reason for such a general feeble contribution. The remaining variables in the regression model appear to perform admirably in favor of economic growth, with human capital stock having the most significant positive coefficient. Although not as significant as human capital stock, the financial system or capital market efficiency and domestic capital formation have positive coefficients. Government spending and the inflation rate have been found to harm the economy. These findings imply that the government should consider human capital stock as critical to all its development and economic strategies.

In his study, Adeniyi [2020] investigated the impact of FDI and inflation on economic growth in five randomly selected African countries. The study used data mapper and UNCTAD time series from 1996 to 2018, and the variables of interest were FDI inflows, GDP per capita (economic growth), and inflation rate. As a rule of thumb, the unit root test and regression analysis were run to estimate the objectives, and the results indicate that FDI positively impacts economic growth in all five countries studied. Except for Egypt, inflation tends to harm economic growth in four of the five countries studied.

Sengupta and Puri [2020] endeavored to investigate the structure of FDI in the Indian subcontinent and India's neighbors, such as Pakistan, Nepal, Bangladesh, and Sri Lanka, as well as reconnoiter the relationship between FDI and GDP. Regression was used in their study to investigate the relationship between one or more prognosticators or experimental variables and one regressing variable. The findings revealed that the different economic policies of the respective countries played a role in explaining the difference in the quantum of the flow, that there is a relationship between FDI and GDP, and that FDI is instrumental in enhancing the economic growth of the countries included in the study in all cases.

According to Ciobanu's [2020] study on the impact of FDI on Romania's economic growth, there is co-

integration between the variables once real GDP and FDI are dependent variables. In addition, it was discovered that the primary factors influencing long-term economic growth in Romania are the labor force, FDI, and trade openness. In the long run, the growth of the labor force, the GDP, imports, and exports all support the growth of FDI.

The examination of the exchange rate and FDI in Nigeria by Okonkwo et al. [2021] from 1981 to 2018 shows a favorable correlation between real and nominal exchange rates and FDI. The study is comparable to that of Xing [2006], who noted that China is more alluring for FDI and suggested that the CBN ought to provide a sufficient flow of foreign currency on the currency exchange market and maintain a sustainable level of exchange rate to draw in more foreign direct investment. Empirical evidence suggests that one of the key variables affecting Japanese direct investment in China is the real exchange rate between the Yuan and the Yen. The devaluation of the Yuan caused FDI from Japan to increase significantly because FDI is flexible in how it reacts to changes in actual exchange rates.

Omri [2014] did a study concerning the link between foreign investment, domestic capital, and economic growth in the MENA region. This study employed a "growth model" context coupled with a simultaneous equations model estimated by the general method of moments (GMM) to examine the connections between FDI, local capital, and economic progress in 13 MENA nations covering a period of 1990 up to 2010. The findings show a link between regional capital and foreign direct investment throughout the region.

MODEL AND DATA

The study uses secondary time series data from the World Bank (The Penn World Table), notably the world development indicators. The data set is obtained from the World Bank. The data sources were chosen because they are the most reliable and are used by nearly every Tanzanian researcher.

On the other hand, the World Bank's databank offers a variety of data arrangement tools that allow required data to be organized in the desired format and can be directly downloaded from an Excel file. The data set includes real GDP in millions of US dollars, FDI inflows (as percentage of GDP), capital stock (as a percentage of GDP), and the nominal exchange rate. The dataset is updated annually and spans the years 1960 to 2019. Time series data used to study the causal relationship between GDP in millions of US dollars, FDI inflows (% of GDP), capital stock (% of GDP), and the nominal exchange rate. The study employs STATA 15 in all of its analyses, including computing and drawing figures – which were all accomplished using the program.

The vector autoregressive model (VAR) is a popular, flexible, and uncomplicated multivariate time series analysis tool. It is used to study the effects of the regressors variables on the regressing variables [Zivot and Wang 2003]. The univariate autoregressive model is a natural progression from the dynamic multivariate autoregressive model. The VAR model has been confirmed to be particularly effective in characterizing time series for the economy and finance dynamic behavior and predicting simultaneous equations based on time series models and sophisticated theory models. Forecasts from VAR models are highly adaptable because they can be changed and made dependent on the possible future paths of specified variables in the model [Zivot and Wang 2003].

The vector autoregressive model was specified as follows:

$$FDI_t = f(RGDP_t\ CST_t\ NEXR_t) + \mu_t$$

Whereas μ_t represent the stochastic term.

To generate a linear equation from equation 1.1, the Cobb Douglass log linear is applied, where equation 1.1 becomes:

$$FDI_t = \alpha_0 \left((FDI_{t-1})^{\alpha_1} (RGDP_t)^{\alpha_2} (CST_t)^{\alpha_3} (NEXR_t)^{\alpha_3} \left(\mu_t^{\varepsilon_t} \right) \right)$$

Since equation 1.2 is multiplicative, when transformed to a natural logarithm, the equation becomes:

$$\ln FDI_t = \alpha_0 + \alpha_1 \ln RGDP_t + \alpha_2 \ln CST_t + \alpha_3 \ln NEXR_t) + \varepsilon_t$$

Therefore, the vector autoregressive model becomes:

$$\ln FDI_t = \alpha_0 + \alpha_1 \ln FDI_{t-1} + \alpha_2 \ln RGDP_t + \alpha_3 \ln CST_t + \\ + \alpha_4 \ln NEXR_t + \varepsilon_t$$

The explanatory variables coefficients in equation 1.3 represent the explained variable's long-run elasticities.

In this study, the augmented Dickey-Fuller (ADF) test (Dickey and Fuller, 1981) is used to test for unit roots to avoid spurious regression in a time series analysis.

A stationarity test is crucial for the time series variables (observations) to avoid spurious regression estimations. Therefore, in testing for stationarity, the most common estimator used in this study is the augmented Dickey-Fuller (ADF) test.

Consider the ADF test as that:

$$\Delta Y_t = \beta_1 + \delta Y_{t-1} + \sum_{i=1}^{n} \alpha_i \Delta Y_{t-i} + \varepsilon_i$$

The hypotheses of equation 1.4 are as hereby described below:

$H_0: \delta = 0$ *under this assumption the series are found not to be stationary*

$H_0: \delta < 0$ *under this alternative hypothesis the series are stationary*

Estimating the p from the VAR estimation of the variables in their levels is necessary because it is always unknown. There are various lag length criteria that can be used to determine the p. such as Akaike's Information Criterion (AIC), Schwarz Information Criterion (SC), Final Prediction Error (FPE), and the Hannan Quinn (HQ) Information Criterion [Zhang and Zhang 2018].

The co-integration test is performed after testing the series stationarity to assess the existence of the long-run relationship between variables. In this study, the co-integration test is performed using the Johansen co-integration test, which applies maximum likelihood in testing for the long-run relationship among multivariate vector autoregressive models (VAR model).

Consider a VAR model of vector *k*; given a vector being *I* (1) or integrated in order, the explained variable can be written as:

$$Y_t = \alpha_t Y_{t-1} + \alpha_t Y_{t-2} + \ldots \ldots \ldots \ldots + \alpha_k Y_{t-k} + \varepsilon_t$$

Whereas Y_t and ε_t are the n × 1 vectors of which equation 1.5 can be rewritten as:

$$\Delta Y_t = \sum_{i=1}^{k-1} \omega_i Y_{t-i} + \prod Y_{t-1} + \mu_0 + \varepsilon_t$$

of which:

$$\prod = \sum_{i=1}^{k} \alpha_i - 1 \quad \text{and} \quad \omega_i = -\sum_{j=i+1}^{k} \alpha_j$$

By which, there are $n \times r$ *matrices* as well as α and β each with *'r'* ranking with a matrix of $\prod = \alpha\beta'$ and $\beta' Y_t$ (said to be stationary). However, this depends on whether the reduced rank $r < n$, α and individual columns of β are the adjustment parameters in the VECM and co-integrating vector, respectively – whereby *r* is the number of co-integrating relationships.

After testing for co-integration, we then adopted a vector error correction model (VECM) to capture the long-run and the short-run dynamics. To estimate the relationship of FDI, real GDP nominal exchange rate, and capital stock in Tanzania, the following equations have been used for the estimations:

$$\ln FDI_t = \alpha_0 + \sum_{i=1}^{n} \theta \ln CPS_t + \sum_{i=1}^{n} \psi \ln N\_EXT_t + \\ + \sum_{i=1}^{n} \eta \ln RDGP_t + \varepsilon_t$$

$$\Delta \ln FDI_t = \alpha_0 + \sum_{i=1}^{n} \theta \Delta \ln CPS_t + \sum_{i=1}^{n} \psi \Delta \ln N\_EXT_t + \\ + \sum_{i=1}^{n} \eta \Delta \ln RDGP_t + \varepsilon_t$$

Therefore, FDI_t, represents the relationship between real GDP, capital stock and nominal exchange rate for the period of 60 years (1960–2020) while ε_t is the

coefficient of the Error correction term (ECT_{t-1}). This study is important and intriguing since few current studies in Tanzania have been able to integrate multiple variables impacting FDI covering a very long period of time. Therefore, the analysis and discussion of findings have relied on proportional techniques.

The co-integration test verifies the existence of long-term equilibrium relationship between variables. A long-run equilibrium relationship or ECM is applied if there is a co-integration relationship. If there is no co-integration relationship, the difference variable analyses the short-term relationship. In contrast, the Granger causality is a method of determining if one variable helps predict another. Traditional Granger causality testing methods should ensure the stability of time series data, and the integration process should be clear. However, the effectiveness of the Granger causality test is poor if the time series integration process is different or unclear and the facts that it is weak in testing the causality of the long-term period data. As an alternative, the T-Y (TY) method is used [Toda and Yamamoto 1995].

The Toda-Yamamoto causality test applies a modified Wald test statistic to test zero restrictions on the parameters of the original VAR (k) model. The test has an asymptotic (χ^2) distribution with k degrees of freedom. The test essentially involves two stages.

The first stage determines the optimal lag length (k) and the maximum order of integration (d) of the variables in the system. The lag length, k is obtained in the process of the VAR in levels among the variables in the system by using different lag-length criteria such as AIC or SBC. The unit root testing procedure, such as Dickey-Fuller [1981] ADF and Phillips-Perron [1985] tests may be used to identify the order of integration,

The second stage uses the modified Wald procedure to test the VAR (k) model for causality. The optimal lag length is equal to $p = [k + d(\max)]$. In the case of a bivariate (Y, X) relationship, the Toda and Yamamoto [1995] causality test is represented as follows:

$$Y_t = \sum_{i-1}^{v} \beta 1j \times Y_{t-1} + \sum_{i-k+1}^{k+d\,max} \beta 2j \times Y_{t-1} + \\ + \sum_{i-1}^{v} M1j + v_t$$

$$X1_t = \sum_{i-1}^{v} R1j \times X_{t-1} + \sum_{i-k+1}^{k+d\,max} R2j \times X_{t-1} + \\ + \sum_{i-1}^{v} H1j + e_t$$

$$X2_t = \sum_{i-1}^{v} P1j \times X2_{t-1} + \sum_{i-k+1}^{k+d\,max} P2j \times X2_{t-1} + \\ + \sum_{i-1}^{v} L1j + \Omega_t$$

$$X3_t = \sum_{i-1}^{v} K1j \times X3_{t-1} + \sum_{i-k+1}^{k+d\,max} K2j \times X3_{t-1} + \\ + \sum_{i-1}^{v} G1j + \Pi_t$$

Where Y_t = FDI, $X1_t$ = real GDP, $X2_t$ = norminal exchange rate, $X3_t$ = capital stock and v_t, e_t, $'\Omega_t$, Π_t are residuals.

The Wald tests were then applied to the first k coefficients matrices using the standard χ^2 statistics. The null hypothesis is constructed so that X does not cause Y; similarly, the second hypothesis does not cause X. The Seemingly Unrelated Regression (SUR) approach is used to estimate the system described by equations 11–14 [Rambaldi and Doran 1996]. The hypothesis is then put to the test using a Wald test. The calculated Wald statistic has a k-degrees-of-freedom asymptotic chi-square distribution.

RESULTS

The results in Table 1 show that the average annual inflow of FDI in Tanzania for 59 years was 0.0463406%. In contrast, the lowest recorded FDI was –8.508473%, and the highest FDI recorded was 1.7348%. Moreover, the nominal exchange rate between US Dollar and Tanzanian shillings from 1960 to 2019 was 4.621%, the lowest ever at 1.9488%, while the highest was recorded at 7.7355%.

On the other hand, Tanzania had an average real GDP of 10.34% from 1960 to 1921, with a minimum of 9.029% and a maximum of 11.84%. Over the years 1960–2021, the average capital stock recorded in the country was 11.206%, while the minimum was 9.71 and the maximum was 12.88%.

Fig. 2 shows that to test for the stationarity, we must include drift for the variables to be stationary.

Table 1. Descriptive Statistics

Variables	Mean	Standard Deviation	Min	Max
LnFDI	.0463406	1.778024	–8.508473	1.734082
N_Exchange rate	4.62085	2.38128	1.948818	7.735524
Real GDP	10.34279	.7556901	9.029381	11.84804
Capital stcok	11.20676	.7966173	9.716331	12.88934

Source: author's computation.

This is signified by the presentation of the variables in the Fig. 2. Moreover, these figures for foreign direct investment (FDI), capital stock, real GDP, and nominal exchange rate show that the variables may not be stationary; hence, the need to be further reexamined by the augmented Dickey-Fuller, which will give numerical interpretation of the variables' status towards stationarity (unit root).

To prevent erroneous results, it is crucial to do a pretest for the statistical features of the variables, such as a non-stationarity test for time series data. Table 2 displays the outcomes of the unit root test for the variables utilized in this study. The unit root test results indicate that all the variables are integrated of order one, I (1).

Because Granger causality and vector autorepression analysis use lagged variables, the number of lags to be included in the causality tests is critical [Karimi 2011]. The study had to conduct a practical test to establish the correct number of lags to be used by STATA command of vector autoregression selection order criteria to calculate the final prediction error (FPE), Akaike's information criterion (AIC), Schwartz's

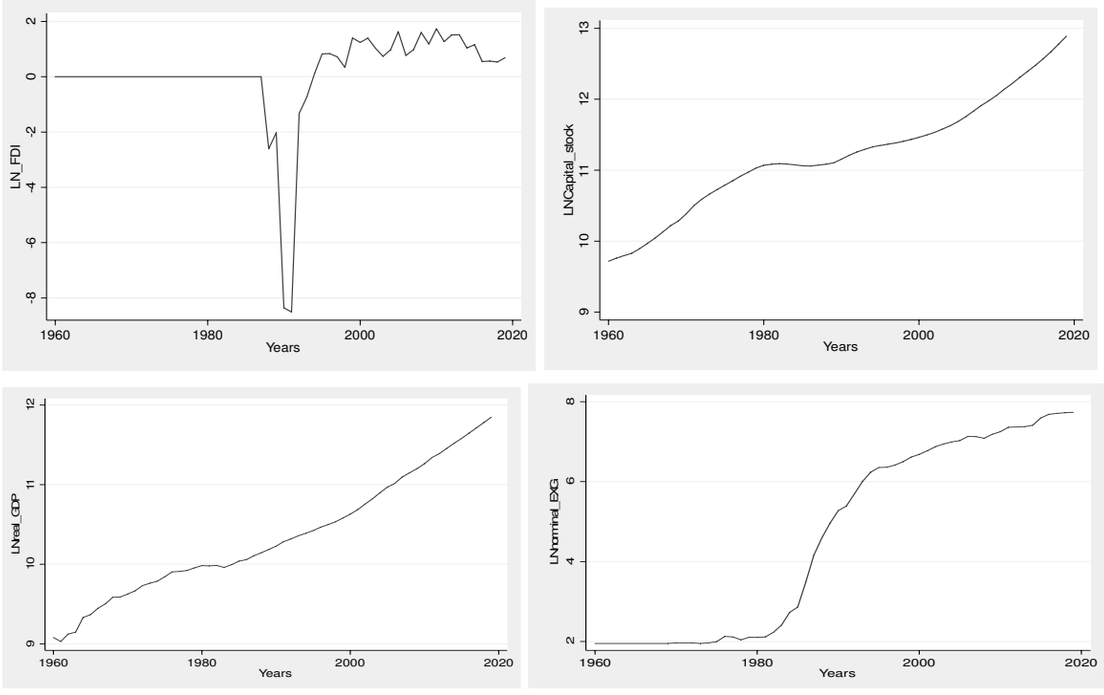

Fig. 2. Time Series Plot of Variables to analyze Trends
Source: author's calculation.

Table 2. Unit Root Tests utilizing the augmented Dickey-Fuller test results

Variables	Level			First Differences		
	None	Constant	Constant and Drift	None	Constant	Constant and Drift
ln (FDI)	–3.068	–3.044	–3.044	–3.226	–3.199**	–3.199**
	(1.95)	(–2.923)	(–1.672)	(1.95)	(–2.924)	(–1.673)
ln (Real GDP)	11.65	1.768	1.768	6.812	1.094**	1.094**
	(–1.95)	(–2.923)	(–1.672)	(–1.95)	(–2.924)	(–1.673)
ln (N_Exchange rate)	4.427	0.241	0.241	0.929	–0.725**	–0.725**
	(–1.95)	(–2.923)	(–1.672)	(–1.95)	(–2.924)	(–1.673)
ln (Capital stock)	11.337	10.036	10.036	5.353	5.224**	5.224**
	(–1.95)	(–2.924)	(–1.673)	(–1.95)	(–2.924)	(–1.674)

Notes: Number in parentheses are the critical values at a 5% significance level. ** indicate significance at a 5% level.
Source: author's calculation.

Bayesian information criterion (SBIC), and Hannan and Quinn information criterion (HQIC) lag-order selection statistics (varsoc). The exact ideal for the causality connection test should use four-lag to provide precise guesstimates following Schwartz's Bayesian information criterion (SBIC) requirements. The four-lag version of the dependent variable from the Granger causality model was used in the study.

Where, LR: Sequential Modified LR Test Statistic (each test at 5% level), FPE: Final Prediction Error, AIC: Akaike information Criterion, SBIC: Schwarz Bayesian Information Criterion, HICQ: Hannan Quinn Information Criterion.

The results in Table 3 show that the most convenient and optimal lag is at order 2. This choice offers the best likelihood of delivering accurate estimations, as evidenced by receiving four stars in LR, FPE, AIC, and HQIC. This indicates that, according to all these criteria, lag 2 is found to be the best option. In contrast, lag 4 only meets one criterion, which is AIC and LR. Therefore, this study's estimations have been made using the optimal lag at order 2.

Figure 3 findings underline the results portrayed in Table 3 that the optimal lag order is at lag two, which is represented by column 2. The presence of such movements indicates variations in the changes of the variables under different integration.

The null hypothesis for the trace test is that the number of co-integration vectors is $r = r \times < k$, as opposed to the alternative that $r = k$.

Table 3. Choice for selecting the order for the Vector Autoregressive model

Lags	LL	LR	*df*	*p*	FPE	AIC	HQIC	SBIC
0	–204.634				0.020236	7.4512	7.50729	7.59587
1	231.652	872.57	16	0.0000	6.10E–09	–7.55901	–7.27858	–6.83567
2	299.111	134.92	16	0.0000	9.9e–10*	–9.3968	–8.89202*	–8.09479*
3	304.43	10.64	16	0.8310	1.50E–09	–9.01537	–8.28624	–7.13469
4	331.191	53.521*	16	0.0000	1.10E–09	–9.39968*	–8.44619	–6.94032

* Indicates lag order selected by the criterion
Source: author's calculation.

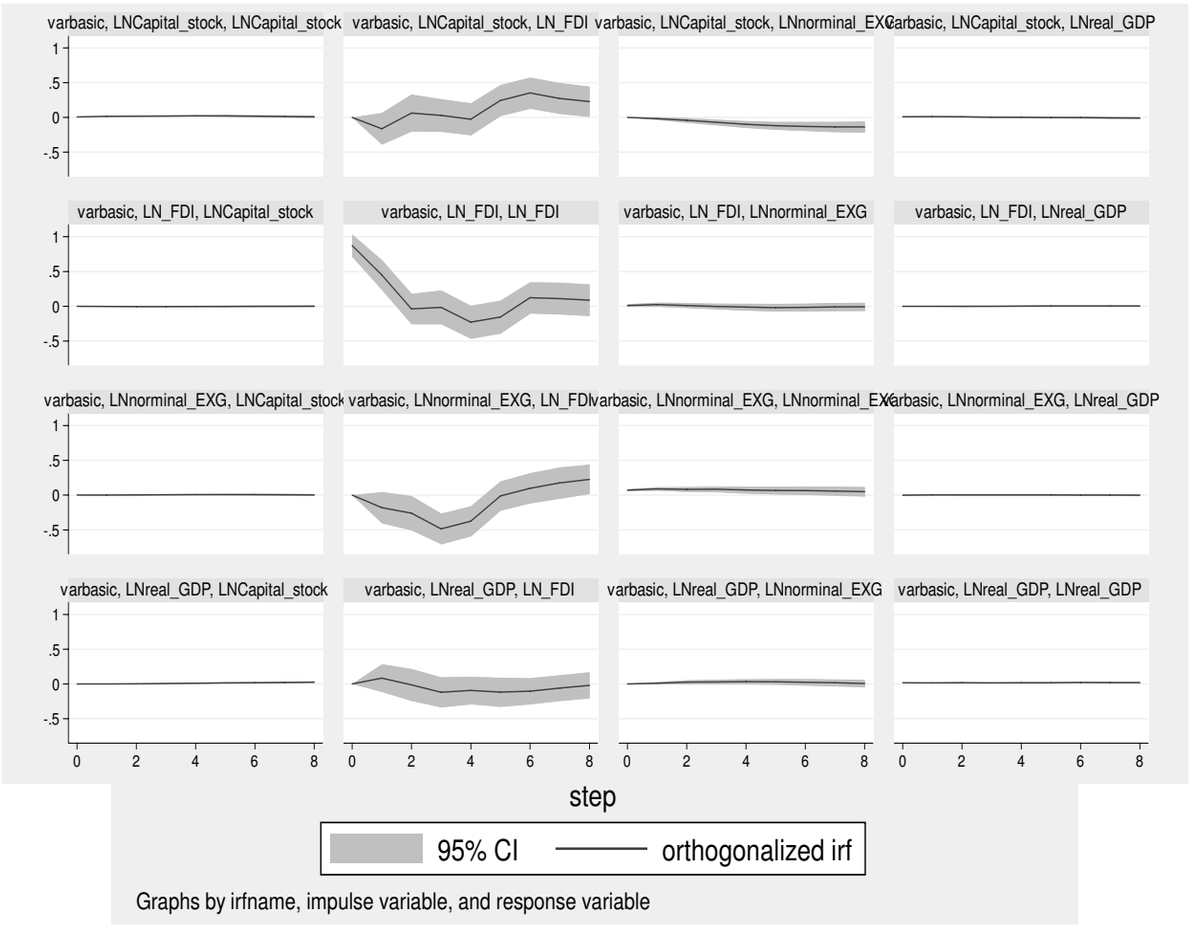

Fig. 3. Results of the analysis
Source: author's calculation.

The trace test differs from the alternative hypothesis in that at least one co-integrating link (exposed by the number of direct amalgamations). The alternative view for the maximum eigenvalue test is K0 + 1 (instead of K > K0). In this situation, there is only one way to combine the non-stationary variables to construct a stationary process, which is the essence of rejecting the null hypothesis.

The null hypothesis of Johansen's co-integration test is that there is no co-integration among variables. We reject the null hypotheses if the trace and maximum statistics values are more significant than the critical values at 5% and 1%, respectively. Table 4 shows the results of the co-integration study, and there is at least one co-integrating vector among the four variables included in the model because both the trace statistics and maximum statistics values are greater than the critical values at the 5% and 1% significance levels, respectively. It can also be argued that the relationship between FDI, capital stock, real GDP, and the nominal exchange rate exhibits a distinct long-run equilibrium.

Findings in Table 5 show that the nominal exchange rate is positively and significantly influencing the FDI in Tanzania at lagged 2. In contrast, an increase in the nominal exchange rate increases the FDI by 43 at a 1% significant level. But also, the results show that the nominal exchange rate is negatively and significantly influencing the FDI in Tanzania at lagged 1, whereas

Table 4. Co-integration test based on Johansen's Test Approach

Maximum rank	parms	LL	Eigenvalue	Trace statistic	5% critical value	1% critical value
0	20	275.4227		72.5966	47.21	54.46
1	27	290.2357	0.39998	42.9704	29.68	35.65
2	32	304.6879	0.39247	14.0662*1*5	15.41	20.04
3	35	311.631	0.21291	0.1799	3.76	6.65
4	36	311.721	0.0031			
Maximum rank	parms	LL	Eigenvalue	Max statistic	5% critical value	1% critical value
0	20	275.4227		29.6262	27.07	32.24
1	27	290.2357	0.39998	28.9043	20.97	25.52
2	32	304.6879	0.39247	13.8862	14.07	18.63
3	35	311.631	0.21291	0.1799	3.76	6.65
4	36	311.721	0.0031			

Source: author's calculation

Table 5. Vector Autocorrelation Results

	(1)	(2)	(3)	(4)
VARIABLES	LnFDI	LnN_Exch	LnRGDP	LnC_stock
L.lnFDI	0.711198***	–0.0011796	–0.001275	–0.0016995
	(0.1212203)	(0.0084961)	(0.0025288)	(0.0010563)
L2.lnFDI	–0.216629*	–0.0285***	0.001938	0.0004679
	(0.1250837)	(0.0087669)	(0.0026094)	(0.0010899)
L.lnN_Exch	–4.394915***	1.457689***	0.0259178	0.0111034
	(1.279401)	(0.0896705)	(0.0266899)	(0.0111482)
L2.lnN_Exch	4.349639***	–0.53337***	–0.02257	–0.01686
	(1.259065)	(0.0882452)	(0.0262657)	(0.010971)
L.lnRGDP	1.669813	0.4618632	0.7804465***	0.026924
	(5.367416)	(0.3761909)	(0.111971)	(0.0467695)
L2.lnRGDP	–0.318275	0.2438064	0.3556799***	0.0893656
	(5.913151)	(0.4144403)	(0.1233558)	(0.0515248)
L.lnC_stock	–8.591673	–3.54872***	–0.0282405	1.674271***
	(10.43405)	(0.7313008)	(0.2176675)	(0.0909181)
L2.lnC_stock	7.873839	3.134297***	–0.1060926	–0.7648523***
	(8.765979)	(0.614389)	(0.1828693)	(0.0763832)
Constant	–4.860144	–2.07932***	0.139527	–0.1447401*
	(7.503903)	(0.5259327)	(0.1565408)	(0.065386)
STRENGTH OF INSTRUMENTS				
AIC	–9.50762			
HQIC	–9.00946			
SBIC	–8.22872			
Log likelihood	311.721			
FPE	8.82E–10			

*** p <0.01, ** p <0.5, *p <0.1

Source: author's calculation.

an increase in the nominal exchange rate decreases the FDI by 43% at a 1% significant level.

Additionally, the findings in Table 5 show that the nominal exchange rate is positively and significantly influencing the capital stock in Tanzania at lagged 2, whereas an increase in the nominal exchange rate increases the capital stock by 31 at a 1% significant level. But also, the results show that the nominal exchange rate is negatively and significantly influencing the capital stock in Tanzania at lagged 1, whereas an increase in the nominal exchange rate decreases the capital stock by 35 at a 1% significant level.

The T-Y Granger causality results in Table 6 indicate that we reject both the null hypothesis that the nominal exchange rate does not Granger cause FDI and the null hypothesis that FDI does not Granger cause the nominal exchange rate. Therefore, we can infer that there is a two-way relationship between the nominal exchange rate and foreign direct investment. And there is evidence of rejecting the null hypothesis that real GDP, nominal exchange rate, and capital stock together do not Granger cause FDI inflow in Tanzania, and there is a unidirectional cause from all variables to FDI inflow in the country.

Table 6. Toda-Yamamoto Causality (modified WALD) Test Results

Null hypothesis	chi-sq	d	Probability	Granger Causality
Nominal exchange rate does not Granger cause FDI	12.019	2	0.002	Bidirectional causality N_exch ⟷ FDI
FDI does not Granger cause the nominal exchange rate	15.584	2	0.000	
Capital stock does not Granger cause FDI	0.9530	2	0.621	No causality
FDI does not Granger cause capital stock	2.8568	2	0.24	
Real GDP does not Granger cause FDI	0.2476	2	0.884	No causality
FDI does not Granger cause real GDP	0.5670	2	0.753	
All variable does not Granger cause FDI	15.404	6	0.017	Unidirectional All ⟶ FDI

Source: author's calculation.

DISCUSSION

The Granger causality analysis, denoted as (T-Y), suggests that the nominal exchange rate has a significant impact on FDI flows to Tanzania. The results indicate a bidirectional causal relationship, with the nominal exchange rate influencing FDI at a 1% significance level. These findings align with Okonkwo et al.'s [2021] research, which explored the connection between Nigeria's exchange rate and FDI and found that both real and nominal exchange rates positively affected FDI.

However, these results contrast with those of Cavallari and d'Addona [2013], who investigated the determinants of FDI, including both nominal and real volatility. Their study concluded that, on one hand, both nominal and real volatility strongly discourage foreign investments, while output and exchange rate volatility are critical factors when deciding whether to invest in a foreign country. Additionally, interest rate volatility is believed to significantly influence the volume of foreign investments..

According to Cavallari and d'Addona [2013], the findings suggest that the host country's interest rate volatility negatively impacts FDI flows. Foreign direct investment decreases by an average of 2.55% for every 1% increase in foreign volatility. This implies that an increase in domestic volatility has little effect on foreign investment. In other words, making a direct investment in a nation with significant (high) nominal exchange rate volatility will result in a riskier stream of earnings, which is inversely related to returns. Given the significant causal relationship between the nominal exchange rate and FDI, Tanzania's low levels of

FDI may be attributed to previous ineffective nominal exchange rate strategies.

Furthermore, the T-Y Granger causality test results demonstrate that real GDP, capital stock, and the nominal exchange rate all have a significant impact on FDI inflows in Tanzania. There is a unidirectional relationship from real GDP, capital stock, and the nominal exchange rate jointly to foreign direct inflow in Tanzania at a 1 percent significance level. This result aligns with the findings of Anyanwu & John [2021], who examined the determinants of FDI in Africa. Using the dynamic panel data framework, the study shows that FDI inflows to Africa depend on accumulation economies, the presence of natural resources, real GDP growth, domestic and global FDI policies, among other factors. Several specific results are noteworthy. First, real GDP growth positively influences the location of FDI. Secondly, the presence of natural resources/stocks tends to attract resource-seeking FDI. Lastly, large economies are the most significant driver of FDI inflows to Africa.

CONCLUSIONS

The T-Y Granger causality test, which employs the vector autoregressive model to represent the association between various measures as they change over time, was used to establish variable causality, i.e., how variables depend on each other. Its p-value, similar to the nominal exchange rate, is less than a 5% significance level; consequently, the null hypothesis is rejected. This leads to the conclusion that the nominal exchange rate Granger causes foreign direct investment inflow in the country. However, the combined effect of the variables – capital stock, real GDP, and nominal exchange rate – has a p-value of 0.017, which is below the 5% significance threshold, indicating that it Granger drives FDI into the nation.

On the other hand, the Granger causality test demonstrates that foreign direct investment causes changes in the nominal exchange rate in Tanzania.

Both the nominal exchange rate and capital stock exhibit both positive and negative correlations with foreign direct investment. Tanzania, like many other African economies, remains vulnerable to external forces despite making significant strides in stabilizing the exchange rate. It is recommended that the Central Bank of Tanzania, along with those of other African nations with similar economic structures, maintains a stable nominal exchange rate level as an incentive for foreign investors to increase the inflow of foreign direct investment.

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ZWIĄZEK MIĘDZY BEZPOŚREDNIMI INWESTYCJAMI ZAGRANICZNYMI A NOMINALNYM KURSEM WALUTOWYM, REALNYM PKB I ZASOBEM KAPITAŁU W TANZANII

STRESZCZENIE

Cel: Celem artykułu jest zbadanie relacji między BIZ a nominalnym kursem walutowym, realnym PKB i zasobem kapitału w Tanzanii za pomocą ilościowych metod badawczych i analizy ekonometrycznej. Celem analizy jest dostarczenie wglądu w czynniki, które wpływają na BIZ oraz wniesienie wkładu do istniejącej literatury na temat związku między BIZ a wzrostem gospodarczym. **Metody:** Poddano analizie związek między napływem BIZ, realnym PKB, zasobem kapitału i normalnym kursem walutowym w Tanzanii przy użyciu solidnej metodologii badawczej. W badaniu wykorzystano oprogramowanie STATA 15 i kryteria informacyjne Akaike (AIC), kryteria informacyjne Schwarz (SC), błąd ostatecznej prognozy (FPE) i kryteria informacyjne Hannan Quinn (HQ). Ponadto do określenia optymalnego opóźnienia zastosowano model autoregresji, test kointegracji Johansena i test przyczynowości Toda-Yamamoto (zmodyfikowany WALD). **Wyniki:** Wskazano, że istnieje dwukierunkowa zależność między nominalnym kursem walutowym a BIZ w Tanzanii, tj. czym napływ BIZ wpływa na zmienność Nominalnego Kursu Walutowego, a Nominalny Kurs Walutowy Wpływa na napływ BIZ. Ponadto wyniki wskazują, że realny PKB, zasób kapitału i Nominalny Kurs Walutowy wywierają jednokierunkowy wpływ na napływ BIZ do Tanzanii. **Wnioski:** Nominalny kurs walutowy i zasób kapitału mają zarówno dodatnie, jak i ujemne korelacje z bezpośrednimi inwestycjami zagranicznymi. Tanzania, podobnie jak wiele innych gospodarek afrykańskich, pozostaje podatna na siły zewnętrzne, mimo znacznych postępów w dążeniu do stabilizacji kursu walutowego. Zaleca się, aby Bank Centralny Tanzanii wraz z bankami innych krajów afrykańskich o podobnej strukturze gospodarczej utrzymywał stabilny nominalny poziom kursu walutowego jako zachętę dla inwestorów zagranicznych do zwiększenia napływu bezpośrednich inwestycji zagranicznych.

Słowa kluczowe: przyczynowość Grangera, model autoregresji, napływ BIZ, realny PKB, nominalny kurs walutowy, kapitał

CONTENTS
SPIS TREŚCI

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